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An Application of the Investment Model for Examining the Effects of Commitment, Self-Efficacy, and Goal Difficulty on Performance

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AN APPLICATION OF THE INVESTMENT MODEL FOR EXAMINING
THE EFFECTS OF COMMITMENT, SELF-EFFICACY,
AND GOAL DIFFICULTY ON PERFORMANCE

by

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Old Dominion University in Partial Fulfillment of the
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Old Dominion University
May, 1990

Approved ~~by~~:

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DEDICATION

My family and friends have been more supportive, encouraging, and concerned than I would ever have thought possible. They have been steadfast in the confidence they placed in me, and have made countless sacrifices so that I might relentlessly pursue my goals. For the years that they have cheered me on, I dedicate this work to them.

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There have been many individuals who have inspired, encouraged, and guided my academic interests over many long and often frustrating years. First, I thank my father, who taught me so long ago the importance of truth and integrity in the face of discouragement and uncertainty. It was with those thoughts in mind that I began wanting to unravel some of the confusion surrounding my dissertation topic. He would have been proud that I questioned the validity of procedures and ideas that had been taken for granted for so many years.

There are some professors that made an impact upon me early in my career in psychology. Dr. Marian McDonald, who allowed me to be one of her research assistants in her behavioral assessment laboratory at SUNY Stony Brook, convinced me that "Data from a subject is like gold." Dr. Joseph Madden, my mentor at Rensselaer Polytechnic Institute, taught me to find an area of interest I could enjoy with a passion, and to make it my area of research. That advice worked for me then, as it does now.

Staff support at Old Dominion University could not have been more helpful. Michael Sachon and his fabulous staff in Computer Services never let it show if they became tired of my questions, chocolates, donuts, or pizzas. I am grateful for all the help, advice, and encouragement offered by the

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endless. Over the years, proposals, and revisions, I learned to look forward to his expert, painstaking, and meticulous editorial comments.

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ABSTRACT

AN APPLICATION OF THE INVESTMENT MODEL FOR EXAMINING THE EFFECTS OF COMMITMENT, SELF-EFFICACY, AND GOAL DIFFICULTY ON PERFORMANCE

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This research was designed to test the presumed effects of commitment, self-efficacy, and goal difficulty level on task performance. The investment model of commitment was used to experimentally manipulate commitment levels. Eighty subjects served as their own controls. For a computer typing task, performance baseline was established, then subjects performed additional trials under various commitment-to-study, commitment-to-job, and goal difficulty conditions. Seven hypotheses were tested. Analyses were conducted to determine main effects of commitment-to-study, commitment-to-job, commitment-to-goals and interaction effects among experimental conditions.

Performance score differences were significant for speed, but not accuracy across high and low commitment levels, supporting the hypothesis that commitment and

performance are positively correlated. Organizational climate established in the commitment-to-study condition was shown to be a determinant of subsequent performance. Results supported Locke's (1981) contention that commitment is necessary for goal-setting to work, but did not support the suggestion that difficult goals result in better performance. The hypothesis that task interest is related with satisfaction was confirmed, but hypotheses regarding relationships between task interest, facet satisfaction, and work motivation with performance were generally unsupported.

Self-efficacy estimates of typing speed and accuracy made before feedback was received were significant predictors of performance, but estimates of accuracy consistently underestimated actual performance. Post-feedback efficacy estimates explained significantly more variance than pre-feedback estimates, as expected; however, accuracy estimates were resistant to revision based on feedback and did not show increased predictive power. Commitment levels did not have a differential impact on subjects' post-feedback efficacy estimates.

Results were interpreted in terms of task complexity, instrumentality, and arousal theory, and implications for future research and applications were discussed.

I. INTRODUCTION

Statement of the Research Problem

Goal setting is included in virtually every program for improving organizational and personal productivity, and practitioners advise that success depends on the degree to which participants are committed to those programs and goals. Researchers have frequently defended data that are discrepant with their expectations by challenging the commitment of the participants. Measurement of commitment has not been systematic, nor has it been operationally defined with consistency across studies. This chapter begins with a discussion of what goal setting contributes to motivation, and presents a review of conceptual and methodological problems associated with previous goal setting research. Problems with the construct of commitment are defined, and a model suggesting parameters of commitment, including perceived self-efficacy, is outlined. The chapter concludes with suggestions for research to help clarify the relationship between commitment and goal setting under different experimentally controlled levels of motivation and goal level difficulty.

Utilization of a recently tested investment model of commitment as a manipulation check in research (Farrell & Rusbult, 1981; Rusbult, 1980) may help provide clarification

to be methodologically useful for lending credence to the use of college student samples in research. The sections which follow will provide the rationale for showing that a goal setting model which includes the investment model of commitment and individuals' perceived self-efficacy may permit psychologists to defend the external validity of laboratory research conducted with college student samples. Further, this model of commitment (Farrell & Rusbult, 1981; Rusbult, 1980) may help managers understand how to more effectively motivate their employees.

Goal Setting and Employee Motivation

One of the most accepted and used methods for implementing motivational theory in applied work settings is known as goal setting. Goal setting uses standards of performance which are communicated to employees so that they can better gauge their expenditures of effort. Further, goal setting works by directing attention and action, mobilizing energy and effort, encouraging persistence, and motivating individuals to develop strategies for goal attainment. Terms similar in meaning to goals are sometimes used interchangeably, including performance standard (a measuring rod for evaluating performance), quota (a minimum amount of work or production), work norm (a standard of acceptable behavior defined by a work group), task (a piece of work to be accomplished), objective (the ultimate aim of

an action or series of actions), deadline (a time limit for completing a task), and budget (a spending limit or goal) (Locke et al., 1981).

Researchers have studied the effects of participatively generated versus assigned goals (Dossett, Latham, & Mitchell, 1979; Ivancevich, 1976, 1977; Kernan & Lord, 1988; Latham & Marshall, 1982; Latham et al., 1978; Latham & Saari, 1979a, 1979b; Latham & Steele, 1983; Latham, Steele, & Saari, 1982; Latham & Yukl, 1975, 1976), various levels of goal difficulty (Bassett, 1979; Bavelas & Lee, 1978; Becker, 1978; Forward & Zander, 1971; Frost & Mahoney, 1976; Kim, 1984; Latham & Locke, 1975; Latham & Steele, 1983; Mento, Cartledge, & Locke, 1980; Mowen et al., 1981; Yukl & Latham, 1978), and characteristics of employees themselves (Carroll & Tosi, 1970; Dossett et al., 1979; Ivancevich & McMahon, 1977; Latham & Yukl, 1976; Steers, 1975).

The acceptance of goal setting by management is matched by that of behavioral scientists. After evaluating 32 theories of organizational behavior, Miner (1984) concluded that goal-setting theory is one of only four which are considered to be both useful and valid. Strong support was contributed by Pinder's (1984) text on work motivation. He stated that goal-setting theory has garnered more empirical evidence of usefulness than any other approach to work motivation to date. Pinder emphasized that while the relationship between cognitive factors (beliefs and

attitudes) and behavior is tenuous at best, data exist that show a stronger linkage between intentions (goals) and behavior. Landy and Trumbo (1980), summarized goal setting theory with caution, noting that "some findings . . . are clearly at odds with other existing theories. If and when these diverse findings are placed in a coherent model or theoretical framework general enough to encompass a wide range of industrial behaviors, it may very well take over as the most reasonable approach to work motivation (p. 370)."

The apparent cost effectiveness of the process is one reason for the popular acceptance of goal setting in industry. Implementation of goal setting programs costs very little in comparison to benefits received. Examples often cited include a 32% gain in the productivity of freight handlers (Latham & Baldes, 1975), and a 14% reduction of electric energy consumption by residential users (Becker, 1978). Hunter and Schmidt (1983) reported that participatively set goals may lead to a 4% productivity increase over assigned goals, and encouraged further efforts aimed at explaining the mechanisms of successful goal setting. Punnett (1986) investigated the effect of goal setting on work output of Caribbean women, and demonstrated the cross-cultural generalizability of the technique for increasing performance. Other research examining the cognitive processes of goal setting revealed that goal setting improves productivity by directing energy toward

development of efficient strategies before beginning a task (Earley & Kanfer, 1985; Earley, Wojnarski, & Prest, 1987). An even more pronounced effect of goal setting was reported by Gowen (1985) for a managerial simulation in which individuals who set goals performed 19% better than those participants with no goals, and performance was 31% better when individual goals were compatible with group goals.

Reviews of the literature on goal setting (Latham & Yukl, 1975; Locke, 1968; Steers & Porter, 1974) have concurred that the process generally works. A success rate of 90% was calculated for 99 out of 110 studies comparing specific hard goals to medium, easy, do-your-best, or no goals at all (Locke, Shaw, Saari, & Latham, 1981). Meta-analytic studies have been conducted which statistically aggregated results of previous goal setting research (Mento, Steele, & Karren, 1987; Chidester & Grigsby, 1984). Foci of these meta-analytic studies included determination of the magnitude of goal difficulty and goal specificity-performance relationships and potential moderator effects of study setting (laboratory or field). Other aspects considered have included study type (experimental or correlational), level of education, feedback, and presence or absence of incentives. (It is important to remember that incentives hold motivational value only when their attainment is desired and reward is contingent upon achievement of a goal. Goals and incentives

may co-exist independently of each other.) Again, the only consistent finding was that both specific or difficult goals produced better performance than vaguely stated "do your best" goals. This relationship was maintained across a variety of tasks and in both laboratory experiments and field studies (Mento, Steele, & Karren, 1987; Chidester & Grigsby, 1984).

However, not all the research findings have shown clear relationships between the use of goal setting and performance. The literature contains reports of many studies finding small or zero effects of goal setting on performance (Bavelas & Lee, 1978; Forward & Zander, 1971; Frost & Mahoney, 1976; Hall & Foster, 1977; Ivancevich, 1982; Ivancevich & McMahon, 1982; Jackson & Zedeck, 1982; Locke & Shaw, 1984; Motowildo, Loehr, & Dunnette, 1978; Organ, 1977; Strang, Lawrence, & Fowler, 1978). Mento et al. (1987) suggest the need for research emphasizing the underlying mechanisms which may be contributing to these difficulty/specificity-performance relationships.

Task Difficulty and Self-Efficacy

Locke et al. (1981) have noted the confusion induced by the use of task difficulty interchangeably with goal difficulty. A task is a piece of work to be accomplished, whereas a goal is usually a standard striven for. A

difficult task may be hard because of its complexity or because it requires much effort. To illustrate the concept of task complexity, Locke et al. point to the difference between writing a physics book and composing a thank-you note. Both tasks require skill, but writing the book requires more skill and knowledge than writing the note. Holding knowledge and skill constant, amount of task effort is illustrated by comparing the difficulty of digging the foundation for a structure to digging a hole to plant a seed.

Goal difficulty most often refers to the attainment of specific standards of proficiency or productivity. For example, holding task difficulty constant, one group of salespersons may be given a goal of opening five new accounts in a week and another group may be expected to open ten new accounts. The harder goal would be attained by using greater effort and attention than would be required to achieve the easy goal. Simple illustrations of task difficulty and goal difficulty are shown in Table 1. Locke's (1968) theory of motivation, asserted a direct linear relationship between goal difficulty and performance, based on evidence that performance was greater for difficult goals than for easy ones. Later studies failed to uphold the linearity of the performance-goal difficulty function.

Table 1

Difference Between Task Difficulty and Goal Difficulty

Task:	Singing Happy Birthday vs. Star Spangled Banner	
	(easy)	(difficult)
Self-Efficacy:	High	Low
Easy Goal:	Sing	Sing
Observed Behavior:	Sing	Sing Softly
Difficult Goal:	Sing on Key	Sing on Key
Observed Behavior:	Sing	Move Lips

Task:	Reshape Instrument Cluster in Auto vs. Jumbo Jet	
	(easy)	(difficult)
Self-Efficacy	High	Low
Easy Goal:	8 months	18 months
Observed Behavior:	New Cluster	New Cluster
Difficult Goal:	6 months within budget	12 months within budget
Observed Behavior:	Use last year's model	Buy preassembled from competitor

People confronted with difficult tasks and difficult goals may exert great amounts of effort in order to achieve the goal, or they may simply decide that attainment of the prescribed goal is beyond their capability, regardless of the amount of effort expended. This possibility was discussed by Stedry and Kay (1966) when they postulated a maximum tolerance level for a discrepancy between present and future goal difficulty. Within the tolerance interval, an increase in difficulty is followed by an increase in effort and hence performance; beyond it, further increase in difficulty has a negative effect on effort. Atkinson's inverted-U law (1958) which explains effort as the product of perceived task difficulty, reward value, and need for achievement, asserts that performance is maximal at moderate levels of motivation because tasks that are seen as too difficult are associated with a low probability of success, and those that are too easy do not offer as large a return in the form of accomplishment. In an early revision of his theory of motivation, Locke (1970) agreed that tasks which are perceived as too difficult lose their ability to gain a person's commitment.

Ability levels possessed by individuals were not addressed in the previous discussions of task or goal difficulty. Using the example of writing a college level textbook, the scholar with greater teaching and research experience should be expected to find this task less

difficult than one with less experience. Similarly, a new salesperson may find it more difficult to open five new accounts than the seasoned one who can open ten accounts with the same amount of effort. Stedry and Kay (1966) could not satisfactorily distinguish perceptions of challenging goals from those perceived as impossible, hence they simply suggested that a tool or procedure be developed to enable the determination of the transition point from possible to impossible. Since experiments have not permitted people to select from a variety of tasks and goals, it is impossible to know what kinds of relationships would develop when difficult goals are set for easy to moderately difficult tasks.

Ultimately, the effort expended by individuals toward goal attainment appears to be more closely related to their self-perception of abilities rather than actual ability levels. Self-perception of abilities is also called self-efficacy, and Bandura (1981) has conducted many experiments linking self-efficacy to performance. Efficacy expectations are beliefs held by individuals which may be created through direct or vicarious exposure to experiences, by verbal persuasion, training, or symbolic emotional arousal. Table 2 shows the possible sources of efficacy beliefs posited by Bandura (1981).

In many studies, subjects who indicated that they were committed to and trying for goals may, in fact, have had

Table 2

Origins and Development of Efficacy Expectations

Origins of Efficacy Expectations	
<u>Source</u>	<u>Mode of Induction</u>
Performance Accomplishments	Participant Modeling
	Performance Exposure
Vicarious Experience	Live and Symbolic Modeling
Verbal Persuasion	Suggestion
	Exhortation
	Self-instruction
Emotional Arousal	Attribution
	Relaxation
	Symbolic Exposure

little or no expectations of success.

When confronted with such difficulties, people who entertain serious doubts about their capabilities may slacken their efforts or give up altogether, whereas those who have a strong sense of efficacy exert greater effort to master the challenges. Bandura (1977; 1982) suggests that self-efficacy has a directive influence on choice of activities and efforts, and is responsible for expectations of eventual success that encourage assimilation of feedback information once behaviors are initiated. In the context of goal-setting, efficacy expectations can affect both goal choice, goal commitment, and performance (Locke, Motowidlo, & Bobko, 1986). Efficacy expectations determine how much effort people will expend, and how long they will persist in the face of obstacles and aversive experiences. The stronger the perceived self-efficacy, the more active the efforts, and a high level of perseverance usually produces high performance attainments (Bandura & Schunk, 1981; Brown & Inouye, 1978; Schunk, 1981; Weinberg, Gould, & Jackson, 1979).

Efficacy expectations vary on several dimensions. They differ in magnitude. To wit, if tasks are ordered in level of difficulty, the efficacy expectations of different individuals may be limited to the simpler tasks, extend to moderately difficult ones, and include or exclude the most taxing performances. Efficacy expectations also vary in

generality. Some experiences create specialized mastery expectations while others instill a more generalized sense of efficacy that extends beyond the specific situation. In addition, expectancies vary in strength. Weak expectations are easily extinguishable by disconfirming experiences, whereas individuals who possess strong expectations of mastery will persevere in their coping efforts despite disconfirming experiences.

Studies of the relationship between efficacy and performance have been criticized for measuring people's hopes for favorable outcomes rather than with their sense of personal mastery. These expectations have been assessed using global measures reflecting a mixture of hope, wishful thinking, and faith (Bandura, 1981). One study supporting the role of efficacy on performance is of questionable value because it was based on college student subjects performing in a one-minute brain-storming task, and evaluated goal commitment using a face-valid measure (Locke, Frederick, Lee, & Bobko, 1984).

Goal Setting and Commitment

Disagreement among scientists persists regarding the best approach for defining commitment, although it is agreed that commitment reflects some form of psychological bond between individuals and the relationships they enter into.

Locke et al. (1981) defined commitment within the context of goal setting as the determination to try to meet a desired level of performance. Industrial-organizational psychologists have been most concerned with commitment to organizations, and have defined commitment in terms of attachment to and involvement in the workplace. In a motivational sense, commitment has been defined as the willingness of employees to contribute high levels of effort working for organizations with which goals and values are shared (Porter, Steers, Mowday, & Boulian, 1974), or as the willingness of social actors to give energy to the organization (Kanter, 1968). Within a cognitive framework, commitment is viewed as an attitude based on values and expectations of loyalty and duty (Weiner & Yardi, 1980), or as an affective attachment to the goals and values of the organization (Buchanan, 1974). Some researchers approach the study of organizational commitment from longitudinal perspectives to predict employee turnover (Koch & Steers, 1978; March & Simon, 1958; Porter, Crampon, & Smith, 1976; Porter et al., 1974; Sheldon, 1971; Steers, 1977) while others have suggested that a more immediate effect of commitment may be manifested in better job performance, employees requiring less supervision, and better decision-making processes (Moore, 1965; Mowday, Porter, & Dubin, 1974; Porter et al., 1976). Campion and Lord (1982) further specified commitment as the extension of effort, over time,

toward the accomplishment of an original goal combined with an unwillingness to either lower or abandon the original goal level even when confronted with feedback indicating that goals have not been reached. Goal commitment also may be thought of as the decision process by which discrepancy-reducing strategies are selected (cognitive, goal, or behavioral change) to deal with goal-discrepant performance feedback (Kernan & Lord, 1988).

Commitment has been mentioned in many authors' discussions as an important condition for ensuring the success of goal setting programs. Early in the development of goal setting theory, commitment began appearing in post hoc explanations of failed research attempts. In 1968, when results did not support his contention that more difficult goals lead to better performance, Locke stated that subjects who "stop trying when confronted by a hard task (i.e., those uncommitted [italics added] to a goal) are people who have decided that the goal is impossible to reach and who no longer are trying for that goal" (p.164). Recently, Locke et al. (1988) stated more emphatically that "it is virtually axiomatic that if there is no commitment to goals, then goal setting will not work" (p. 23). Hollenbeck, Williams, and Klein (1989b) observed that in spite of the critical role assigned to goal commitment by early goal setting theorists, the assessment of goal commitment has not played a prominent part in goal setting research (Hollenbeck, Klein, O'Leary, &

Wright, 1989a). Past research frequently has cited unmeasured goal-commitment effects as post hoc explanations for inconsistent results. In a review of goal setting studies since 1968, Hollenbeck and Klein (1987) found that over 70% had failed to include any measure of goal commitment. In the 30% of studies attempting to measure goal commitment, many simply asked participants to indicate to what degree they could accept the goals assigned them, whereas others elicited estimates from subjects regarding how hard they might try to reach a goal. Within those articles, the term goal commitment has often been used interchangeably with goal acceptance (Erez & Zidon, 1984; Landy, Barnes, & Murphy, 1978; Latham, Mitchell, & Dossett, 1978; Latham & Yukl, 1976; Locke, Saari, Shaw, & Latham, 1981; Pritchard & Curtis, 1973). Goal acceptance can be merely an indication of the degree to which individuals understand the existence of a performance standard or goal that is assigned by another person (Hollenbeck et al., 1989a). Measures of goal commitment should suggest the degree to which individuals feel compelled to exert effort to achieve a goal. It is conceivable that even a self-set or participatively-set goal may garner acceptance but not commitment from an individual, as would be the situation when a goal is initially accepted but effort to attain it is not demonstrated over time (Hollenbeck et al., 1989a). This conceptual ambiguity may often be responsible for those

attempts at quantification of commitment which have resulted in qualitative confusion (Hollenbeck & Klein, 1987; Locke, Shaw, Saari, & Latham, 1981).

Precursors to Goal Commitment and Goal Acceptance

The discrepancy in behavior of individuals who accept goals compared with those who are committed to goals may be explained in terms of their intention to behave. Ryan (1970) has developed a theory that posits intentions as the most immediate and important determinants of behavior. Figure 1 (Ryan, 1970) shows the steps in the linkage that progress, literally, from the development of the person to the development of intentions. As shown in the figure, at Level 1, closest to the end behavior, is the intention to act. At this level, whatever behaviors that are consistent with those intentions may be expected. At Level 2, the individuals use cognitive and evaluative processes to weigh the features of the immediate situation as they perceive it. Such evaluations include expectations of certain behaviors resulting in certain outcomes, the attractiveness of possible outcomes (or of the behavior itself), and the appropriateness of the behavior within the social and physical context. Level 3, the repertoire of stored products, contains previously learned patterns of responding

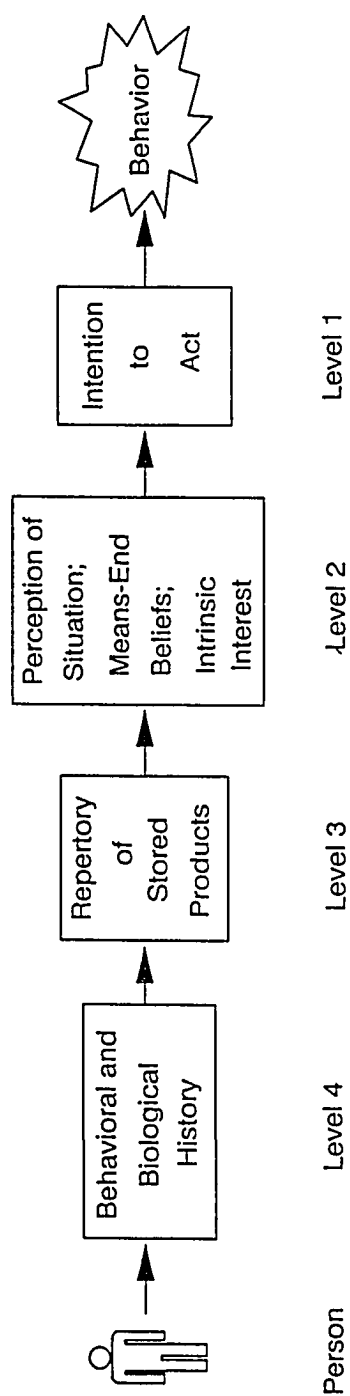


Figure 1. Four levels of precursors to behavior (based on Ryan, 1970).

to elements in the environment, and includes needs, plans, preferences, and values. Level 4 is the developmental and historical background of the individual, and is only remotely linked to the manifestation of behaviors.

At Level 1, the theory of reasoned action proposed by Fishbein and Ajzen (1975) agrees that it is the intention of individuals, not their beliefs or values, that determine behavior. A person may hold to the belief that a particular goal is a good one, but may not make the decision at Level 2 to integrate that goal into their plan of action. Figure 2 diagrams the Fishbein and Ajzen model to show how its components correspond to those of Ryan's (1970) model. The Fishbein and Ajzen model emphasizes the importance of the sources and nature of comparisons that individuals make in deciding the direction of their behavior. There is an obvious overlap showing that intention (labeled as box f in Figure 2) is the direct precursor to behavior (g). Prior to the establishment of an intention, the model shows that the individual holds attitudes and beliefs (a) about specific objects and activities which vary in the degree of correspondence to the normative values held by various other reference groups, such as coworkers, family members, or union representatives. Since individuals select the most

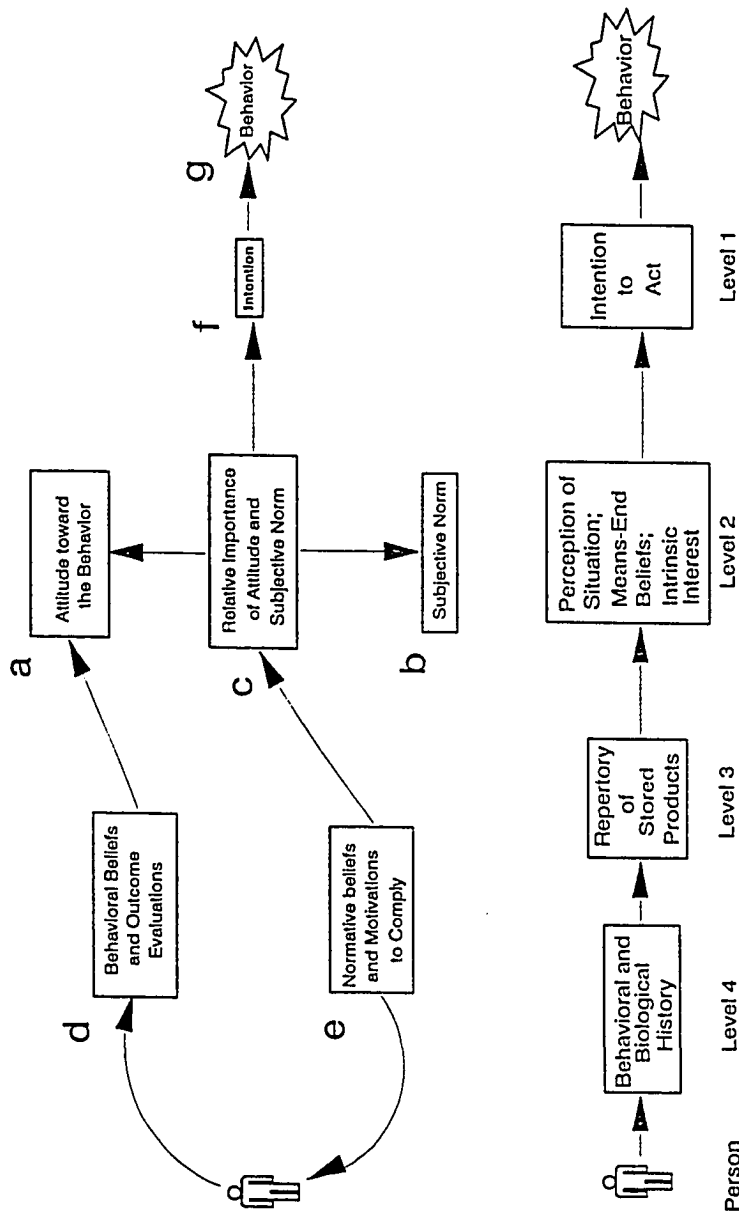


Figure 2. Attitudes and beliefs directing intention to behave (based on Fishbein and Ajzen, 1980).

meaningful reference group for the situation they are in, the set of attitudes held by the reference group is called the subjective norm (b). Individuals are likely to use a different subjective norm for different decisions. For example, the opinions of colleagues may be used when deciding which office equipment to purchase, while a neighbor's opinions may be valued when deciding on where to take a vacation. The chosen intention is the result of weighing the relative importance (c) of the individuals' attitude towards the behavior to that of the subjective norm. At this point, the individual decides whether or not to conform to a given standard of behavior or to determine his own course of action congruent with personal values and attitudes. For example, he may know that another employee at his level in the organization would accept an upward transfer to a new location, but may decide that the move would not be desirable for him at the present time. The subjective norm is also used when comparing one's own level of satisfaction regarding a situation with how others would be expected to respond in similar circumstances. Within the framework of the investment model of behavior (Rusbult, 1981) the determination of satisfaction is made when one performs a reward-cost analysis to compare his work situation to a general standard, or comparison level (CL) (Thibaut & Kelley, 1959), and is similar to the subjective norm. The comparison level represents the average quality

of outcomes which the individual has come to expect from an association (in the workplace, this association would be employment, and issues related). For example, within a group of clerical workers racing to meet a deadline, each will make a decision about how much effort to put into the work after reviewing what they believe to be true about the benefits, costs, and consequences of cooperating to meet the group's goal. They will have to decide if hard work will be recognized and rewarded as reflected by wage and benefits security, or if by meeting the deadline will result in the staff reductions based on the groups' superior performance. Such a decision ultimately derives from the components at Ryan's Level 3, the repertoire of stored products. In Figure 2, these are defined by Fishbein and Ajzen as (d) behavioral beliefs and outcome intentions, and (e) normative beliefs and motivation to comply. Behavioral beliefs and outcome expectations are related to the individuals' own evaluation of experiences, whereas the normative beliefs represent how the individual believes the reference group thinks and feels toward that behavior.

From this point, it is easy to elaborate on the mechanisms that contribute to goal acceptance or commitment. If self-perception of ability, rather than ability itself influences the evaluation of a goal's difficulty, as Stedry and Kay (1966) postulated, Bandura (1982) has reasoned that activation of the self-evaluation process through internal

comparison requires both personal standards and knowledge of results (level) of one's performance. In other words, for goal attainment to become an intention, or for commitment to occur, realistic feedback mechanisms have to be present. Neither knowledge of performance without standards nor standards without knowledge of results provides a basis for self-evaluative reactions and thus have little motivational impact. It is easier to profess goal acceptance or commitment in the absence of discouraging feedback than it is to maintain high motivational levels when there is such feedback.

In Figure 3, two of Bandura's contributions have been added to the model of behavior. Sources of efficacy expectations from Table 2 have been superimposed at box (d) of the Fishbein and Ajzen (1980) model to suggest specific roots of the response patterns acquired over one's lifetime, and the feedback loop relating the outcomes of a behavior in terms of probability of success and valence is expanded from box (a). This figure now includes a representation of the feedback mechanism that allows for the assessment and iterative reassessments of situational conditions whenever a choice between activities must be made. Each feedback loop challenges or confirms the set of stored information and beliefs held by the person, and those directly determine

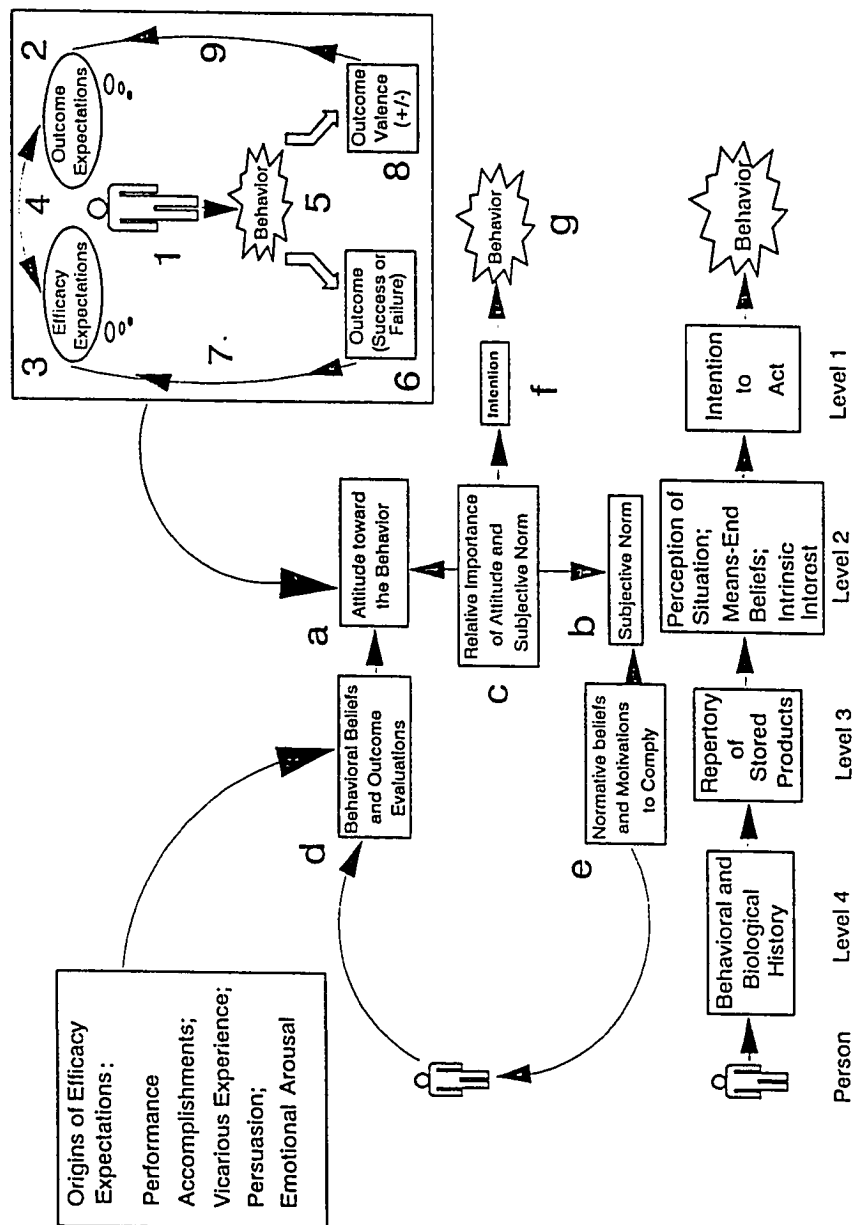


Figure 3. The role of self-efficacy expectations in determining a person's intentions (based on Bandura, 1977).

subsequent attitudinal stances toward behaviors.

In describing the concept of self-efficacy Bandura (1977) has distinguished between efficacy expectations and response-outcome expectations. An estimate that a person (1) holds regarding whether a given behavior will lead to a desirable or undesirable outcome is called an outcome expectation (2). A person would be expected to choose to direct energy toward behaviors leading to the attainment of a desired outcome, and to refrain from expending energy that would be likely to result in an undesired outcome. An efficacy expectation (3) is the belief that one can successfully execute the behavior required to produce the desired outcomes. People can believe that a given course of action will provide certain outcomes, but if they doubt that they have the skill, knowledge, and/or energy resources necessary to perform the prerequisite activities, such information will not influence their behavior. It is this cognitive process of integrating the outcome and efficacy expectations (4) that determines how much effort, if any, will be manifested through behavior. Bandura (1982) has shown in clinical settings that self-perceived efficacy affects how much effort is invested by people engaged in phobia treatment activities and in the subsequent levels of coping skill performance they attained. Judgments of

self-efficacy were shown to determine, in part, choice of activities, rates of skill acquisition, and performance.

A feedback loop is represented through which mastery of coping skills or development of abilities can boost perceived self-efficacy in a mutually enhancing process. Increases in skill and ability levels lead to greater self-efficacy, which in turn results in more confidence in skills and abilities. After engaging in a particular behavior (5) the person receives two forms of feedback. The success or failure in meeting a performance goal (6) provides performance feedback (7) that is used in reevaluating efficacy (3). The consequence of the success or failure of the behavior engaged in determines the situation outcome (8) which will have either a positive or negative valence, and thus provides outcome feedback (9) that goes back into evaluation of outcome expectations (2). Both forms of feedback become part of the reference set that the person uses when making decisions (4) about future actions. Information from personal and vicarious experience is continually added to the reference set of information, such that changes occurring along any part of the feedback path may change the assessment of efficacy and outcome expectations. Fishbein and Ajzen (1980) demonstrated that

the attitude toward any particular behavior, after being compared with the subjective norm, is much more influential in determining eventual behavior than knowledge or beliefs about that behavior that do not consider the individuals' attitude.

The previous models may be further elaborated upon with regard to goal acceptance and goal commitment by considering some of the features of Locke's (1968) model of goal setting, with subsequent modifications for feedback added by Erez and Zidon (1984). In Figure 4, Locke's model begins with the common management practice of goal assignment (1). When initially assigned, the goal can be thought of from the employees' perspective as just another subjective norm, or a desire communicated by management that a particular level of performance be maintained. The individual must then cognitively process the request (2) by comparing it with stored information and learned patterns of responding. If one knows that rejecting the goal will create unpleasant consequences from an inflexible manager, goal acceptance will probably be voiced based on prior knowledge alone, without any need for further evaluation. If the situation does, in fact, appear to provide options, a person may consider his willingness to work hard to attain a goal

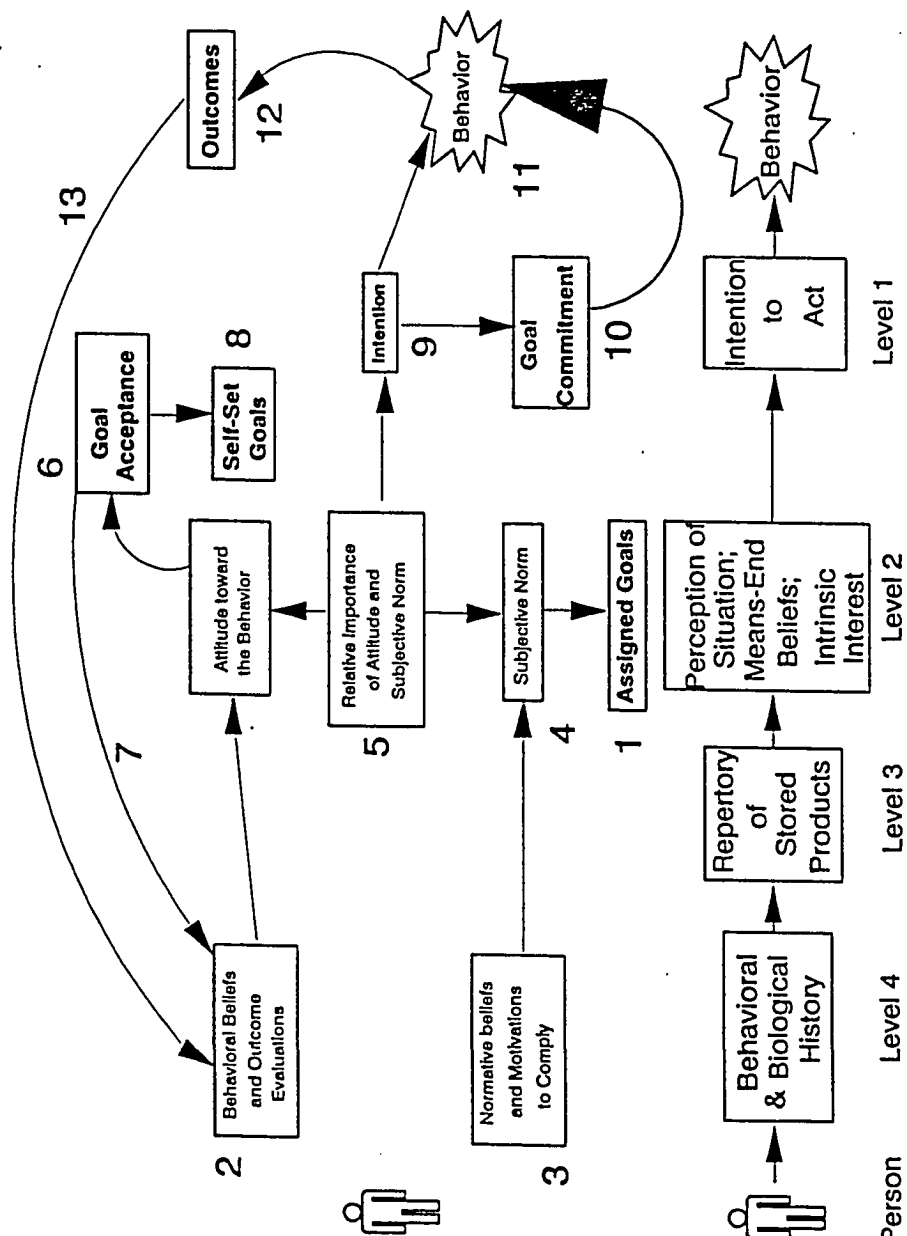


Figure 4. Goal setting components fit to the Intention-Behavior model (based on Erez and Zidon, 1984).

(behavioral beliefs and outcome evaluations) against the backdrop of a larger reference group work ethic (3) (normative beliefs and motivations to comply) and (4) subjective norm to decide if the goal is an appropriate one. After evaluating (5) the fit between the assigned goal and stored information, the goal may be accepted (6) if it appears to be reasonable or if the situation demands that agreement be voiced. Before the goal can reasonably foster commitment, the person must first consider if he can reasonably expect to reach the goal by drawing upon his efficacy expectations (7). If the goal still appears to be attainable within reasonable limits, the person may adopt the assigned goal as their own, such that it now becomes a self-set (or participatively set) goal (8). The self-set goal will be compared again (5) to determine its rank and priority over competing demands on the individual. At the point that a conscious decision is made to focus resources on the goal, that goal becomes an intention (9) and commitment (10) keeps it a priority manifested in performance (11). Outcomes (12) of the goal-directed performance provide efficacy and valence information and serve as feedback (13) for the evaluative process (5) again, allowing the individual to monitor and control their expenditure of effort. The cycle continues until either the goal is reached, commitment is abandoned, or a new goal is assigned.

Parameters of Commitment

In a recent review of components of participative goal setting, Erez and Arad (1986) suggested that the goal setting process may in itself account for increased levels of commitment in work settings. Again, the notion was postulated without any attempt to empirically measure commitment. In fact, the presence of commitment has been taken for granted in most of the research settings in which these studies have been conducted. The concept of participants' commitment has been encountered most often in personnel literature nested within discussions of neglected or confounded variables. The virtual neglect of commitment related issues may stem from the absence of any experimentally sound method for measuring and manipulating this construct. In those few studies where commitment has been considered, it has been treated as a static trait-like variable rather than as a characteristic which is responsive to factors extraneous to the controls imposed by the research setting. Klenke-Hamel (1982) considered person, organization, and job characteristics in developing a causal model of organizational commitment. Survey results of a five-organization sample yielded significance for different characteristics, but those characteristics were different for the various organization subsamples. As noted by

Klenke-Hamel, traditional organizational variables may have relevance and meaning only for specific occupational and demographic groups. A possible explanation for the lack of consistent significance across samples may be that the levels of investment, rewards, costs, and number of available alternatives differ for those group members. Although the causal model of commitment can not be considered static, it does fail to address those concerns of individuals that are rooted in conditions apart from the organizations of the individuals themselves. According to the investment model, commitment is affected by variables such as market conditions and alternative work situations perceived as available to the individual.

The most frequent surrogate for actual measures of commitment is tenure, again reflecting the longitudinal perspective of most organizational research. Tenure, however, is a poor indicator of commitment in that people may remain in situations indefinitely if only for lack of obtainable alternative situations (Salancik & Pfeffer, 1977). Commitment has emerged in recent management literature as necessary for both bolstering domestic productivity and mending fences between dissatisfied segments of the workforce and the organizations that use their talents. Commitment to excellence in task performance by employees may help to sustain corporate longevity even in light of declines in the rates of reinforcements and rewards

(Salancik, 1977).

The different objects of commitment must also be noted. Considerations in the literature on commitment range from organizational commitment to task commitment, from goal commitment to commitment to self, from commitment to ideals to commitment to institutions. Clearly, commitment is not at all static. The skilled laborer who takes pride in the quality of her work (task) may maintain a low degree of commitment to established production quotas (goals), and may experience conflict when forced to choose between attending a company picnic (organization) or a family outing (self). It stands to reason that commitment to any purpose would be a dynamic, fluctuating force, sensitive to those characteristics which are salient and important to individuals.

Criticisms of Previous Research Methodology

1. Ambiguous construct definition. As stated previously, reviews of goal setting literature show that in only 30% of research circumstances have attempts been made to measure commitment, and these have included significant methodological and conceptual failures (Hollenbeck & Klein, 1987). The definition of goal commitment itself has been one source of confusion. Most studies have used assigned

goals, and the two notions of goal commitment and goal acceptance have been used interchangeably. An example of this confounding of construct measures may be noted in a study of goal choice, goal satisfaction, and performance by Earley & Kanfer (1985) that incorporated goal acceptance and goal commitment questions which were then averaged into a composite commitment score. Goal acceptance and commitment can co-exist in varying degrees, which may explain inconsistencies in those few studies which have attempted to measure degree of goal commitment (Latham & Saari, 1979a, 1979b; Latham et al., 1978; Yukl & Latham, 1978; Dossett et al., 1979; Frost & Mahoney, 1976; Locke et al., 1981; London & Oldham, 1976; Oldham, 1975; Organ, 1977; Mento et al., 1980).

There are many examples in the literature of commitment being used interchangeably with acceptance. Latham et al. (1978), in a section of their article discussing "goal acceptance," wrote that "no significant main or interaction effects were found among the conditions with regard to goal acceptance. The grand mean was 3.65 . . . indicating that the employees were between 'moderately committed' and 'very committed' to attaining the goal." Pritchard and Curtis (1973) reported that all subjects in their experiment gave a verbal commitment to the assigned goals. The following description of the experimental procedure raises the question of whether the subjects were expressing an

understanding of the goal, commitment to the goal, or compliance to meet the experimenters' demands:

. . . In the goal conditions, subjects were told: One of the things I am looking for is the improvement that a person shows on this type of a task over time. As you can guess, a person gets faster and faster at this type of a task as he learns it better. This is especially true when he first starts learning it and, in fact, we like to have people try to increase the amount of cards they sort by 30% the second try. What I would like for you to do is actually set a similar improvement goal for yourself and try to make that goal on the next set of cards. So, would you be willing to set a goal of a 30% improvement over your last attempt?

All subjects did give such a verbal commitment to the goal. This commitment was reinforced by the experimenter saying, "So, in other words, if you sorted 100 cards the last time, your personal goal this time would be 130, right?" Again, verbal commitment was given by the subject. (p. 178)

Latham and Yukl (1975b) did not measure commitment to a goal setting program in their study of logging crews, but alluded to commitment to explain the outcome. They stated, "The failure of either participative or assigned goal setting to increase productivity in the second sample was attributed to lack of support for the program by local management."

In a subsequent study, Latham and Yukl (1976) relied again on the concept of commitment to explain the results which were observed, but did not attempt any form of measurement. They stated that ". . . once the workers learned that they would not be adversely affected by the goal setting program, commitment to the goals increased and productivity improved."

Erez and Zidon (1984) pointed to the fact that the

positive relationship between goal difficulty and performance described by Locke in his goal setting theory of motivation assumes that goals are accepted, yet in actuality, goal acceptance varies on a continuum from acceptance to rejection. In their program of research subjects were asked to indicate the extent to which they accepted the goals which were assigned, and to rate the difficulty of the goals:

Phase 1 . . . comprised seven 2-minute trials with goal difficulty progressively increasing from Trial 1 (very easy, 10 rows, $p=.9$) to Trial 7 (very difficult, 27 rows, $p=.000$)¹. Each goal was assigned at the beginning of the trial. Subjects were asked to underline the row defined as their goal, (e.g., the 10th in Trial 1, the 14th in Trial 2), and to answer two questions--one on subjective goal difficulty and one on goal acceptance--before starting each trial.

Subjects were asked to indicate the extent to which they accepted the goal on a 9-point Likert type scale ranging from strongly agree (+4) to strongly disagree (-4). (p. 71)

Goal acceptance was offered as a key factor in understanding the difficulty-performance relationship and in solving inconsistencies between Locke's (1968) theory of motivation, which asserts that there is a direct linear relationship between goal difficulty and performance, and Atkinson's inverted-U law (1958) which asserts that performance is maximal at moderate levels of motivation.

¹The p value of .000 was meant to indicate that there was no expectation of completing the last set of problems.

The main finding of the study showed positively linear relationships between performance and difficulty where goals are accepted and negatively linear ones where they are rejected, suggesting a possible explanation for Atkinson's model without contradicting Locke's (Erez & Zidon, 1984).

A concern regarding Erez and Zidon's (1984) study of goal acceptance is that once again, commitment and acceptance have been used interchangeably. In explaining the discrepancy between the goal difficulty-performance and inverted-U functions, Locke et al. (1981) preferred the more active term, commitment to its passive counterpart, acceptance:

This hypothesis of a positive linear relationship between motivation or effort and performance contradicts the Yerkes-Dodson inverted-U "law", which asserts that performance is maximal at moderate levels of motivation. Although it is true that with any given subject, performance will eventually level off as the limit of capacity or ability is reached, this is a separate issue from that of motivation. Of course, subjects may abandon their goals if they become too difficult, but the hypothesized function assumes goal commitment [italics added]. Performance may also drop off if subjects become highly anxious, especially on a complex or underlearned task. But a state of high anxiety should not be labeled high motivation in the positive sense because it represents a state of conflict rather than of single-minded goal pursuit. . . (p. 132)

Again, it is apparent that the acceptance of a goal does not necessarily mean that one intends to expend effort to attain that goal. It is quite reasonable to suspect that some subjects will demonstrate knowledge of and understanding of

the intended goals, but have no desire to do anything more than acknowledge it. For example, a salesperson who is given a goal of acquiring ten new accounts in a month may accept and be committed to that goal. His counterpart, given the same goal, may choose to accept, acknowledge, and then ignore that goal in order to attend to another need or to pursue attainment of an unstated goal (e.g, search for another sales position).

Several other possible explanations exist for these failures to obtain consistent results.

2. Subject's introspective limits. Limitations imposed by subjects' introspective abilities may undermine attempts at evaluating performance differences as a function or measure of commitment. While it may be important that naive subjects be used in laboratory experiments, researchers must deal with the consequences of untrained subjects who may not fully understand what is meant by commitment, or who do not have the sophistication necessary for discriminating and reporting small differences within or between a variety of psychological states. For example, studies by Latham et al. (1978) and Pritchard and Curtis (1973) each observed effects of monetary incentives on actual performance, but these effects were not reflected in the goal commitment measurements. The use of a proven technique to experimentally manipulate commitment levels in subjects (e.g., the investment model of commitment) would

eliminate this particular measurement impasse. The investment model will be described in detail in a later section.

3. Feedback. Irregularity in the availability of feedback has been another methodological obstacle. It is essential that people participating in goal setting have the opportunity to learn how near they are to their objectives. Some studies provided feedback shortly after completion of tasks, others allowed as much as six months elapsed time before making performance outcomes known to participants. Bandura (1982) reasoned that activation of the self-evaluation process through internal comparison requires both personal standards and knowledge of results (level) of one's performance. Neither knowledge of performance without standards nor standards without knowledge of results provides a basis for self-evaluative reactions and thus have little motivational impact. Simply adopting goals, without knowing how one is doing seems to have no appreciable motivational effect. In light of the overwhelming evidence that prompt feedback is essential for facilitating behavioral and attitudinal change, sound research should proceed to study methods which are known to maximize rather than minimize performance effects (Austin & Bobko, 1985; Erez, 1977; Erez & Zidon, 1984).

4. Face valid questionnaire formats. Measures of goal acceptance have been skewed by use of direct, face-valid,

response determining questions, such as "How committed are you to attaining the goal?" Direct measures of goal acceptance have generally been found to be unrelated to either experimental or task performance. Hannan (1975) assessed goal acceptance by the degree of difference between the subject's stated goal and his or her personal goal. Personal goals were indicated on a questionnaire administered at a later point in the experiment after the goals had been assigned. The difference scores, showing degree of acceptance, were related to one measure of performance, suggesting that indirect measures of goal acceptance may be more valid than direct measures. This recommendation is supported by similar findings which show that individuals are likely to misrepresent themselves by implementing image management enhancement in order to meet perceived demand characteristics of personnel evaluation techniques (Pannone, 1987). The problem of illusory face validity when measuring goal acceptance was noted by Erez and Zidon (1984) as being one of the persistent methodological problems in goal setting research, yet the measure employed in their study was a traditional Likert-type scale. Most studies have used Likert-type scales for measuring goal acceptance, with the nearly unanimous goal commitment observed having been attributed to restriction of range caused by the scales themselves, rather than by genuine differences in psychological states.

The appropriateness of face valid measurement instruments is particularly questionable when applied to laboratory experiments using students as subjects. A persistent criticism of much applied psychological research is centered on the use of students as subjects and the limitations this imposes on the ability to generalize research findings. Included among the reasons for criticism are lack of commitment of the participants (Boehm, 1980; Weiner, 1977) and the unnaturalistic atmosphere inherent in an artificial work setting (Carlsmith, Ellsworth, & Aronson; 1976). Critics claim that it is unlikely that the subjects are motivated to work hard on laboratory tasks which are perceived as either meaningless or unimportant. Tubbs (1986) suggested that researchers ". . . should probably make more of an attempt than has typically been done to create real-life situations for their subjects. The use of more realistic tasks, lengthier trial periods, and accurate feedback would be a big step towards obtaining more externally valid effects in the laboratory" (p. 480). The problem is compounded when these same students are asked to use introspection to answer questions such as "How interested were you in the task?", or "How motivated were you to reach your goals?", making it unlikely that truthful responses will be elicited (Carlsmith et. al, 1976; McCall, 1970; Weiner, 1977).

Another challenge in research is the reduction of

systematic error caused by experimenter demand. As the Milgram (1974) research on obedience and the Hawthorne studies (Roethlisberger & Dickson, 1939) demonstrated, subjects are eager to behave in a manner which they expect is desired by the experimenters. Although researchers often employ double-blind research designs to minimize the salience of clues regarding expected outcomes, it is often difficult or impossible to be as careful as one would like. Characteristics of volunteer participants may include above average commitment to perform in order to meet the demand characteristics of the experiment (McCall, 1970; Mowen, Middlemist, & Luther, 1981). This problem may have a double edge. It is possible that researchers, subject to the demand that they show that their subjects are involved with and committed to their experiments, are inclined to employ dissonance reduction processes in order to avoid imposing stringent rational and empirical standards that are difficult to put in place when given the constraints of subjects, time, resources, funds available. This is especially true in the case of studies involving deception, where credibility by subjects is likely to be questionable. For these reasons, the inclusion of objective measures rather than presumably face valid self-report question formats may be helpful in determining relationships among attitudes, beliefs, and behavior in laboratory subjects. Obviously, if confidence in external validity of research

with students can be raised, the utility, efficiency, and net value of such research efforts would be enhanced for both scientists and practitioners.

Critique Summary and Current Applications

Major shortcomings in the research procedures may explain the lack of consistency among research outcomes.

These include:

- 1) Commitment has not been experimentally manipulated in laboratory simulations of goal setting processes.

- 2) Feedback of performance results have been supplied irregularly.

- 3) Performance objectives in laboratory settings have been based on simple tasks holding little interest or uimportance for the subjects.

- 4) The motivation levels of laboratory subjects have not been objectively assessed using reliable and valid measures.

Taking into account the call for commitment to meet current and future needs for the motivation of contingent workers, the present investigation calls for research using:

- 1) experimentally manipulated commitment levels directed at influencing perceptions of situational, task, and goal considerations,

- 2) prompt and detailed performance feedback,

3) psychometrically sound attitudinal, motivational, and performance measures, and

4) a laboratory setting designed to appear interesting and motivating to a college student sample.

Toward a Comprehensive Model of Goal Setting

In order to meet the needs of practitioners for effectively selecting and motivating people for a variety of work needs, a model must be offered which will take into account characteristics of individuals, the work itself, the goal setting process, and the resources available for cost effective motivation management.

The following section discusses some of the considerations which would be expected to further understanding of the goal setting and performance relationship.

1. The Inclusion of Self-Efficacy Measures.

Self-efficacy is one of the factors which determines the direction and level of energy expended by people. It follows then, that self-efficacy, determined by combinations of performance accomplishments, vicarious experiences, emotional arousal, and verbal persuasion should be a determinant in the success of goal setting programs, and consequently should influence individuals' performance

levels. Bandura (1982) showed in clinical settings that self perceived efficacy affects how much effort is invested by people engaged in phobia treatment activities and in the subsequent levels of coping skill performance they attained. Judgments of self-efficacy were shown to determine, in part, choice of activities, rates of skill acquisition, and performance. The clinical findings were supported by results of a field experiment comparing three different methods of computer training, which showed that individuals having higher self-efficacy performed significantly better across all conditions (Gist, Schwoerer, & Rosen, 1989).

Bandura (1982) suggested performance feedback as an important determinant of future goal selection. Confirming evidence was found in a laboratory study investigating work related aspects of efficacy. Lee (1988) reported that self-efficacy was reported as significantly higher for subjects after goals were successfully attained.

Self-efficacy and satisfaction. Self-efficacy, being a belief that one holds regarding the level of competence he or she possesses that is instrumental to manifesting a particular target behavior within certain situational contexts, may be one of the single most important influences upon motivation. Research conducted by Ajzen and Fishbein (1980) has shown the role beliefs and attitudes play in forming the intentions to direct such diverse behaviors as voting, alcohol addiction, weight loss, occupational choice,

and consumer behavior. Bandura (1982) is in agreement with Ajzen and Fishbein in stating that it is imperative in measurement of attitudes and beliefs to be specific concerning the task, context, and bases used by individuals in developing their beliefs.

It should therefore be expected that self-efficacy would be an important consideration entering into determination of one's satisfaction with activities and relationships, and that it would fit into most models of instrumentality. Locke, Cartledge, and Knerr (1970) have demonstrated that people who aim for and exhibit mastery at desired levels of performance experience a sense of satisfaction; this satisfaction enters the feedback loop enhancing the valence of the object outcome. As Bandura (1977; 1982) has noted, efficacy is influenced in part by verbal persuasion or modelling. Given that efficacy may impact upon satisfaction, and satisfaction plays an important part in one's decision to commit oneself to a job, task, or organization, an advantage of manipulating the conditions that maximize the benefits inherent in commitment is that inexpensive verbal or written instructions may be the only resources needed. This linkage may be one of the strongest yet least costly methods by which managers can help stimulate productivity. A multitude of opportunities is available for providing such information informally, in training, on the job and in performance appraisal

interviews.

Utility theory asserts that organizational acceptance of intervention strategies depends on the perception that rewards will exceed the costs associated with them (Murphy, 1987). Traditionally, even minor costs that are immediate are weighed more heavily than large gains that are prospective. Information about outcome and efficacy expectations can be made salient through the utilization of pre-existing formal and informal organizational communication networks, so that minimal costs are incurred compared with other attempts at behavior modification and other kinds of motivational interventions. The potential for significant gains resulting from increased organizational, task, and goal commitment may far outweigh costs of such a program.

As both efficacy and commitment may impact upon satisfaction, and satisfaction in turn enters into the feedback loop providing individuals with information that changes commitment and efficacy expectations, it would be prudent to follow the Ajzen and Fishbein model and consider determinants of the beliefs and attitudes that direct behavior, such as self efficacy.

2. Use of prompt feedback. Goal setting requires that feedback be derivable from either intrinsic qualities of the task itself or from extrinsic sources (e.g., evaluative data from supervisors). Locke et al. (1981) have noted that

choosing to accept or reject an assigned or participatively set goal can be fit into the framework of expectancy theory because all things being equal, people are more likely to accept or choose a given goal when they have high rather than low expectations of reaching it. Past performance has consistently been found to predict the level set for future goals; after success people are more likely to become more confident and set higher goals. Conversely, they are expected to become less confident and to set lower goals after failure (Cummings et al., 1971; Lopes, 1976; Wilsted & Hand, 1974). However, some individuals, upon failing to achieve a desired goal may compensate by setting higher goals because of self-induced pressure (Lewin, 1958; Forward & Zander, 1971; Zander, Forward, & Albert, 1969).

Ajzen and Fishbein (1980) have shown that the beliefs that are held by an individual regarding his or her own ability or probability of success determine the intentions of the individual. After each behavior is attempted, information is processed to evaluate future expenditures of energy in similar directions. Such feedback has a direct impact upon future behavior.

Considering the presumed importance of self-efficacy, feedback is essential for individuals to test their accuracy in estimating their own ability. According to Mento et al. (1987), many studies have omitted use of any feedback, thereby failing to include what must be one of the principal

components of the goal setting process. The present research included two measures of performance feedback as the task was performed, and detailed feedback was presented between the second and third trials.

3. Incorporation of the Investment Model of Commitment. A recent contribution to the social science literature, the investment model, may be ideal for addressing each of these methodological considerations while casting new light upon the development and maintenance of commitment. The investment model draws from several principles of interdependence theory, and follows the assumption that people are generally motivated to maximize rewards while minimizing costs (Kelley and Thibaut, 1978). A combination of balance and exchange theories, the investment model considers the rewards and costs derived from the job, the quality of the individual's job alternatives, and the magnitude of the individual's investment in the job. Job satisfaction, or positivity of affect toward one's job is explained as a simple function of the rewards and costs associated with the job. Job commitment is explained as the more complex interaction of rewards, costs, investments, and alternatives. These concepts will be explained more fully in the next section.

The Investment Model of Commitment

Many approaches to the study of commitment have viewed it as an attitudinal construct consisting of behavioral intentions while other approaches have focused on the behaviors themselves. The attitudinal perspective focuses on inquiries regarding what employees report as their intentions; the behavioral paradigm suggests that commitment functions as a motivating force and therefore looks at performance effects (Scholl, 1981).

The investment model developed by Rusbult (1980) is based upon the social exchange model proposed by Goffman (1961), the theory of exchange relationships (bargaining) in business settings (Homans, 1958), and interdependence theory (Thibaut & Kelly, 1959; Kelley & Thibaut, 1978). Homans (1958) considered exchange relationships as combinations of rewards and costs perceived by employees such that sense of commitment would depend on level of satisfaction with that ratio of benefits to costs. Becker (1960) expanded this theory with the inclusion of an investment component; meaning that the more an employee has invested in the work relationship, the greater his or her sense of commitment. Becker discussed the notion of individuals investing in more than one relationship, calling the alternative relationships side bets. Rusbult (1981) developed a set of formulas which consider satisfaction, side bets, and satisfaction with a situation. These were shown to have predictive value for estimating individuals' levels of commitment in a laboratory

simulation. Tests of the model will be described further in the next section.

The present study used manipulations of investment, cost, satisfaction, and alternatives to study the specific effects of these determinants of commitment on performance. Measures of individuals' self-efficacy were included to determine if expectations of success can explain additional performance score variance. Self-efficacy has already been proposed as a factor contributing to perceived satisfaction with intended activities (Bandura & Cervone, 1983; Bandura & Schunk, 1981) and its importance in goal-setting-performance relationships has been studied. Within the investment model of commitment, job satisfaction, or positivity of affect toward one's job is explained as a simple function of the rewards and costs associated with the job. Job commitment is explained as the more complex interaction of rewards, costs, investments, and alternatives. Generally stated, commitment to and satisfaction with any association is a function of the discrepancy between the outcome value of that association and the individual's expectations about the quality of relationships in general (or comparison level) (Thibaut & Kelley, 1959). As shown in Figure 5a, the level of commitment an individual holds can be compared to the fulcrum, or balancing point on a scale ranging from commitment to present situation (far left), to the consideration of an alternative (far right).

In the case where alternatives are not actual choices, the perceived balance ratio of the comparison level is used, such that commitment would be shifted away from the present situation but not toward anything else. In this case, the commitment level would be pulled to the center of the scale, representing indifference. If the ratio of benefits to costs and investments is larger for the present situation than the perceived ratio for the alternative used for comparison, then commitment will occur on the side of the present job (Figure 5b). If the ratio of rewards to costs and investments for the present situation is smaller than that perceived for the alternative, then commitment will shift away from the present situation and move closer to a perceived alternative (Figure 5c). The determination of satisfaction is made when the individual performs a subjective reward-cost analysis for comparing his or her work situation to a general standard for evaluating such

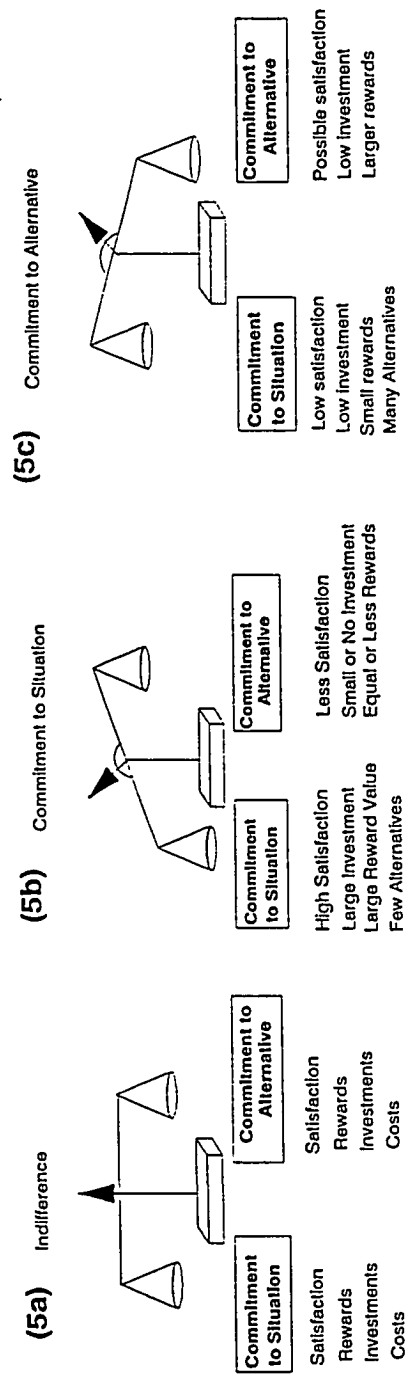


Figure 5. The evaluation of alternatives in the Investment Model of commitment.

associations. This general standard is called the comparison level (CL) (Thibaut & Kelley, 1959), and is similar to the subjective norm considered in the Ajzen and Fishbein model (1980). The comparison level represents that average quality of outcomes which the individual has come to expect from the association (in the workplace, this association would be employment). Individuals who have had poor employment experiences should have a low CL; those who find redeeming aspects in unlikely situations should have a high CL. Satisfaction with employment should increase as the rewards associated with it increase and costs decrease (Farrell & Rusbult, 1981). The reward value of an association is defined by:

$$R_x = \sum (w_i r_i)$$

where R_x (the reward value of association X) equals the sum of r_i (the individual's subjective estimation of the reward value of attribute i available from association X) interacting with w_i (its subjective importance). Examples of rewards include pay, autonomy, variety, task identity, and opportunities for advancement. The adage that 'money isn't everything' illustrates how reward value of an association is the interaction of both the objective value of a reward with its subjective importance. Cost value of association X (C_x) is defined by:

$$C_x = \sum (w_j c_j)$$

where c_j is the magnitude of the subjective costs of

association X with regard to attribute j, and w_j represents the importance of j in the association. Examples of job costs might include length of time required for commuting, unfair promotion practices, undesirable shifts, or unpleasant working conditions.

Individuals will project the value of the current association upon his or her comparison level in order to assess the degree of satisfaction with the association, which is also equal to the association's outcome value (O_x). For example, college students who participate as subjects in psychology experiments generally have some preconception regarding the overall value they expect to derive from the experience, based in part on reports from peers. If they receive more participation credits than their friends, or have a more interesting task to perform, their level of satisfaction should be higher relative to their CL. Satisfaction (SAT_x) and outcome value (O_x) may be represented by:

$$SAT_x = (R_x - C_x) - CL = (O_x)$$

Alternative outcome value, or alternative outcome satisfaction is the next element in the investment model of commitment. Alternative value is the quality of the best available alternative to relationship X. This may mean either participation in a more (or less) interesting experiment, or no research participation at all. Alternative value (A_y) would be defined by:

$$A_y = (R_y - C_y) - CL$$

The model predicts that job alternatives would be negatively related to job commitment. If research alternatives are poor, then commitment to participation in the available experiment should be greater. Presence of alternatives has been shown to be negatively related to both intent to remain in one's position and to career commitment (Pfeffer & Lawler, 1980; McLaughlin & Butler, 1974).

The last determinant in the investment model is investment size. Investment refers to resources that are put into an association. The intent of investment is the potential enhancement of overall relationship value. Tenure, interest in the work, acquisition of non-transferable skills, and pension funds are examples of common job investments. Using the example of student participation in research, investments may include completing screening procedures to determine eligibility for further participation or learning about research methods relevant to course work. These investments, also called sunk costs, increase commitment by increasing the costs of leaving the association. Invested resources may be either material or psychological, and investment size (I_x) may be represented as:

$$I_x = \sum (w_k i_k)$$

where i_k refers to the size of the investment of resource k in relationship X , and where w_k refers to the importance of

resource k. Commitment is generally increased over time as resources are invested into a relationship, and for this reason tenure is often assumed to suffice as proof of commitment. Commitment, though, is also a function of association and alternative outcome values which are determined in part by market conditions and therefore undermine the importance of tenure as an indicator of commitment.

Commitment (COM_x) may be expressed using either of these two equivalent equations:

$$COM_x = (R_x - C_x) + I_x - O_y, \text{ or}$$

$$COM_x = SAT_x + I_x - A_y$$

Commitment should increase as the value of the relationship increases, as the magnitude of the individual's investment in the relationship increases, and as the value attributed to alternatives decreases.

For construct clarification, it is important to observe that satisfaction with a job and commitment to that job are not necessarily strongly correlated. While it is true that commitment may be caused by high satisfaction, it may also be the result of poor alternatives or large investments. Workers may be dissatisfied with their jobs while maintaining high levels of commitment to performance simply because they must.

This investment model provides a framework for the careful manipulation of commitment levels in individuals to

examine the effects of commitment on goal-setting and performance.

Validity of the Investment Model

A series of studies have been conducted which tested the validity of the investment model for predicting various types of commitment. Rusbult (1980) tested the investment model for its effectiveness in predicting commitment to ongoing romantic relationships. In both laboratory role-play and cross-sectional field settings, the model proved effective for estimating individuals' commitment to the relationship. Another field study of the investment model and romantic associations found satisfaction and alternatives being the strongest predictors of commitment, varying directly, but found no relationship between commitment and investment (Sprecher, 1988).

The application of the investment model to work commitment involved both laboratory and field research. Commitment levels in the laboratory setting were manipulated by controlling four independent variables each having two levels in a 2 X 2 X 2 X 2 factorial design. Job reward value (R_x) consisted of variations in estimated pay (high level \$4, low level \$2). Job cost value (C_x) was manipulated by changes in the task demands. (High cost subjects received credit only for 100 per cent accuracy in work performance; low cost subjects were given credit for a 60 percent accuracy criterion.) Alternative value (A_y) was

manipulated by changing the expectation of payment level for the second part of the task, with \$4 being the high alternative value and \$2 being the low alternative value. Investment size was manipulated by the type of training provided prior to performing the experimental task. Training materials which were highly specific to the experimental task were considered as the high investment condition. For the low investment condition, subjects were given material which was very general and only tangentially related to the task. The investment component manipulation was based upon a distinction discussed by Becker (1975) in an analysis of lifetime earnings of American workers. Training that is specific to a particular task serves as an investment in that task because it is less transferable to other tasks. General training does not have as particular a purpose, which explains why it is not perceived as having high investment value.

Further studies (Farrel & Rusbult, 1981) tested the investment framework for its ability to predict work related phenomena such as job satisfaction, job turnover, and job commitment. In a controlled laboratory analog of a work setting and a cross-sectional survey of industrial workers, predictions suggested by the equations in the preceding discussion of the investment model were supported. Job satisfaction was best predicted by the reward and cost values associated with the job. Job commitment was best

predicted by the combination of reward and cost values, alternative values, and investment size. While satisfaction and commitment were negatively correlated with turnover, job commitment had a stronger negative correlation with turnover than did satisfaction. The results of studies testing commitment to romantic and work relationships strongly supported the predictions advanced by the investment model. Applying similar manipulation techniques should enable managers and researchers to ensure that individuals are actually committed to the performance of their tasks at hand.

Hypotheses and Design of the Current Research

In order to determine if individuals' level of commitment to a goal will affect performance, the experimental strategy suggested by Rusbult (1981) will be utilized so that commitment will be a treatment condition of the experiment, rather than an inferred attitude of the subject. To address some of the criticisms of laboratory research using college students, the task performed (a computer-based typing tutorial game) was selected to be perceived as more interesting and relevant to students than those used in previous research. This task also afforded the opportunity to unobtrusively measure performance and provide detailed feedback to subjects. The lab setting

itself was designed to look similar to an employment office, and a survey of skills availability was the premise given for the experiment. Cues provided in the laboratory were intended to suggest that interested and qualified students would be considered for job opportunities resulting from their participation. Using the Rusbult (1981) method of varying perceived levels of rewards, costs, alternatives, and investment related to the situation, two objects of commitment were manipulated by providing different instructions and experimenter scripts for different conditions. Commitment to the research study itself was one experimental manipulation intended to test the assumption that college students are valid participants in laboratory research. Commitment to a performance goal was similarly manipulated by using scripts to describe a job opening that participants could qualify for. Features of the hypothetical job were varied to either inspire or discourage commitment to achieving the performance goal set. In addition, either easy or difficult goals were set for qualifying for the job. The hypotheses to be tested using this methodology are listed in Table 3.

If task performance truly is dependent in part on the characteristic of commitment, then performance scores should be higher for subjects in the high commitment conditions. This may be stated as:

Table 3

Hypotheses Tested in This Research

-
- Hypothesis 1: Individuals tested in high commitment conditions produce significantly better performance scores than those participating in low commitment conditions.
- Hypothesis 2: The higher the individual's motivation to work, the greater the perceived overall satisfaction with the task.
- Hypothesis 3: The greater the interest in the task, the higher the performance scores.
- Hypothesis 4: The greater the interest in the task, the higher the satisfaction with the task.
- Hypothesis 5: The higher the degree of satisfaction with task characteristics the greater the levels of task performance achieved.
- Hypothesis 6: The greater the individuals' perception of self-efficacy (SE), the higher the performance scores obtained within commitment levels.
- Hypothesis 7: The greater the individuals' perceived self-efficacy (SE), the higher the performance scores across levels of commitment.
-

Hypothesis 1: Individuals tested in a high commitment condition should produce significantly better scores than those participating in low commitment conditions. The null hypothesis, that performance would be equal across commitment conditions, would support the contention that college students are already committed to performing at their best ability levels.

The investment model also postulates that satisfaction should increase as both rewards and investments increase (Farrell & Rusbult, 1981). One of the questions raised by critics of laboratory research using college students is that they are usually unmotivated and uninterested in the required task. The reward level will be higher for more highly motivated individuals because their opportunity to work would be rewarding in itself for its drive reducing potential. This will be tested as:

Hypothesis 2: The higher the individuals motivation to work, the greater will be the perceived satisfaction with the task. Similarly, because investments increase commitment by increasing the costs of leaving the association, individuals having a higher degree of interest in the task should manifest a greater degree of commitment to task performance and derive a greater sense of satisfaction from involvement in the task. Using the investment model, this notion will be tested in the experiment as:

Hypothesis 3: The greater the interest in the task, the greater will be the scores obtained on performance measures; and

Hypothesis 4: The greater the interest in the task, the higher will be the satisfaction with the task.

Other rewards exist which may impact upon perceived satisfaction with task involvement. Commitment is expected to increase as the rewards associated with the task increase (Farrell & Rusbult, 1981). Examples of rewards, which are similar to those defined in the Job Characteristic Model of job satisfaction (Hackman & Oldham, 1974) include pay, autonomy, variety, and task identity. This relationship will be tested as:

Hypothesis 5: The higher the degree of satisfaction with task characteristics, the greater will be the level of task performance achieved.

Self-efficacy has been suggested as a characteristic of individuals which influences the decision to expend effort upon particular activities. Hence, it is expected that within each of the commitment conditions, performance will be moderated by the strength of individual's expectations of success. This generates the next hypothesis to be tested.

Hypothesis 6: The greater the individuals' perceived self-efficacy, the higher will be the performance score obtained within commitment levels.

If the manipulation of commitment is successful, then levels of performance obtained should be higher for individuals in the high commitment condition than in either the low commitment or control (baseline) condition even when perceived self-efficacy is low. On the other hand, as a determinant of satisfaction and thus commitment, self-efficacy may have so strong an effect that it imparts a greater effect in subjects than the intended commitment level manipulation. Individuals having low self-efficacy expectations may be unable to derive the necessary levels of satisfaction required in order to attain either the attitudinal or behavioral manifestations of the commitment manipulations and may show poor performance across commitment levels. Conversely, subjects having relatively high self-efficacy levels may strive to meet performance goals regardless of the commitment level. That is to say, they aim to do well because they want to demonstrate their competence, even if they do not ascribe high importance to meeting the demands of the job, task, or organization. This interaction effect between self-efficacy and commitment will be tested as:

Hypothesis 7: The greater the individuals' perceived self-efficacy, the higher the performance scores across levels of commitment.

These hypotheses are summarized in Table 4.

Table 4

Hypotheses Summary Table

Hypothesis	Predicted Relationship	Direction
H ₁	$C_1P_1, C_1P_2, C_1P_3 > C_2P_1, C_2P_2, C_2P_3$	+
H ₂	MAT-SAT ₀	+
H ₃	PCG _T -P ₍₁₋₃₎	+
H ₄	PCG _T -SAT ₀	+
H ₅	SAT ₁₋₅ -P ₁₋₃	+
H ₆	SE-P ₁₋₃	+
H ₇	SE-C ₁ P ₁₋₃ < SE-C ₂ P ₁₋₃	+

Key: MAT Motivation to Work
 PCG Interest in Task
 C₁ High Commitment Condition
 C₂ Low Commitment Condition
 P₁ Baseline Performance
 P₂ Commitment to Study Performance
 P₃ Commitment to Job Performance
 + Positive correlation

II. METHOD

Subjects

After obtaining approval from the campus Human Subjects Committee, female students at a middle-sized Mid-Atlantic university were recruited from the subject pool of the Psychology Department. The present study was confined to females only to eliminate confounding by sex differences, as the keyboard task being used as a dependent measure may be strongly gender-typed. The desired sample size was set at 80 subjects, conforming to suggestions proffered by Roscoe (1975) for determining minimum sample size. The formula is

$$N = \Sigma \left[\frac{z_c \sigma}{e_m} \right]^2$$

where z_c is the z-score representing the level of confidence (z_c is 1.96 for a .95 confidence interval, σ is the sample standard deviation, and e_m is the maximum acceptable error. Maximum acceptable error, set at one half the sample standard deviation error, would dictate the use of 16 subjects per cell. Since analyses of variance were to be performed on performance data, Roscoe's (1983)

recommendation that sample size be at least 10 times as large as the number of variables was considered. A minimum of 80 subjects were required, providing for 40 subjects in each level of the first treatment condition, and 10 in each Study X Job X Goal treatment combination cell. To minimize the effects of violating the assumption of homogeneous error variance, adequate and equal numbers of subjects were needed in each cell (Hays, 1963). The goal for subject recruitment was set at 100 to make certain that data for the minimum of 80 subjects would remain after allowing for attrition, subject mortality, unusable subject data, and screening out subjects unable to perform at even minimal levels.

The manipulation of commitment levels in the experiment required using deception during the procedure. To address the need to ensure that subjects were aware of and interested in the manipulations, several screening points were used to exclude participants who did not read or could not understand the written materials and who were unlikely to be interested in obtaining a hypothetical job.

Subjects were first screened during a telephone interview when background information was obtained and appointments set for qualified subjects. This preliminary screening eliminated prospective subjects who were male, employed full time, or did not speak English as a first language. Additional screening occurred when subjects completed a set of questionnaires prior to the experimental

manipulation. Screening at this point was used to eliminate subjects who could not understand basic terms on the questionnaires, claimed to have never used a keyboard of any kind, were exhausted, and did not desire or were not available to accept a part-time job opportunity. All students who did not meet these prerequisites were allowed to complete the baseline typing measure to provide feedback for them and to appear consistent with the premise that skill testing was a principal purpose of the research. These subjects were then debriefed, paid, and given credit for participating, but were not be subjected to the experimental portion of the procedure. Further, subjects who passed the previous screening points were eliminated during the experimental manipulation if it became evident that they were not reading the written instructions. The following manipulation checks were also built into the procedure. Subjects were told to inform the experimenter when they had completed different portions of the procedure. Those who failed to follow these instructions were removed from the study sample. Finally, during the debriefing conversation, students who expressed reservations about the authenticity of manipulations were also eliminated. In all, 130 individuals inquired about participation in the study, and after screening out unsuitable subjects and those who failed to appear at appointed times, 80 were retained for analysis.

In addition to receiving credit toward fulfillment of psychology class requirements, subjects who completed the experiment with marketable typing scores were given brochures and a business card provided by a local employment agency. Pilot testing indicated that subjects were pleased by this extra consideration shown to them. All subjects who completed the laboratory exercise were paid \$5 for the time they contributed.

Experimental Design

A between-subjects repeated measures Latin-square design was utilized, with a 2 (commitment to study condition) X 2 (task commitment) X 2 (goal difficulty) factorial design. Independence of observations, one of the assumptions of normally distributed samples, is particularly problematic in situations such as this where accumulated learning may result from exposure to the experimental conditions. To minimize effects of both individuals' learning over trials and statistical dependence among the error components (Hays, 1966; Keppel & Saufley, 1980), subjects were given a practice session comprised of timed samples of the typing tasks to familiarize them with keyboard structure and operating strategies necessary for task completion. Many procedural precedents have been established for obtaining baseline scores for typists (Gentner, 1983; Grudin, 1983; Larochelle, 1983; Long, 1976;

Munhall & Ostry, 1983) however, pilot testing was used to ascertain the adequacy of the recommended length of practice.

Materials

Subjects completed several paper and pencil instruments to obtain measures of demographic and research variables. Performance on various components of typing skills were measured using an automated minicomputer system for stimulus presentation and data recording. Employment blanks, brochures, business cards and requests for referrals from various employment agencies were placed conspicuously at several locations in the testing center to encourage the expectation that participation in the study might result in employment opportunities. The remainder of this section describes all measurement instruments that were used in this study.

Measure One: Motivation to work

Commitment to task performance goals rests on the premise that individuals have a basic desire to work. It is conceivable that an individual may desire to be engaged in some form of work without commitment to quality or performance goals, but the converse -- that an individual may be committed to performance goals without a desire to work -- does not make intuitive sense.

In order to explore this premise more fully, addressing Hypothesis 2, subjects were given a subtest of the

Motivation Analysis Test (Cattell, Horn, Sweney, & Radcliffe; 1964). (Permission to buy the use of the copyrighted material was secured from the Institute for Personality and Ability Testing.) The Motivation Analysis Test (MAT) was developed through factor-analytic techniques. It contains ten subscales which measure various motivational variables that are called either ergs or sentiments. Career motivation is one of the sentiments, and is defined as a culturally acquired set of attitudes which becomes a source of motivation and interest.

Three motivation scores are derived for each erg or sentiment. These are Unintegrated, Integrated, and Total motivation scores. The Unintegrated motivation scale detects the basic or rudimentary wants of the individual; for example, the desire to be very successful or respected in a career. The Integrated score reflects actual efforts made by individuals toward drive reduction, such as seeking and holding positions along a career path. Total scores indicate the degree to which individuals have resolved any differences between Unintegrated (desired) and Integrated (actual) motivation components. The Total score assesses the general motivational state for the erg or sentiment.

The MAT Career Sentiment subscale contains twenty-four items arranged within four subtests. The Uses subtest asks subjects to indicate how they prefer to spend time or money; for example, reading books or hiking. The section labeled

Estimates has subjects make judgments about a variety of topics, for example, "what percentage of people believe that cancer will be curable?" Paired words requires subjects to select which of two word associations with a third word springs more quickly to mind, and Information tests knowledge on the premise that subjects know more about topics in which they are interested.

Both clinical and experimental applications of the MAT are facilitated by the fact that the test has low face validity and is free from contamination by brief moods and situational demands. These features make it possible to elicit from subjects responses that are free from either social desirability or experimenter demand biases. The MAT has been tested against the 8SQ (Curran & Cattell, 1971) (which measures emotional states) and the 16PF (Cattell, Eber, & Tatsuoka, 1949) (for measuring personality traits) and has been shown to measure motivational drive without contamination from personality or mood states. Validity of the MAT has been well documented in clinical use (Boyle & Cattell, 1984; Cattell & Birkett, 1980; Kline & Grindley, 1974; Kline, 1976) and has withstood stringent testing of its psychometric properties (Boyle, 1985; Boyle, Stanley, & Start, 1985; Cooper & Kline, 1982; Kline & Cooper, 1982).

The Career Sentiment Total, representing general levels of motivation, has been shown to be an effective predictor of work motivation for screening the chronically unemployed

for a job readiness program (Kaufman, 1983). It is predicted that a positive correlation will exist between subjects' career motivation scores and the effort expended to reach goals set for jobs in the experimental manipulations (Hypothesis 2).

Measure Two: Interest in task

According to the investment model of commitment, an individual weighs the costs and benefits of each particular outcome before deciding whether he or she should direct effort in its direction. Interest in the task could also be interpreted in the model as one of the investment considerations.

To determine the level of attraction of the word processing task (Hypotheses 3 and 4), subjects completed a subscale of the Interest Inventory portion of a vocational counseling program called Planning Career Goals (Flanagan, 1976). (Permission to use the copyrighted material was obtained from McGraw-Hill.) Planning Career Goals was developed to assist counseling personnel in helping students make realistic and long-lasting educational and career plans (Kandor, 1986). Large samples were used in the predictive validation for Planning Career Goals, and the instrument is a reliable indicator of vocational interests and aptitudes (Dunn & Mitchell, 1981). The Interest Inventory contains three sections comprised of 300 items which measure individuals' interest in occupations, occupational

activities, and current activities. Twelve career groups including clerical and office workers are included, and subjects express interest by rating job titles, job activities, or job-related non-work activities on a five point Likert-type scale. Twenty-five items from the subscale measuring interest in the Secretarial-Clerical, Office Worker category were used to create a shortened form specific to this study's needs, and required about three minutes for completion. High interest in the Secretarial-Clerical, Office Worker category would be reflected by scores above 75.

Measure Three: Demographic Data

The investment model of commitment weighs situational factors against available alternatives. Information regarding factors such as part- or full-time employment, rate of pay, part-or full-time student status, and city of residence was collected for each participant using a demographic questionnaire. This was presented as the Work History Form after the Motivation Analysis Test and Planning Career Goals inventory in order to prevent contamination of responses to the earlier instruments.

It was anticipated that experimental manipulations would be more effective for those subjects desiring part-time employment to supplement their income or experience than for subjects who were already established in well paying jobs. Data from the work history form were used to

enhance the attractiveness of the hypothetical job opportunity in the high commitment-to-job condition and to diminish the desirability of the job opportunity described in the low commitment-to-job condition.

Measure Four: Self-efficacy estimates

Bandura (1982) has criticized previous studies that have tried to test empirically the relationship between expectancy and performance. For example, Davison and Wilson (1973) and Lick and Bootzin (1975) measured individuals' hopes for favorable outcomes rather than with their own expectations of personal mastery. Moreover, expectancies had been assessed using global measures reflecting individuals' levels of hope, wishful thinking, and faith instead of relying on more narrowly based expectations reflecting only perceived ability or expected rates of learning. To obtain data for testing Hypotheses 6 and 7, this study followed Bandura's suggestions for eliciting self-efficacy estimates.

Bandura recommended using a 'micro-analytic' methodology for testing propositions about the origins and functions of perceived self-efficacy. This strategy consists of the presentation of graduated self-efficacy scales representing tasks varying in difficulty, complexity, stressfulness, or some other dimension, depending upon the particular domain of functioning being tested. Subjects designate the tasks they think they can do and their degree

of certainty. Bandura et al. (1982) described this procedure as follows:

Subjects were provided with the list of 18 performance tasks included in the behavioral list, and instructed to designate those tasks they judged they could perform at that time. For each task so designated, they rated the strength of their efficacy expectations on a 100-point scale, ranging, in 10-unit intervals, from great uncertainty thorough intermediate values of certainty, to complete certitude. The level of self efficacy was the number of performance tasks with a value of 20 and above that subjects judged they could perform. (p. 7)

Bandura cautioned that judgments of self-efficacy be made privately rather than publicly as a precaution against creating public commitment and pressure for consistency. The process of making public self-efficacy judgments does not in itself affect performance, but people are inclined to become conservative in their self-appraisals, thereby creating efficacy-action discordance (Telch, Bandura, Vin, Agras, & Stout, 1981). The measure used in this study was defined as the perceived self-efficacy in typing speed and accuracy.

Pre-practice self-efficacy estimate. The first measure of self-efficacy was in the form of an open-ended question on the Work History (demographic data) blank. At that stage of the experiment, subjects were asked only to estimate the number of words per minute they are able to type and to approximate their expected percentage of accuracy. Subjects who left this blank or entered "not applicable" were asked to guess at these figures before being allowed to go on to

the next part of the experiment.

Post-practice self-efficacy estimate. This efficacy measure, made after performance feedback was made salient, consisted of a list of increasing levels of typing speed. For each level, subjects were asked to indicate their belief, on a probability scale ranging from 1 to 100 in increments of ten, that they could type at that speed level. They were also asked to estimate for each speed level the percent of accuracy that would be achieved at that speed. A sample of the self-efficacy format is shown in Figure 6. (the complete scale is located in Appendix A. 5).

Measure Five: Typing ability

Subjects were tested for their ability to type. Since subjects were used as their own controls, pre-treatment baseline measures of typing skills were obtained. Various strategies exist for establishing base rates for typing ability. Grudin (1983) reported using a 10-minute warm-up period, Munhall and Ostry (1983) assessed baseline skills using a standard 3-minute test, Gentner (1983) defined subjects' baseline ability after a ten minute warm-up period, and Larochelle (1983) established baselines for subjects using a 1,000 keystroke warmup. Long (1976) used a 300-character warm-up exercise as part of an experiment proving that warm-up and learning effects produce insignificant within-session changes of speed. In light of these methodological precedents, a warm-up period in this

Keyboard Confidence Questionnaire

Estimate your own typing speed and accuracy based on your knowledge of your personal skill:

1. 10 wpm:

a. I believe that I can type 10 wpm

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all Very
Certain Certain

b. I believe that I can type 10 wpm with

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete
Accuracy

2. 20 wpm:

a. I believe that I can type 20 wpm

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all Very
Certain Certain

b. I believe that I can type 20 wpm with

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete
Accuracy

Figure 6. Post-feedback efficacy questionnaire.

experiment permitted subjects to spend 5 minutes practicing simple keyboard drills then 9 minutes to type samples of actual text. Following the example used by Gentner (1983), text for the sample and practice trials were taken from portions of standard typing tests used by a local employment agency (so that qualified participants might be referred for actual placement if interested). Passages taken from a medical transcription textbook (Epstein, 1975) were used for the commitment-to-job conditions. To control for task difficulty, the texts used for each condition were evaluated with the Flesch-Kincaid formula (Flesch, 1949) which expresses text difficulty in terms of reading grade levels ranging from three through college. The difficulty level rating for the practice, baseline, and commitment-to-study condition test was 9.66, and the grade level required for the commitment-to-task condition test had a slightly higher difficulty rating of 9.77. All testing was administered using a computerized typing skill development program (Glidden & Zeidenberg, 1986) (complete texts are located in Appendix A. 4). Subjects viewed one line of text at a time, with error feedback shown by arrows appearing on the screen under the mistyped letter. Speed and accuracy were recorded after each trial, and were displayed on the monitor at the subjects' work station to provide feedback. Additional

performance information was compiled for each subject and then presented to subjects after completing the first experimental manipulation. These supplemental performance results are shown in Table 5.

Measure Six: Satisfaction with job, task, and task characteristics

In order to study the strength of possible relationships among motivation to work, interest in the job, task performance and satisfaction with various job components (Hypotheses 2, 4, and 5, respectively), the Job Diagnostic Survey (Hackman & Oldham, 1974) was administered. This instrument, one of the most widely used measures of job and task attributes, employs as its framework the job characteristics model of work motivation and specifies those features of jobs which affect attitudes and behavior. Three "Critical Psychological States" (CPS) which encourage positive personal and work outcomes (high internal motivation, high work satisfaction, and high quality performance) are identified using the questionnaire. The CPS are a) Experienced Meaningfulness of the Work, b) Experienced Responsibility for the Outcomes of the Work, and c) Knowledge of the Results of the Work activities. The

Table 5

Summary Information Provided by Typing Performance Analyses

<u>Results for Each Finger:</u>	<u>Results by Letter Group</u>
1. Overall average	1. Overall average
2. Left little	2. Left hand
3. Left ring	3. Right hand
4. Left middle	4. Home Row (asdfjkl;)
5. Left index	5. QWERTY row
6. Right index	6. Bottom row
7. Right middle	7. Middle keys
8. Right ring	8. Punctuation
9. Right little	9. Numbers and Symbols

Error Summaries

<u>Error Name</u>	<u>Nature of Error</u>
1. Wrong Column	Correct hand and row--one column off
2. Wrong Row	Correct hand and column--wrong row
3. Transposition	Inverted order of letters
4. Dropping	Letters omitted from word
5. Mirror Image	Correct finger position--wrong hand
6. Shifting Error	Incorrect use of shifting key

theory proposes that the three CPS result from the presence of five core dimensions. Experienced Meaningfulness of the Work is determined by the core dimensions of Skill Variety (the degree to which a job requires a variety of different activities in carrying out the work), Task Identity (the degree to which the job requires completion of a whole and identifiable piece of work), and Task Significance (the degree to which the job has a substantial impact upon the lives or work of other people). The second CPS, Experienced Responsibility for the Outcomes of the Work, is dependent upon the dimension "Autonomy" (the degree to which the job provides substantial freedom, independence, and discretion to the employee in scheduling the work and in determining the procedures to be used in carrying it out), and Knowledge of Results is most influenced by Feedback (the degree to which carrying out the job results in the employee obtaining direct and clear information about job performance). Designed primarily to identify components of jobs that could be changed through job redesign efforts, an equation has been formulated which considers a combination of the five core dimensions in order to give an estimate of motivational strength (Motivating Potential Score, or MPS) that the job would hold for individuals:

$$\begin{array}{l}
 \text{M} \\
 \text{P} \\
 \text{S}
 \end{array}
 \quad
 \begin{array}{l}
 \text{Skill} \quad + \quad \text{Task} \quad + \quad \text{Task} \\
 = \frac{\text{Variety} \quad \text{Identity} \quad \text{Significance}}{3} \times \text{Autonomy} \times \text{Feedback}
 \end{array}$$

The application of this formula depends on the scores of the five core dimensions, although many studies have been unable to replicate the five-factor structure defined by the model (Birnbaum, Farh, & Wong, 1986; Dunham, Aldag, & Brief, 1977; Dunham, 1976). Hackman and Oldham (1978) acknowledge that where high intercorrelations are found between job core dimensions, factors may collapse statistically and render the MPS formula invalid. Measures of satisfaction with various job characteristics (general, pay, growth, security, social, and supervisory) have demonstrated the ability of respondents to differentiate among these affective dimensions. This means that although some job characteristics themselves may be highly correlated, the attitudes that individuals hold regarding the jobs may still be differentiated. Since the primary reason for using the JDS in this experiment is for the assessment of satisfaction with job components rather than for determining targets for job redesign, the replication of the five-factor structure will not play a critical part in analyses. Studies have upheld the validity of the JDS for accurately reflecting incumbents attitudes about job characteristics for white collar workers (Levine, 1983), and normative data have been developed for over eight hundred jobs in a variety of organizations (Oldham, Hackman, & Stepina, 1978). Ample evidence exists that the dimensionality of job characteristics may be sample-specific (Green, Armenakis,

Marbert, & Bedeian, 1979; Griffin, Moorhead, Johnson, & Chonko, 1980), thus the recommendation has been made that each sample be evaluated as a unique situation and tested for underlying factor structure. For those cases where fewer than five distinct core dimensions are found, the five core dimensions may be added together, instead of using the multiplicative formula, when MPS information is desired.

The JDS, designed primarily for use in survey guided interventions was not entirely compatible with the constraints of the proposed laboratory study. Therefore, after pilot testing, the original short form of the JDS was modified by deleting questions regarding satisfaction with supervision and coworkers, because the experiment did not provide information regarding these aspects of the work environment, and inclusion of related questions required subjects to make blind judgments. This was revealed during the pilot testing, when subjects consistently asked if there were additional sources of information about these topics that they had missed. Seven items were eliminated after consideration by a three-member panel. This tailored version of the JDS, which takes about 15 minutes to complete was administered after the first experimental manipulation, but before the second. (See Appendix A. 6 for the modified Short Form of the JDS.)

Procedure

All subjects. When subjects registered for the experiment, they were asked to report individually to a room designated as the Performance Assessment Laboratory. (A schedule of experimental elements is outlined in Table 6.) Upon arrival, subjects found a note on the door saying "be right back- please wait here!" Each was made to wait for approximately five minutes. The subject was then greeted by the experimenter, who made it appear that he had just returned from a meeting. (This delayed entrance was orchestrated to lend credence to the experimenter's need to check telephone messages later in the scenario.)

Subjects were told to have a seat in the reception area of the room while the experimenter prepared a test packet for her. At this time a phone call was staged on a prop telephone, asking the secretary to ". . . please hold any calls coming in for the lab because we can't be disturbed while testing is in progress." When the subject had been made comfortable, she was handed a clipboard containing a cover sheet, informed consent form, Motivation Analysis Test (labeled as an "indicator of general test-taking ability necessary in order to adjust their subsequent test scores"), Interest Inventory, Work History Form, and instructions for proceeding to the next step in the experiment. (Copies of the consent and work history forms are contained in Appendices A. 1 and A. 2.) Subjects not wishing to sign the

Table 6

Laboratory Session Schedule

<u>Time(m)</u>	<u>Cumulative Time</u>	<u>Procedural Element</u>
0	0:00 - 0:05	Subject arrives at lab; waits
5	0:05 - 0:10	Experimenter arrives; greeting
20	0:10 - 0:30	Packet 1: Consent, MAT, PCG, Pre-feedback Efficacy Estimate
5	0:10 - 0:15	Listen to phone messages
10	0:15 - 0:25	Stage phone calls
15	0:30 - 0:45	Keyboard Warmup and Practice
5	0:45 - 0:50	Baseline Performance Measures
5	0:50 - 0:55	Commitment to Study Manipulation Read by Subjects
5	0:55 - 1:00	Commitment to Study Performance Measure
5	1:00 - 1:05	Feedback Privately Reviewed
20	1:00 - 1:15	Staged phone calls; Commitment to Task Manipulations
25	1:05 - 1:30	Packet 2: Post-feedback Efficacy Estimate, JDS, Manipulation Checks, Contract of Non-disclosure
5	1:30 - 1:35	Instructions for Commitment to Task Measure
5	1:35 - 1:40	Commitment to Task Performance Measure
10	1:40 - 1:50	Debriefing, Payment of Subjects
<hr/> Total Time: 1:45 (approximate) <hr/>		

informed consent form were permitted to leave without penalty. The experimenter gave a brief description of the purpose of the study, and explained the reason for having the consent form completed. In order to reduce the risk of experimental demand, subjects were told only that data were being collected about the attitudes and skill levels of college students. This was particularly important so that answers to the MAT tapping work motivation would be as honest as possible. (The low face validity of the MAT helps constrain faking responses to it.) To minimize chances of students from the subject pool learning elements of the study in advance, subjects were told that they were assigned at random to any one of several testing phases, and that there were different components involved with each one. Subjects were advised not to discuss the specific type of testing they participated in with anyone outside the lab in the unlikely event that some participants might want to practice to score well, which would bias the data. At this time, subjects were also told that some students would be asked to return at a later date for further testing, but that some of the components could be completed all in one session. The experimenter then excused himself to take care of some paperwork and listen to messages on the telephone answering machine. The answering machine was located at the experimenter's work station on the other side of a folding room partition, but the flashing message indicator was

easily visible to the subject upon entering the lab. The same messages were played for all subjects. Messages were played back in full one time, then rewound and played back while messages were written down. This was done to give the appearance of the messages being recent, and to be sure that the subjects could hear them. Phone messages referred to previously filled jobs and to job openings needing to be filled.

After completing the first packet of questionnaires, subjects read the last page of the packet containing instructions to "give your completed forms to the lab assistant on the other side of the partition, then proceed to the work station at the second desk behind the next partition." Subjects read that they were going to participate in a simulation of a situation that occurs with increasing frequency in the work place, and that their skill levels and attitudes regarding innovations in the work place were going to be measured. They were also informed that they would be working alone, but could ask questions if needed. Finally, subjects were told to find the set of instructions at the work station, and begin following the instructions as if it was their first day on a new job assignment or if they had gotten a memo asking them to report to the work station and be responsible for completing the work there.

All subjects were given the same instructions in the

first several pages of the packet left for them at the work station. They were told to follow the instructions carefully, and that their progress would be shown on a duplicate display terminal at the experimenter's work station, on the other side of the partition, so that any problems with the software would be easily detected. (The duplicate display monitor permitted test results to be recorded unobtrusively.) All subjects listened to the same nonrhythmic instrumental background music to control for any performance differences caused by changes in verbal or rhythmic radio content.

Subjects were left alone to begin the task. They were given three pages of background and general information, stating that industrial growth and increased demands on available labor in the region was requiring that information be collected about basic skills held by the local labor force. They were also informed that the introduction of new technologies was creating the need for insight into individuals' reactions to innovation for use in development of training strategies. Mention was made of the increased use of temporary workers to fill short term labor needs, thus helping to strengthen the credibility of the hypothetical job prospect offered later in the experiment.

Subjects began by taking a two minute warm-up test to familiarize them with the format of the testing program. They proceeded on their own to a three and then five minute

test. They were instructed that they were about to take the last of the practice tests before taking the standard test, but the results of the next five minute test were recorded and used for the baseline (control condition) measure. After completing the baseline measure, the next instruction presented was an "intermission", providing an opportunity for subjects to read about common practices in employment (training, job rotation, and flexitime) and how this research hoped to help employers learn more about the needs of the workforce.

The intermission was also used as the manipulation of commitment to the study. It was at this step that the two sets of written instructions diverged for the low and high conditions of commitment to the study. The texts differed in that they pointed out various considerations impacting on perceived cost, investment, rewards, and alternatives related to participation in the study. (Both sets of materials are included in Appendix A. 3.) During this intermission, a phone call was staged to the student peer advisor who interacts directly with research participants. The conversation included discussion of possible changes in the number of credits earned for time required in the lab, the availability of other studies, the need for student subjects, importance of the study outcomes, and subjects' overall satisfaction with this and other studies being conducted.

The following statements were overheard during the staged conversation, and investment model variables represented by each are included in parentheses. For the low commitment to the study condition, comments overheard included:

Yeah, that's right. From now on when you have people sign up, let them know that we're going to be paying ten dollars instead of five. Yeah, we're still going to give two credits, but with so many other experiments being conducted, we want to make sure we get people to sign up. Yeah, we do have most of the data we needed, but as long as we have the grant money, we have to use it up. We've already written up most of the results. Like you were telling me the other day, with four more studies starting up in a week, we could be the last experiment people pick if we don't offer more money. (Many alternatives, lower relative extrinsic reward, lower intrinsic reward)

I don't really mind offering the money. From the feedback we get, we know the subjects really don't like getting stuck with these computerized tests we've been using lately. Some of the people I've run here are bored to tears by the time they leave. Besides, we still have plenty of grant money left. (Low satisfaction with task)

Yeah, it might be harder to get people to sign up with all these other projects going on, but luckily we already have more data than we really needed. For the most part, we're just afraid that if we stop running subjects now, we'll have to give up the lab space before we start the next project. We don't even really need some of the data that's been collected the past few weeks. (Low intrinsic reward value)

Yeah, we just want to finish off the grant money and get on with the next project. We're going to be getting some new equipment finally. The computer and software we have now is so outdated already! The other labs have some real state of the art stuff. It really gets on my nerves, having to train people to use systems that they'll never have any use for once they leave the lab. At least they get in and out of here pretty fast. (Low investment, low transferability of training, high cost)

For the high commitment to the study condition, comments overheard included:

Yeah, that's right. From now on when you have people sign up, let them know that we're only paying two dollars from now on instead of five.

Yeah, they'll still get two credits, especially since there aren't a lot of opportunities for them to sign up for research this semester. There are lots of reasons. For one, there's hardly any other experiments for anyone to sign up for this semester, so we're getting loads of people signing up without having to pay them cash. If they don't sign up for this, they might not get the credits they need. You were just telling me yesterday that four experiments that were supposed to start this month won't be starting 'til next semester. Well, it's good for us since we really need these data. A lot of businesses in the area are depending on it to figure out training needs and wage levels. (Higher relative extrinsic reward, higher relative intrinsic reward, fewer alternatives)

I don't really mind offering the money at all, I just don't think it's necessary. From the feedback we get, we know the subjects really like using the computerized tests we've been using lately. Some of the people I've run here don't want to leave when their time is up, and they've been making me late for my next appointment! It's surprising how many people thank me for helping them learn more about the skills they can market.

Some of them are really grateful to have a non-threatening place to learn their way around with the computer. Besides, we still have plenty of grant money left. (High satisfaction with task)

We've been moving along with more people signing up than we can fit into the schedule. We're getting lots of good data- its really going to make a difference in quality of work life in this area. Based on our results, I think wages are finally going to come into line with some of the larger metropolitan areas, and I think better training will be provided proactively instead of retroactively. The way this area is growing, they have to start planning as soon as they can. A lot of the small business owners in this area are so out of touch with the attitudes and skills of the work force. Well, luckily the students I'm processing here will open their eyes to the facts. (High intrinsic reward value)

Yeah, we're already looking forward to finishing off the grant money and getting on with the next project. We're going to be getting some more equipment, I think. The computer and software we have now is really good! The other labs have some pretty outdated stuff. Its great, the number of people that come in and tell me how

they just started learning to use a machine like this at home, or at work. It still takes some time to learn how to use it all, but with the couple of hours that people spend in the lab learning how to work the system, they really begin to feel confident about using the computer. Some of them said they were so afraid that at work they would have to use one, and they would be so embarrassed. Then they come in here and learn how to do it step by step. It takes a while, but everyone leaves knowing a lot more than when they came in. (High investment, high transferability of training, low cost)

The staged conversation was paced so that it was salient, but did not overlap with the start of the next typing test. This test was used as the performance measure for both levels (high and low) of the commitment to study conditions. When the typing test was over, the written instructions guided participants through a series of graphs viewed on the computer depicting detailed analyses of their speed and accuracy, and concluding with an error analysis and suggestions for improvement. When finished looking over the feedback results, they were instructed to open the next set of questionnaires and complete the post-feedback self-efficacy measure, Job Diagnostic Survey, manipulation

checks, and contract of non-disclosure (these materials can be found in Appendices A.6 - A.10, respectively). The contract of non-disclosure emphasized the importance of keeping laboratory procedures and goals confidential, and was designed to minimize the awareness of deception in the procedure.

While post performance measures were being completed in the waiting area, the experimenter was overheard continuing to return phone calls, which contained the manipulations regarding commitment to the next task. Remarks which were overheard included concerns over availability of other job alternatives, pay and benefits relative to area standards, transferability of gained, expected availability of interested students, flexibility of scheduling around exams and semester breaks, and willingness of employers to take into account growth opportunities for students. (Text for these manipulations is found in Appendix A. 9.) When subjects came to turn in their completed papers, they were all told that they needed to take one more test to round out some missing data base for an prospective employer who intended to use the results to determine training needs and entry level wage rates. Subjects had overheard the need for qualified applicants, and were told that if they passed the minimal scores for the test that they might want to be considered for this position. All subjects in both commitment conditions voiced having interest in the

potential job. Subjects had overheard the minimum scores needed for consideration for employment, and these were restated to them at this time. In the moderate goal condition, subjects were told that they needed to achieve a typing speed five words per minute greater than their baseline score after rounding the baseline to the nearest multiple of five. The same criteria applied to the accuracy scores; however, some students had already reached a performance ceiling by typing at close to 100 percent accuracy. These students were given the additional accuracy goal only when accuracy was 95 percent or lower. For the difficult goal condition, the baseline scores were rounded to the nearest multiple of five, and the stated requirement for hiring was set at ten words per minute over the rounded baseline. When accuracy scores were 90 or under, they were rounded to the nearest multiple of five and then ten was added to the required accuracy. Although many studies have shown participatively set goals to result in more goal commitment, other studies have found that assigned goals lead to higher goal commitment (Kernan & Lord, 1988). Bassett (1979) found that the legitimacy of the goal setter largely determines how committed a person will be to the assigned goal. Often, individuals who have little information about a task will prefer to have an acknowledged expert provide the goal anchor for them.

When subjects were finished with the task, those who

did not meet the hiring criteria set for them were partially debriefed about the different measures they had completed, about the hypothetical relationships between interest, satisfaction, and performance, and the need for adhering to the provisions established in the contract of non-disclosure. Any questions were answered, and they were given a credit slip and five dollars.

It was important that upon completion of the study that subjects were only partially debriefed. Complete debriefing would permit early participants in the study to inform later subjects of the deception, thus contaminating the manipulation. For this reason, subjects who did meet the hiring criteria established for the tests were not allowed to leave entertaining expectations of probable employment. To dispel these expectations, the experimenter explained that he had to pick up the psychology credit slips from the secretary down the hall. Upon returning, he informed the subject that the secretary had just received a phone call regarding the status of the job openings described, and that the positions had already been filled. Subjects then received the standard debriefing.

III. RESULTS

Manipulation checks

Factors of the investment model of commitment which were experimentally manipulated--rewards, costs, investments, and alternatives--were measured by the manipulation check questionnaire and analyzed for significant differences between means by commitment-to-study. Means, standard deviations, and t value for each factor are listed in Table 7 by treatment level (low or high commitment-to-study).

The commitment manipulation check form subscale reliabilities (Chronbach's coefficient alpha) were satisfactory (see Table 8), ranging from 0.89 to 0.96. All four manipulated commitment factors showed significant differences ($p < .001$) when means were compared across treatment groups. Along with the high manipulation check reliabilities, the indication is that the desired effect of influencing commitment to the study was achieved.

Reference to demographic characteristics of the sample may be useful for interpretation of results and comparisons with other studies. All subjects indicated that they were

Table 7

Means and Standard Deviations of Manipulation Check
Measures by Commitment-to-study Treatment

Measure	Low commitment to study	High commitment to study
Reward Value		
Observed Mean	2.38 _a	4.28 _b
<u>SD</u>	0.46	0.36
Cost		
Observed Mean	4.84 _a	1.04 _b
<u>SD</u>	0.04	0.34
Investment		
Observed Mean	1.10 _a	4.98 _b
<u>SD</u>	0.59	0.51
Alternatives		
Observed Mean	5.03 _a	1.22 _b
<u>SD</u>	0.49	0.92

Note. N=40. Higher scale values indicated greater quantities of scale factors. Means with different subscripts differ significantly at $p < .0001$.

Table 8

Subscale Reliabilities

Construct	Subscale	Number of items	Chronbach's α
1. Commitment Manipulation Checks	1. Reward Value	5	0.94
	2. Cost Value	4	0.96
	3. Investment Value	2	0.96
	4. Alternative Value	2	0.89
2. Satisfaction (JDS)	1. General	3	0.87
	2. Task Significance	3	0.70
	3. Autonomy	3	0.62
	4. Feedback from Job	3	0.79
	5. Internal Motivation	4	0.60
	6. Pay	2	0.80
	7. Security	2	0.82
	8. Growth	4	0.88
3. Interest in Task (PCG)	1. Job title	9	0.85
	2. Job linked activities	8	0.84
	3. General activities	8	0.84

Note. N=80. Interest measure administered at baseline, prior to experimental treatments.

currently interested in employment opportunities, and 60% were employed part time or not at all. The average interest level in clerical and office work was 42.5 on a scale ranging from 0 through 100, with higher scores indicating greater interest. Frequency of keyboard use averaged 3.95 on a scale of 1 through 7, representing about once a week usage. The most recent wage rate earned by the sample averaged \$5.22, with the overall wage rate being \$4.90. The employment and wage history information was within expected levels found for the pilot group, so that features used to describe pay and scheduling of hypothetical positions in the commitment-to-job manipulation were believable and attractive.

Hypothesis 1

To test Hypothesis 1, that individuals tested in a high commitment condition would perform better than those in low commitment conditions, a one-way analysis of covariance (ANCOVA) was performed for typing speed and accuracy across the Commitment-to-study condition (Table 9), and a three-way ANCOVA was performed for typing speed and accuracy across Commitment-to-job conditions (with main effects and interactions considered for Study and Goal levels). Variability from subjects' baseline ability, interest in task, and career motivation measures were partialled out in each analysis. The three-way ANCOVA is shown in Table 10.

Table 9

One-way Analyses of Covariance for Commitment-to-Study

Source	df	Speed		Accuracy	
		Partial SS	F VALUE	Partial SS	F VALUE
Study	1	184.26	38.73****	5.49	2.34
Interest	1	0.08	0.02	1.40	0.60
Motivation	1	1.12	0.24	0.04	0.02
Baseline Skill	1	6100.67	1282.42****	5363.28	2281.19
Error	75	356.78		176.33	
Total	79	6555.95	325.78	5814.39	
R-Square		0.95		0.96	

* $p < .05$. ** $p < .01$. **** $p < .0001$.

Table 10

Three-way Analyses of Covariance for Study, Job, and Goal Levels

Source	df	Speed		Accuracy	
		Partial SS	F VALUE	Partial SS	F VALUE
Study	1	69.74	12.25****	7.22	0.88
Job	1	1073.48	188.60****	59.26	7.21**
Goal	1	2.42	0.42	4.26	0.52
Study*Job	1	12.46	2.19	1.89	0.23
Study*Goal	1	2.14	0.38	23.60	2.87**
Job*Goal	1	0.76	0.13	30.40	3.70*
Study*Job*Goal	1	0.82	0.14	2.33	0.28
Baseline Speed	1	4685.80	823.25****	2.50	0.30
Baseline Acc'cy	1	2.25	0.40	10.02	1.22
Interest	1	7.43	1.31	4.74	0.58
Motivation	1	3.94	0.69	0.06	0.01
Error	68				
Total	79				

* $p < .05$. ** $p < .01$. **** $p < .0001$.

Table 11 displays adjusted performance means and standard errors. Table 12 shows raw means and standard deviations. Significant main effects of commitment manipulations were demonstrated for both study and job levels on speed $F(1,68) = 12.25$ and 188.60 , $p < .001$, respectively. The three-way interaction of Study X Job X Goal was significant ($F(1,68) = 823.25$, $p < .0001$), suggesting that attitudes established in the commitment-to-study manipulation influenced subjects' willingness to try for subsequent performance goals in the commitment-to-job condition.

The 3-way ANCOVA performed tested the hypotheses that high commitment-to-study scores would differ from low commitment-to-study scores, and indicated the degree to which the first treatment manipulation (commitment-to-study) influenced performance on the second (commitment-to-job). The analysis also tested for the presence of an interaction effect of Commitment-to-Job X Goal Level. Significant main effects were found for study and job levels on speed ($p < .001$). For accuracy, a main effect was found for Job level ($p < .01$), as well as significant Study X Goal and Job X Goal interactions ($p < .001$, $p < .05$, respectively).

Hypothesis 1 was supported by finding significant differences between group means for effects of job and goal levels on performance speed. A significant main effect was found for commitment-to-study, which carried over to the commitment-to-job performance measures. Job scores grouped

Table 11

Adjusted Means and Standard Errors for Performance Scores by Treatment Combinations

Baseline		Low Commitment-to-study		High Commitment-to-study	
(No goal Condition)	****	26.59 / 95.86		25.46 / 93.24	
	26.53 _b	25.23 _a / 94.44 _c		28.32 _b / 94.98 _c	
	1.45	0.35		0.25	
		/ 1.36		.38	
Low Commitment to Job	Low Goal	30.38	95.78	28.77	97.11
		21.99	/ 91.18	23.64	/ 93.57
		.79	.92	.77	.92
	High Goal	29.87	97.19	29.11	97.11
		22.69	/ 94.39	23.26	/ 93.88
		.77	.92	.78	.93
High Commitment to Job	Low Goal	24.22	96.27	21.89	93.53
		28.80	/ 94.92	31.62	/ 95.97
		.77	.92	.78	.94
	High Goal	23.49	94.75	20.44	85.86
		29.50	/ 94.88	32.12	/ 94.42
		.77	.92	.81	.97

Note. Speed and accuracy mean scores are reported as (speed)/(accuracy). Upper line (italicized) shows baseline covariate score; raw performance scores are shown on middle line; standard errors are in bold print on lower line. Means with different subscripts differ significantly from baseline at level indicated by asterisks. $N = 40$ for each of the levels in the Commitment-to-study condition. $N = 10$ for each Study X Job X Goal combination. **** $p < .0001$

* $p < .05$. $p < .0001$

Table 12

Raw Means and Standard Deviations for Performance Scores by Treatment Combinations

	Baseline	Low Commitment-to-study		High Commitment-to-study	
(No Goal Condition)	26.02 _a / 94.55 _c	26.58 [*]	95.86	25.46 ^{***}	93.23 [*]
	9.02	25.90 _b / 95.40 _c	27.65 _b / 94.00 _d	9.29	11.92
	8.60	8.94	2.39	9.29	11.92
Low Commitment to Job	Low Goal	30.40	94.70	23.00	95.70
		26.10 / 91.10	20.60 / 93.80		
		6.14	4.33	5.56	3.01
	High Goal	22.70	96.40	21.30	96.40
		19.60 / 94.50	18.70 / 94.10		
		7.79	3.27	8.93	2.00
High Commitment to Job	Low Goal	26.60	96.50	31.70	95.40
		29.50 / 94.90	37.00 / 95.90		
		8.80	2.38	10.64	2.00
	High Goal	27.10	94.70	25.40	86.60
		30.50 / 94.80	31.70 / 94.10		
		12.32	2.20	5.18	2.6

Note. Speed and accuracy mean scores are reported as (speed)/(accuracy). Upper line (italicized) shows baseline covariate score; raw performance scores are shown on middle line; standard deviations are in bold print on lower line. Means with different subscripts differ significantly from baseline at level indicated by asterisks.

$\bar{N} = 40$ for each level in the Commitment-to-study condition. $\bar{N} = 10$ for each Study X Job X Goal combination.

* $p < .05$. *** $p < .0001$

by initial study condition were not significantly different. Accuracy means differed only for the commitment-to-job manipulations.

Although significant differences were found between the commitment-to-study group means, suggesting that students' commitment to performing may be very situation specific, Hypothesis 1 was also pertinent for determining whether results from college student subjects are generalizable to other samples. To determine if performance in the commitment-to-study conditions was significantly different from students' baseline performance scores, paired comparison t -tests were performed. Difference scores were created for each subject by subtracting their baseline speed and accuracy scores from commitment-to-study scores. The t -tests were performed to test the null hypothesis that the mean of the difference between pre- and post- treatment scores would be zero. It was expected that treatment scores of subjects in the high commitment group would differ significantly from baseline scores, while subjects in the low commitment group will not show significant performance differences between baseline and trial scores. Results shown in Table 13 indicate significant differences between the subjects in the high commitment-to-study group for increases in both speed and accuracy compared with their baseline scores. Smaller, but still significant differences were found for a decrease in speed scores for the low

Table 13

Comparisons of Speed and Accuracy Scores between Baseline and Commitment-to-study Levels

Treatment Level	Measure	Raw Score	Standard Deviation	Mean of Distance From Baseline	Standard Deviation	t
<u>Commitment-to-study:</u>						
Combined	Speed	26.775	9.109	0.750	2.645	2.54**
	Accuracy	94.712	8.579	1.625	1.538	0.94
<u>Low Commitment to Study</u>						
	Speed	25.900	8.940	-0.800	2.462	-2.06*
	Accuracy	95.425	2.395	-0.150	1.512	-0.63
<u>High Commitment to Study</u>						
	Speed	27.650	9.299	2.300	1.786	8.14****
	Accuracy	94.000	11.929	0.475	1.518	1.98*

Note. Baseline Speed = 26.025, SD = 9.02; Baseline Accuracy = 94.55, SD = 8.59.

* $p < .05$. ** $p < .01$. *** $p < .001$. **** $p < .0001$.

commitment-to-study condition. For combined commitment levels, there was a small but significant increase in speed, but no accuracy differences.

Hypothesis 2

Hypothesis 2 predicted that subjects having high levels of work motivation (as indicated by the MAT Total Career Sentiment score) would experience more favorable subjective affect toward the task (as measured by the facet satisfaction scales of the JDS). This relationship was assessed using simple correlations between the motivation scores and facet satisfaction scores across and within commitment levels.

Individuals within each of the commitment groups were expected to show a positive linear relationship between work motivation and satisfaction. Means and standard deviations for facet satisfaction and interest scales are shown in Table 14. Correlations between motivation and satisfaction scores, for testing Hypothesis 2 are shown in Table 15.

Significant correlations were found for Task Significance for the combined groups ($r = .211$, $p < .05$) and for the low commitment-to-study group ($r = .364$, $p < .05$), and for Autonomy within the low commitment-to-study group ($r = .294$, $p < .05$). No other significant correlations were found.

Table 14

Means and Standard Deviations for Satisfaction and Interest
Scores by Commitment-to-study

<u>Measure</u>	<u>Across Commitment Levels^a</u>		<u>Low Commitment to Study^b</u>		<u>High Commitment to Study^b</u>	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
Interest	42.46	18.37	45.72	17.63	39.20	18.73
Satisfaction						
General	3.35	1.62	3.36	1.58	3.34	1.69
Pay	4.10	1.48	4.18	1.32	4.02	1.62
Security	4.20	1.57	4.12	1.54	4.28	1.62
Growth	3.54	1.62	3.72	1.56	3.36	1.68
Internal	4.89	1.16	4.81	1.22	4.98	1.10
Feedback	5.46	1.22	5.20 _a *	1.26	5.72 _b	1.13
Autonomy	3.25	1.35	3.19	1.23	3.30	1.47
Task Sig	4.42	1.33	4.22	1.39	4.62	1.25

Note. Higher scores reflect greater interest and satisfaction. Interest scores have a maximum value of 100; Satisfaction scores range from 1-7. Task Sig = Task Significance.

^a $N = 80$ ^b $n = 40$

* $p < .05$.

Table 15

Correlations Between Motivation and Satisfaction Scores
by Commitment Level

Facet Satisfaction	Across Commitment Levels ^a	Low Commitment ^b	High Commitment ^b
General	.034	.044	.130
Pay	.118	.134	.104
Security	.105	.089	.132
Growth	.073	.127	.004
Internal	.098	.160	.015
Feedback	.119	.251	.077
Autonomy	.141	.294*	.013
Task Significance	.210*	.364*	.007

^a $N=80$. ^b $n=40$.
^{*} $p < .05$.

Hypothesis 3

Hypothesis 3 stated that individuals having a greater interest in the task (as measured by the PCG Interest Inventory) will show higher performance scores across commitment levels. The correlation matrix for interest scores by commitment levels was computed to test this hypothesis. Results, shown in Table 16, indicated no significant relationship between interest in the task and task performance for any of the commitment levels.

Table 16

Correlations of Interest in Task with Baseline and
Commitment-to-study Performance Scores

Measure	Baseline ^a	Low Commitment ^b	High Commitment ^b
Speed	.080	.086	.216
Accuracy	.158	.075	.262

^a N=80. ^b n=40.

Hypothesis 4

Correlations were computed between Interest in Task and Facet Satisfaction scores to test Hypothesis 4, that greater interest would be correlated with greater satisfaction across commitment levels. Table 17 shows results of the correlation procedure. Modest but significant correlations were obtained for Pay, Security, and Growth subscales ($r = .28, .27, \text{ and } .29$ respectively, $p < .05$). Across combined commitment data, a moderate relationship was found between Internal Motivation and Interest ($r = .38$, $p < .001$), and a strong relationship was found between Interest and General Satisfaction ($r = .42$, $p < .0001$). Differential levels of relationships between interest and satisfaction were found between commitment levels. Within the low commitment-to-study condition, General Satisfaction and Internal Motivation showed moderate relationships ($r = .49$ and $.48$, respectively, $p < .001$). Within the high commitment-to-study condition, low to moderate correlations were found for General, Pay, Security, Growth, and Internal Motivation satisfaction subscales (correlations ranged between $.31$ and $.38$, $p < .05$).

Table 17

Correlations Between Task Interest and Facet Satisfaction Scores

Satisfaction Scale	Combined Commitment ^a	Low Commitment ^b	High Commitment ^b
General	.426****	.493***	.378*
Pay	.286**	.243	.312*
Security	.271**	.206	.357*
Growth	.293**	.232	.319*
Internal Motivation	.384***	.477***	.332*
Feedback	.013	.112	.065
Autonomy	.180	.252	.144
Task Significance	.162	.325*	.060

^a $N = 80$. ^b $n = 40$.
^{*} $p < .05$. ^{**} $p < .01$. ^{****} $p < .0001$.

Hypothesis 5

Hypothesis 5 suggests that greater satisfaction with the task will result in higher performance scores. Correlations were calculated for Facet Satisfaction measures with speed and accuracy scores for the baseline (no experimental manipulation) and commitment-to-study (no goal) conditions. Results are shown in Table 18.

Correlations of Facet Satisfaction with baseline level scores were not significant except for Task Significance varying with speed ($r = .219$, $p < .05$). In the low commitment-to-study treatment level, Feedback from the Job Itself showed a strong relationship with speed ($r = .420$, $p < .01$) and Satisfaction with Pay was moderately correlated with accuracy ($r = .257$, $p < .05$). No significant correlations were found for any relationships within the high commitment-to-study treatment level.

To determine effects of Facet Satisfaction on performance in the Commitment-to-job X Goal conditions, correlations were computed for each of the four combination subgroups. Results are reported in Table 19. Within the low commitment-to-job, low goal condition, moderate but significant relationships were found for satisfaction with Security, Growth, and Autonomy correlated with accuracy ($r = .48$, $.45$, $.46$ respectively, $p < .05$). A strong correlation

Table 18

Correlations Between Facet Satisfaction and Performance Across Baseline and by Commitment to Study Levels

Measure	Across Baseline ^a		Low Commitment to Study ^b		High Commitment to Study ^b	
	Speed	Accuracy	Speed	Accuracy	Speed	Accuracy
General	.014	.069	.086	.085	.107	.090
Pay	.052	.127	.257	.309*	.063	.199
Security	.118	.019	.045	.157	.207	.071
Growth	.062	.061	.013	.234	.198	.106
Internal	.089	.020	.059	.035	.222	.288
Feedback	.129	.168	.420** _a	.015	.089 _b	.202
Autonomy	.095	.021	.098	.168	.115	.059
Task Significance	.219*	.164	.112	.045	.263	.222

^a Baseline $N = 80$. ^b Commitment-to-study $n = 40$.

* $p < .05$. ** $p < .01$

Correlations Between Facet Satisfaction and Performance by Goal Levels within Commitment-to-job Levels

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was found between Pay satisfaction and accuracy ($r = .64$, $p < .01$). For the low commitment, high goal condition, satisfaction with Autonomy was moderately related to speed ($r = .52$, $p < .05$).

In the high commitment-to-job, low goal condition, a moderate relationship was shown between Satisfaction with Security and speed ($r = .47$, $p < .05$). A stronger correlation was found between Autonomy and accuracy ($r = .55$, $p < .01$). No significant correlations were found for the high commitment-to-job, high goal group.

Hypothesis 6

Self-efficacy--a characteristic of individuals that influences decisions to expend effort--was expected to be correlated with performance within commitment levels. Pre-feedback self-efficacy scores, obtained prior to baseline or treatment conditions, were first tested using a simple regression model to determine the relationship between presumed and actual skill levels in the no-treatment condition. Results of the simple regressions, reported in Table 20, show that the pre-feedback self-efficacy estimate for speed was a significant predictor of actual performance ($p < .01$). The self-efficacy estimate of accuracy was not a useful predictor of actual baseline performance. To determine if there was a differential relationship of

Table 20

Regression Analyses of Self-Efficacy on Baseline Performance

<u>Source</u>	<u>DF</u>	<u>SS</u>	<u>Mean Square</u>	<u>F</u>	<u>R-Square</u>
<u>Speed</u>					
Self-Efficacy	1	654.877	654.877	8.84**	.102
Error	78	5775.072	74.039		
Total	79	6429.950			
<u>Accuracy</u>					
Self-Efficacy	1	106.682	106.682	1.45	.018
Error	78	5733.118	73.502		
Total	79	5839.800			

** $p < .01$.

self-efficacy as a function of commitment, pre-feedback efficacy estimates were regressed on performance scores in the high and low commitment-to-study treatment groups. As shown by the results of simple regression analyses in Table 21, self-efficacy estimates were useful predictors of speed in both conditions, (low commitment $F = 3.65$, df 1, 78, $p < .05$); high commitment $F = 6.66$, df 1, 78, $p < .05$). The amount of variance explained by pre-feedback efficacy scores was not equal across Commitment-to-study conditions. In the high Commitment-to-study condition, R -square = .15, in the low condition, R -square = .09 ($t = 52.17$, $df = 1$, $p < .05$).

Table 21

Regression Analyses of Pre-Feedback Self-Efficacy on
Performance by Commitment-to-study Level

Source	DF	SS	Mean Square	F	R-Square
<u>Low Commitment-to-study</u>					
<u>Speed</u>					
Self-Efficacy	1	273.299	273.299	3.65*	.088
Error	78	2848.301	74.955		
Total	79	3121.600			
<u>Accuracy</u>					
Self-Efficacy	1	0.339	0.339	0.06	.001
Error	78	233.435	5.880		
Total	79	223.775			
<u>High Commitment-to-study</u>					
<u>Speed</u>					
Self-Efficacy	1	502.884	502.884	6.66*	.149
Error	78	2870.216	75.532		
Total	79	3373.100			
<u>Accuracy</u>					
Self-Efficacy	1	127.246	127.246	0.89	.023
Error	78	5422.754	142.704		
Total	79	5550.000			

* $p < .05$

As in the baseline condition, accuracy estimates were not useful predictors of later performance at either commitment-to-study level.

Pre-feedback self-efficacy was also regressed on performance scores from the commitment-to-job conditions levels by goal level. It should be noted that between the time pre-feedback self-efficacy estimates were made and actual job test performance scores were obtained, detailed performance feedback was given to subjects, and post-feedback self-efficacy estimates were recorded. The purpose of regressing pre-feedback efficacy on job test performance was to see if efficacy expectations originally held by subjects would predict subsequent performance in light of performance feedback given during the laboratory intervention. Table 22 shows results of the regressions of pre-feedback self-efficacy expectations on job test performance by goal level.

Pre-feedback self-efficacy expectations of accuracy did not predict performance in any of the job x goal level conditions. In the Low commitment-to-job, high goal condition, a significant R-square was found for self-efficacy expectations of speed ($F = 7.33$, $df = 1, 18$, $p < .05$). Within the high commitment-to-job, low goal condition, speed expectations significantly explained 18% of the variance on the job test score ($F = 4.03$, $df = 1, 18$, $p < .05$).

Table 22

Regression Analyses of Pre-Feedback Self-Efficacy on
Performance by Commitment-to-job and Goal Level

Source	DF	SS	Mean Square	F	R-Square
<u>Low Commitment-to-job, Low Goal</u>					
<u>Speed</u>					
Self-Efficacy	1	91.015	91.015	2.41	.118
Error	18	679.535	37.752		
Total	19	770.550			
<u>Accuracy</u>					
Self-Efficacy	1	36.062	36.062	2.59	.126
Error	18	250.888	13.938		
Total	19	286.950			
<u>Low Commitment-to-job, High Goal</u>					
<u>Speed</u>					
Self-Efficacy	1	367.079	367.079	7.33*	.289
Error	18	901.471	50.082		
Total	19	1268.550			
<u>Accuracy</u>					
Self-Efficacy	1	2.856	2.856	0.39	.022
Error	18	131.344	7.297		
Total	19	134.200			

* $p < .05$

Table 22 (concluded)

Regression Analyses of Pre-Feedback Self-Efficacy on
Performance by Commitment-to-job and Goal Level

Source	DF	SS	Mean Square	F	R-Square
<u>High Commitment-to-job, Low Goal</u>					
<u>Speed</u>					
Self-Efficacy	1	365.512	365.512	4.03*	.183
Error	18	1632.238	90.680		
Total	19	1997.750			
<u>Accuracy</u>					
Self-Efficacy	1	9.835	9.835	2.08	.104
Error	18	84.965	4.720		
Total	19	94.800			
<u>High Commitment-to-job, High Goal</u>					
<u>Speed</u>					
Self-Efficacy	1	36.514	36.514	0.42	.023
Error	18	1579.286	87.738		
Total	19	1615.800			
<u>Accuracy</u>					
Self-Efficacy	1	0.127	0.127	0.02	.001
Error	18	108.823	6.046		
Total	19	108.950			

* $p < .05$

Post-feedback efficacy expectations, from the Keyboard Confidence Questionnaire, were regressed on job test performance to see if the detailed performance feedback given to subjects resulted in their establishing better estimates of subsequent performance. Regressions were calculated for each of the four Job Level x Goal Level conditions. (Regressions were not calculated for commitment-to-study or baseline performance scores as those tests were administered prior to obtaining post-feedback efficacy estimates. Job tests were administered subsequent to obtaining post-feedback efficacy scores.) Results of the simple regressions are in Table 23.

In the low commitment-to-job condition, post-feedback efficacy expectations for speed explained significant amounts of variance in performance scores across both goal levels. For the low goal level, $F = 25.00$ ($df = 1, 18$, $p < .0001$); for the high goal level, $F = 32.79$ ($df = 1, 18$, $p < .0001$). Similar results were obtained for the high commitment-to-job condition. Post-feedback accuracy expectations did not explain any amounts of performance variance at a significant level. Speed expectations were significant for both low and high goal level conditions ($F = 27.62$ and 37.79 , respectively, with $df = 1, 18$, and $p < .0001$).

Table 23

Regression Analyses of Post-Feedback Self-Efficacy on
Performance by Commitment-to-job and Goal Level

Source	DF	SS	Mean Square	F	R-Square
<u>Low Commitment-to-job, Low Goal</u>					
<u>Speed</u>					
Self-Efficacy	1	448.000	448.000	25.00****	.581
Error	18	322.550	17.919		
Total	19	770.550			
<u>Accuracy</u>					
Self-Efficacy	1	13.232	13.232	0.87	.046
Error	18	273.718	15.207		
Total	19	286.950			
<u>Low Commitment-to-job, High Goal</u>					
<u>Speed</u>					
Self-Efficacy	1	818.985	818.985	32.79****	.646
Error	18	449.565	24.976		
Total	19	1268.550			
<u>Accuracy</u>					
Self-Efficacy	1	16.172	16.172	2.47	.120
Error	18	118.028	6.557		
Total	19	134.200			

 $p < .0001.$

Table 23 (concluded)

Regression Analyses of Post-Feedback Self-Efficacy on
Performance by Commitment-to-job and Goal Level

Source	DF	SS	Mean Square	F	R-Square
<u>High Commitment-to-job, Low Goal</u>					
<u>Speed</u>					
Self-Efficacy	1	1209.459	1209.459	27.62****	0.605
Error	18	788.291	43.794		
Total	19	1997.750			
<u>Accuracy</u>					
Self-Efficacy	1	0.098	0.098	0.02	0.001
Error	18	94.702	5.261		
Total	19	94.800			
<u>High Commitment-to-job, High Goal</u>					
<u>Speed</u>					
Self-Efficacy	1	1094.446	1094.446	37.79****	0.678
Error	18	521.354	28.964		
Total	19	1615.800			
<u>Accuracy</u>					
Self-Efficacy	1	5.259	5.259	0.91	0.048
Error	18	103.690	5.761		
Total	19	108.950			

 $p < .0001.$

Table 24, summarizing the proportion of variance accounted for pre- and post-feedback efficacy estimates by job and goal levels, shows the contrast between the significant information provided by speed estimates and the lack of variance explained by accuracy expectations.

To determine if differential influences on efficacy expectations exist as a function of commitment level, t -tests were computed for the difference between the pre- and post-feedback efficacy scores, testing the null hypothesis that the mean of the difference scores would equal zero. Differences between pre- and post-feedback efficacy scores were significant for speed estimates but were not affected by commitment-to-study level. Table 25 shows the results of the t -tests by commitment-to-study level.

Speed estimates were revised downward by 8.75 words per minute in both conditions ($p < .001$), while post-feedback accuracy estimates were raised by an average of 2.9% over pre-feedback estimates across commitment-to-study levels ($p > .05$).

Table 24

Summary of Pre- and Post-Efficacy Feedback Estimates for Predicting Performance
for Commitment-to-job Speed and Accuracy

Condition	Speed		Accuracy	
	Pre-Feedback Efficacy R-Square	Post-Feedback Efficacy R-Square	Pre-Feedback Efficacy R-Square	Post-Feedback Efficacy R-Square
Low Commitment-to-job				
Low Goal	0.118	0.581 ^{***}	0.126	0.046
High Goal	0.289 [*]	0.646 ^{***}	0.022	0.120
High Commitment-to-job				
Low Goal	0.183 [*]	0.605 ^{***}	0.104	0.001
High Goal	0.023	0.678 ^{***}	0.001	0.048

* $p < .05$. *** $p < .0001$

Table 25

Amount of Change Between Pre- and Post-Feedback Speed and Accuracy Efficacy Expectations
by Commitment-to-study Levels

Study Level	Measure	Pre-S-E Mean	SD	Post S-E Mean	S D	Pre-Post-Diff Mean	S D	t
Low	SPEED	39.13	14.50	30.38	13.51	8.75	16.16	3.42***
	ACCY	78.78	12.02	81.38	6.89	-2.63	14.09	-1.18
High	SPEED	38.75	17.01	30.00	14.85	8.75	16.16	3.42***
	ACCY	80.00	16.68	83.20	7.53	-3.20	18.55	-1.09

Note: SPEED = test speed, ACCY = test accuracy.
 *** p < .001.

Hypothesis 7

Self-efficacy is believed to be among the precursors directing intentions to engage in behaviors or the pursuit of goals and, as such a component of the cognitive set, might be resistant to change during the course of a brief intervention. It was already shown, in Table 20, that pre-feedback efficacy expectations were significantly correlated with speed scores in baseline performance measures. If, as clinical treatments suggest, self-efficacy changes only after repeated exposure to situational and contextual information, efficacy expectations might not be sensitive to the commitment effects experienced during the one-session laboratory manipulation. Hypothesis 7 stated that self-efficacy would be correlated with performance scores across commitment condition levels. To test this hypothesis, pre-feedback efficacy expectations were correlated with the commitment-to-study performance scores, and post-feedback efficacy expectations were correlated with commitment-to-job performance scores. As expected, efficacy scores were significantly related to performance across all levels regardless of commitment manipulation. Moderate, but significant relationships were found between pre-feedback efficacy expectations and scores for the baseline and commitment-to-study conditions across levels (r 's = .319 and .342 respectively, $p < .01$). No significant correlations were found for accuracy scores. Post-feedback efficacy

scores were strongly related to speed across levels of the commitment-to-job condition ($r = 0.72$, $p < .0001$). Although detailed feedback, followed by post-feedback efficacy expectations immediately preceded the commitment-to-job performance test, accuracy scores were not significantly correlated with efficacy estimates. The correlation matrix for this analysis is shown in Table 26.

Table 26

Correlations between Self-Efficacy and Performance Across
Commitment Levels

Treatment Level	Speed	Accuracy
Baseline	.319**	.135
Commitment to Study	.342**	.128
Commitment to Job	.715****	.033

Note. $N = 80$, degrees of freedom (1, 78) for all entries in table. Baseline and Commitment-to-study correlations based on pre-feedback efficacy scores. Commitment-to-job correlations based on post-feedback efficacy scores.

** $p < .01$. **** $p < .0001$.

IV. DISCUSSION

The main objective of this study was to determine if subjects' degree of commitment can explain differential performance effects in goal setting research, without the problems associated with using conventional face valid commitment measures. Manipulation check measures confirmed that by varying the four factors of the investment model of commitment (reward, cost, alternatives, and investment) perceptions of and attitudes regarding the testing context could be significantly altered. Table 27 provides a summary of the hypotheses tested and the degree to which the findings support them.

Hypothesis 1

The hypothesis that subjects performance in the high commitment condition would be better than students performing in low commitment conditions was not supported. In the first condition, manipulation of subjects' commitment to the study itself, performance scores were significantly different from each other across treatment levels; however, they were also significantly different from the

Table 27

Summary of Hypotheses Tested in This Research

Hypothesis 1: (Supported)	Individuals tested in high commitment conditions produce significantly better performance scores than those participating in low commitment conditions.
Hypothesis 2: (Partially Supported)	The higher the individual's motivation to work, the greater the perceived overall satisfaction with the task.
Hypothesis 3: (Not Confirmed)	The greater the interest in the task, the higher the performance scores.
Hypothesis 4: (Generally Supported)	The greater the interest in the task, the higher the satisfaction with the task.
Hypothesis 5: (Partially Supported)	The higher the degree of satisfaction with task characteristics the greater the levels of task performance achieved.
Hypothesis 6: (Generally Supported)	The greater the individuals' perception of self-efficacy (SE), the higher the performance scores obtained within commitment levels.
Hypothesis 7: (Generally Supported)	The greater the individuals' perceived self-efficacy (SE), the higher the performance scores across levels of commitment.

baseline scores in the control condition. Low commitment-to-study speed scores were significantly lower than baseline, and high commitment-to-study scores were significantly higher than baseline scores. It is possible that the small magnitude in differences observed between high and low commitment-to-study speed scores might have resulted in an unintended restriction of range imposed by participant mortality. Subjects who failed to keep their scheduled appointments, or who came to the lab but were subsequently eliminated from analysis for failing to follow instructions may have been the students who were the least committed in that they did not care whether or not they fulfilled their obligation, received credit, or followed the written instructions. Such students, having been self-selected out of the study or excluded for failing to meet inclusion criteria, might represent the sample of subjects who would have been included in other goal setting studies. In the current study, the level intended to represent low commitment would have become, by default, a moderate level of commitment. This can explain the lack of significant distance between scores in the high and low commitment-to-study groups.

Accuracy scores were comparable for baseline and low commitment-to-study groups, but were significantly lower for high commitment-to-study participants. This finding does not contradict the premise that higher commitment results in

better performance, but highlights the trade-off that can be expected when quantity (speed) increases at the expense of quality (accuracy). These findings are similar to those found in a study by Erez and Arad (1986) in which the amount of information communicated during a group discussion was significantly related to increased quality, but not to quantity. It was suggested that differential quality versus quantity effects may be limited by inherent characteristics of the performance measures used and the content of information or feedback. In the Erez and Zidon study, performance was primarily cognitive, and did not involve use of any previously acquired skills or knowledge. In the present study, performance on the typing task was largely dependent upon prior typing skills, and required the integration of cognitive and motor skills. Erez and Zidon (1986) pointed to the fact that although there is an assumed trade off between quantity and quality because they compete for the same cognitive and motor resources, implementation of refined goal attainment strategies should enable performance increases on both dimensions. Although detailed performance and error feedback was given to subjects in the present study, opportunities to practice the suggestions for skill improvement were not provided. Many authors, after criticizing studies utilizing simplistic tasks, have opined that goal setting research ought be conducted on complex tasks requiring multiple and simultaneous decision

processes. A better understanding of the impact of goals on performance might be built instead upon a foundation separating the quality and quantity components of the task. In further research, knowing that commitment can be experimentally controlled for participants, it would make sense to ascertain performance parameters of each component under controlled conditions. For example, using the typing task, a coding scheme could be developed requiring accuracy regardless of speed attained. Similarly, a simulation of a court reporter's job could stress the importance of fast typing with the option of correcting for mistakes at a later time.

In view of the lack of significant performance differences between high and low commitment-to-study groups, it is tempting to attribute the increased performance over baseline scores to simple practice effects. Practice effects, however, can not explain the larger performance disparity of speed scores under baseline and high commitment-to-study conditions than under the low commitment-to-study and baseline conditions.

In the next set of performance measures, for the commitment-to-job manipulation, significant main effects were observed for commitment-to-job and goal level. Speed scores for subjects in the high commitment-to-job group were much better than those in the low commitment-to-job group, and high commitment-to-job following high commitment-to-

study produced the highest performance scores. When low commitment-to-job followed low commitment-to-study, scores were lower across goal levels than when following high commitment-to-study, emphasizing the influence of context on task performance. This series of interactions were interesting in that they suggest the importance of organizational climate on subsequent attitudes and performance of individuals. Parallels may be drawn to organizations offering inadequate orientation or job-specific training during the first stage of employment, then expecting commitment to an arbitrary work standard that may be perceived as unrealistic by new employees. Introductory texts in personnel psychology expound on the importance of creating a favorable first impression when appearing for a job interview. The lingering impact of organizational climate on performance shown in the present study suggests that it is as important for the employer to create a climate conducive to fostering commitment.

Interesting interactions were observed in the Commitment-to-study X Commitment-to-job X Goal Level conditions. High goals did not result in higher scores across commitment-to-job or study. Regardless of the commitment-to-study level, high goals set in the low commitment-to-job condition resulted in significantly lower speed scores than when low goals were set. The setting of a high goal resulted in better performance than setting a low

goal only when commitment-to-job was high, and following the low commitment-to-study condition. In the high commitment to job condition following high commitment-to-study, the high goal resulted in a significantly lower speed and accuracy score than the low goal in the same condition combination.

Expected results were obtained only for the high commitment-to-job condition following the low commitment-to-study, when a higher goal led to higher performance scores. The results, however, were not significant. The failure of high goals to elicit superior performance in the low commitment-to-job condition may simply be attributed to the lack of commitment and interest in qualifying for the unattractive position being offered. In the low goal condition there was less pressure to perform than in the high goal condition, where it is easy to imagine subjects rejecting the idea of working harder to qualify for a job that they were not at all interested in qualifying for.

The results of the last treatment combination, high commitment-to-job following high commitment-to-study, produced surprising results. It was expected that with positive effects of the high commitment-to-study carrying over into the high commitment-to-job condition, that test performance would have been higher for the high goal rather than the low goal condition, given the apparent motivational properties of the high commitment treatments. Instead, the

low goal level in this treatment combination resulted in the highest performance of any treatment cell in the study. At least two explanations are possible for explaining this phenomenon. If students in the high commitment conditions already working at their best performance levels were anxious to be eligible for a job opportunity, having a high goal to attain may have pushed them beyond their points of optimal arousal, resulting in performance decrements. Alternate explanations may be that after performing at their best levels on tasks prior to the job test, they were experiencing fatigue, or subjects may have questioned the worth of expending even more effort to quality for a vaguely defined prospective job having an indeterminate degree of certainty. From the performance data, both explanations might fit the results. In all of the treatment combinations beginning with low commitment to the study, decreases in speed were combined with increased accuracy. In conditions preceded by high commitment-to-study, decreased speed was associated with decreased accuracy as well, indicating that fatigue from trying their best in earlier treatments might be responsible. In the high study, high job, low goal cell the absence of pressure to perform may have allowed for subjects to continue to work under their peak arousal levels longer. Subjects who were enjoying challenging themselves on the typing task for their own satisfaction may have become disenchanted when given a difficult goal to try for.

A shortcoming of the present study was the failure to include any manipulation checks for the commitment to job manipulation. Manipulation checks following the commitment-to-study condition indicated that the manipulation was effective at that level, but checks were not used after the commitment-to-job treatment. When the study was designed, it was felt that because the commitment-to-job task was intended to appear unscheduled, the use of manipulation checks following it would seem inappropriate. Requiring an additional amount of brainstorming, unobtrusive and reliable checks would probably have been a worthwhile addition to eliminate the question of saliency for the last treatment condition.

The findings from this study thus far lend support to the assumption that commitment and performance are directly related. The present findings are concordant with those reported by Huber (1985), who found that difficult goals resulted in significantly lower performance when used with a difficult task. Locke et al (1981) acknowledged that at some level of task difficulty, imposition of a goal may erode rather than enhance performance. If a difficult goal creates anxiety, the ensuing state of conflict detracts from the single-minded pursuit of goal attainment. Huber's finding appears to support the alternative explanations offered in this discussion, suggesting that the increased arousal caused by goal setting facilitates performance when

a task is simple, through the elevation of its total task stimulation to a moderate level. As Atkinson's (1958) inverted U-function or the Yerkes-Dodson law (1908) would predict, a moderate level of stimulation is optimal for performance. In cases where the task is difficult, or perceived as such, arousal will already be high, so imposition of a difficult goal will push the individual into a higher, and dysfunctional level. Although Garland (1984) uses typing as an example of a simple task for which little ability is required, placing it on a similar level with card sorting or truck loading underestimates the difficulty of the typing task. Cooper (1986) noted that typing is one of the most complex cognitive and motor tasks performed routinely in the work place. It might well be that the typing task used in the current study was sufficiently complex to be considered difficult by subjects used in this research. As reported earlier, subjects used a keyboard machine on the average of once per week, and most were not highly trained. The subjects' lack of experience relative to skilled typists might account for the deterioration of performance in the high goal condition. Locke et al (1981) clarified the earlier form of the difficulty-performance relationship, adding that the function is linear for difficult, but attainable goals. Subjects might not have felt that the difficult goals imposed upon them were within reach.

Another objective of this study was to determine whether laboratory research using college student subjects has relevance for generalizing beyond the campus setting. Critics have claimed that college students are typically uninterested in and unmotivated by the tasks they are asked, or sometimes drafted, to become involved with. Ideally, this research should have utilized two samples, one representing college students, the other, their counterparts from outside the academic arena. Mean scores obtained with the measures used in this study were very similar to those reported for standardization samples (see Table 28). Interest inventory and motivation means were very similar, but standardization samples for those measures are not representative of the general population. The validation sample for the Planning Career Goals inventory was comprised of high school students, the lower standard deviation for the older college student sample may reflect increased self-awareness of avocation based on work experience. While it can not be argued that college students share similar values and beliefs as the general population, basic research conducted with them should be able to approximate results that could be expected from samples drawn from the population at large. In the present study, means for facet satisfaction scales were very close to those obtained from a sample of clerical and office workers.

Table 28

Comparison of Present Sample with Validation Samples for
Motivation and Satisfaction Measures

	Office Workers ^a		Current	
<u>Job Diagnostic Survey</u>				
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
General Satisfaction	4.50	1.09	3.35	1.62
Pay satisfaction	4.02	1.46	4.10	1.48
Security satisfaction	4.75	1.31	4.20	1.57
Social satisfaction	5.21	1.00	--	--
Supervisory satisfaction	4.89	1.41	--	--
Growth satisfaction	4.55	1.25	3.54	1.62
Internal Motivation	5.41	0.83	4.89	1.16
Autonomy	4.47	1.25	3.25	1.35
Feedback from the Job	4.61	1.27	5.46	1.22
Task Significance	5.29	1.11	4.42	1.33
<u>Motivation Analysis Test</u>	College		Present	
Unintegrated Score	5.2	--	4.95	1.98
Integrated Score	5.0	--	5.15	1.61
Total Career Motivation	4.5	--	4.49	2.35
<u>Planning Career Goals</u>	High School		Present	
Interest Inventory	41.56	23.28	42.46	18.37

Note: JDS sample N = 255 (Oldham et al, 1978, p. 34).
Social and supervisory satisfaction scales were not used in
the current study. MAT sample N = 566. PCG sample N = 676.

As for the assumption that college students are committed to performing on tasks in laboratory experiments, the results of this study indicate that they are not. Baseline measures from the control condition in this study did not differ substantially from scores obtained in the condition designed to discourage commitment, leading to the interpretation that students in the control condition were not giving their all on the task. A small but statistically significant improvement in performance was achieved when subjects were tested in the high commitment-to-study condition. Based only upon the first treatment, it would appear that performance differences among control, low, and high commitment groups were not large enough to be of practical significance.

When the second commitment treatment is considered, a different picture emerges. A much greater improvement over baseline performance was obtained when subjects participated in the high commitment-to-job condition after having participated in the high commitment-to-study condition. By performing well in the high commitment-to-job condition, subjects were led to believe that they would reap substantial benefits beyond the money, class participation credit, and intrinsic learning value of the control level and high commitment-to-study experiment. Clearly, researchers should always take the trouble to design interesting laboratory experiments that highlight the

significance, value, and importance of the research they are requesting cooperation with, but should acknowledge that the observed performance is probably closer to the lower limits of performance. In terms of generalizability, the combination of factors that contributed to the enhanced performance in the high commitment-to-job, high commitment-to-study group in this research would represent situations in which individuals are striving to accomplish a goal, not merely behaving in a casual manner. This combination of contextual variables, provided by cues made salient in the environment, should be a strong tool in bridging the attitudinal crevass between acceptance of and commitment to goals. Taken from one perspective, the results of this study indicate that to elicit the most conscientious participation, researchers must be able to offer much more than intrinsic value when conducting research if they are to observe a full range of possible performance levels. On the other hand, unless the aim of research is to explore the upper limits of performance, results of experiments using college student samples will serve well to describe a normal range of behavior under ordinary circumstances, while making efficient use of convenient resources.

It should be apparent that these same considerations apply to industry. The same methodological considerations applied in this study hold true for industry. There should be no question regarding the importance of performance

feedback for employees, and psychometrically sound, minimally biased appraisal systems should among the sources of such information. If it is important to create laboratory settings designed to induce short-term effects of interest and motivation, certainly work settings, in which effort is expected over long periods of time, would benefit from similarly stimulating considerations.

Hypothesis 2

Hypothesis 2, which involved the expectation that positive relationships would be found between motivation and facet satisfaction, was not fully supported by significant results in this study. Moderate significant correlations were noted of motivation with autonomy and task significance in the low commitment condition, but no other significant relationships were found relating motivation with satisfaction. It was expected that individuals having strong motivational needs would find greater reward value in the task for its ability to reduce their drive.

Hypothesis 3

Hypothesis 3 proposed that subjects having greater interest in the task would have an inherent investment in pursuing activities involving the task, and would be more

inclined to be committed to task performance. No significant correlations were found between interest and task performance, but because correlations for the high commitment-to-study group were more than twice the magnitude of the low commitment-to-study group, further research might be designed to explore this relationship. It is certainly possible for one to be interested in a task or project, but display various levels of performance because of strategies used for allocating resources or different levels of task-related abilities.

Hypothesis 4

Hypothesis 4 had suggested that subjects interested in the task would find the task more rewarding, consequently interest in the task would be positively correlated with facet satisfaction measures. This was generally supported, with the largest correlations observed in the high commitment-to-study condition for satisfaction with pay, security, growth, general satisfaction and internal motivation. Significant effects for general satisfaction, internal motivation, and task significance in the low commitment-to-study condition were also noted. It is interesting to note that correlations were significant not only for internal motivation, which would be expected to be related to qualities of the task, but for factors external

to the task itself. This suggests that instead of using the motivational technique of job enrichment, which adds variety and responsibility to jobs, positive affect in the workplace might be accomplished by simply using job enlargement techniques to make job more interesting, or by employing better selection techniques to match employees to positions. Employers having implemented job enrichment programs have faced confrontations with labor unions and employee coalitions wanting more pay to compensate them for added responsibility. Tasks can be interesting to individuals, even when much decision-making latitude or responsibility are not required. There have been no reports of complaints that work is too interesting.

Hypothesis 5

Satisfaction was significantly correlated with performance in the low commitment-to-study condition with feedback from the job and satisfaction with pay, lending support to Hypothesis 5, which predicted that satisfaction and performance would be correlated. Feedback from the job was the only facet for which a significant difference was found between the low and high commitment-to-study groups, and appears to have absorbed the weight of the decreased levels of performance in the low commitment group. Within the low commitment-to-job, low goal condition, moderate and

significant correlations were found for security, growth, and autonomy, and a strong correlation was observed within that condition between pay and performance. In the high commitment-to-job, low goal condition, a moderate relationship was found between security and speed, and a strong relationship was observed for autonomy and accuracy. The strongest relationships were observed for pay, security, and autonomy. Given that subjects were asked to project expectations of future satisfaction, based on their experience in the laboratory simulation, and that a consistent pattern of relationships was not found between satisfaction and performance, it is difficult to draw conclusions from these data. Further confounding the interpretation of these results is the problem that, by design, the satisfaction measures were administered before the commitment-to-job manipulations were enacted, and may not reflect attitudinal changes resulting from them. If interpretations are based only upon the commitment-to-study manipulations, it must be noted that three of the 48 possible correlations were significant at $p < .05$, which is very close to the number that could have been expected to be found by chance alone.

Hypothesis 6

Hypothesis 6 was concerned with the relationship between self-efficacy and performance by commitment levels. Pre-feedback self-efficacy significantly predicted speed in baseline performance, and across commitment-to-study and commitment-to-job conditions, but was a poor predictor of accuracy. It was expected that in cases where pre-feedback estimates were not good predictors of performance, the lack of predictive ability would be due to subjects being unaware when they were completing the pre-feedback efficacy estimates that they would be working on a typing skills task. It was also expected that if pre-feedback efficacy expectations were incongruent with performance, after reviewing performance feedback the post-feedback efficacy figures would be fairly accurate predictors of both speed and accuracy.

Post-feedback efficacy expectations were excellent predictors of speed for all commitment levels, but were weak estimators of accuracy. A post hoc test was performed to see if the commitment-to-study level might have differentially impacted upon subsequent estimates of efficacy, but no differential rates of change from pre- to post-feedback efficacy estimates as a function of commitment level were found. Across commitment levels, speed estimates were revised downward by 8.75 wpm, while accuracy estimates

were raised upward by 2.9%. The failure of accuracy estimates to be revised adequately after receiving detailed feedback may be attributed to the tendency that individuals have to overestimate low probabilities and underestimate high probabilities (Huber & Neale, 1986). Subjects tended to underestimate their accuracy ability, even after receiving detailed feedback, perhaps because the initial estimate of efficacy was still salient in memory, thus maintaining a strong anchoring effect. Although new information (feedback) results in adjustments away from the initial estimate, the adjustments are usually insufficient (Huber & Neal, 1986).

Hypothesis 7

Hypothesis 7, that self-efficacy would be related to performance across levels of commitment was supported by significant effects for both pre-feedback estimates predicting speed across levels of commitment-to-study condition, and post-feedback speed estimates significantly predict performance across levels of the commitment-to-job condition. These findings differed from those of Huber and Neale (1986), who found that efficacy expectations were significantly related to goal commitment but not to performance. The failure of accuracy estimates to predict performance might stem from the lack of negative

consequences resulting from making mistakes on the laboratory task. On the computer typing task, mistakes could not be corrected, but there would have been no reason to do so, since a paper copy of the transcript was never printed. The observed bias away from accuracy and toward speed may be a reflection of our culture's longstanding attitude of allowing for an arbitrarily determined allowable error rate in both the service and information sector, perhaps recognizing the adaptation of work habits in an age when computer-stored information is easily corrected without negative consequences. Further research imposing penalties for mistakes would help to determine if attention to efficacy is more a function of situation or cultural bias for specific tasks.

Directions for Future Research

Now that evidence exists for the ability of the investment model to allow for the controlled manipulation of commitment levels in subjects, earlier characteristics of goal setting programs can be replicated, at long last ending the speculation about the effects of such properties as task difficulty, assigned versus participatively set goals, need-for-achievement, locus of control, and incentive conditions.

Summary and Conclusions

The investment model fared well in setting up the desired levels of commitment, as indicated by the degree of significance of the manipulation checks. In field research, there have been doubts expressed that the investment model is a good predictor of commitment to organizations, as measured by employee turnover (Steel & Griffeth, 1989). The investment model predicts that as the perceived number of employment alternatives increases, turnover should increase with all other factors being equal. To date, correlations between perceived labor-market statistics (such as unemployment rates and perceived job availability) have been poor predictors of voluntary turnover. Steel and Griffith (1989) suggest that this discrepancy is the result of using broad regional labor data and correlating it with perceived job prospects for specialized subgroups, such as nurses or teachers. The investment model may work in the laboratory but not in the field because of the greater salience of manipulated components, such as alternatives. This suggests that when employees are made aware of information relevant to their jobs, they may be expected to exhibit a rate of job turnover in accordance with actual labor market data, and expected from considering elements of the investment model of commitment.

The investment model may offer opportunities for organizations to effectively negotiate with a growing

segment of the work force who may challenge conventional methods of dealing with work motivation and turnover. Contingent workers, including both leased and part-time workers, were estimated in 1987 at 18 million (25% of the total labor force) and earn an average hourly rate of \$4.17, or slightly more than half of what comparably skilled full-time workers would receive (Edsall, 1987). Companies receive tax breaks for the indirect staffing of their business needs by laying off incumbents, who are hired in turn by newly created subsidiaries of the parent companies. The subsidiaries lease the contingent workers back to the organization. Contingent workers are also called the "disposable work force" (Pollock & Bernstein, 1987), an appropriate term since minimal investments are made in the workers. Contingent workers seldom get benefits that would typically be given to full time workers performing the same function, and this enables companies to trim operating costs and stay competitive. Businesses spend less money for training and development of disposable (contingent) workers who, by definition are not expected to stay in their jobs long. Unfortunately, this strategy runs counter to the work-ethic tradition of unspoken contracts between individuals and their employers --that employees will remain loyal to the company in exchange for job security-- and threatens to promote mediocrity instead of excellence. At the human resource and planning level, organizations must

not underestimate the importance of the first impressions that they make on their employees, which could have lasting attitudinal consequences impacting on performance. Commitment could be eroding because of a combination of other factors that characterize the current corporate climate.

For example, in the early 1980's managers took notice of Japan's gain in productivity which was credited in part to mutual loyalty existing between organizations and individuals (Pascale & Athos, 1981). This notion of organizational loyalty or commitment then became the focus of much research in recent years (Klenke-Hamel, 1982; Mento, Steele, & Karren, 1987). The long-term perspective with which organizational commitment is studied is comparable to a measure of organizational longevity for the human resource specialists who need reliable predictors of turnover. At the same time, managers responsible for motivating the contingent workforce are faced with a short-term problem: individuals' commitment to their immediate tasks.

The book Future Shock (Toffler, 1970) chronicled the accelerated rate of forces that are coming together to shape societal trends. Some authors are choosing to call the current era a "New Age" (Hickman & Silva, 1986) for its similarities to the relative increase in rate of change experienced during the Renaissance. New Age texts emphasize that organizational health can be maintained by

focusing on organizational commitment and concomitant task commitment (Calano & Salzman, 1987; Hickman & Silva, 1984; Brunsson, 1985).

Minorities and women participating more fully and at higher levels within the work force are fueling an explosion of cultural diversity, and computerized information networks are placing knowledge within reach of lower level workers who have never before been granted access to important business information. The combination of cultural diversity and increased access to information makes this generation more worldly than any other generation preceding them, and results in individuals having greater awareness of alternatives which may be pursued along with the ability and know-how to opt for them. In terms of commitment, the awareness and desire to pursue available options means that there is a greater likelihood that people will redirect their effort more readily than in the past, when given information suggesting that change would be desirable. These conditions mean that the investment model may be used for developing survey techniques for projecting turnover within organizations by tapping into employees' perceptions of the rewards, costs, alternatives, and investments that they associate with the job. In organizations needing to impose layoffs, employees who remain committed to staying with the organization can be given information regarding alternatives, costs, and benefits to effectively use

cognitive restructuring to ease workers into the job market.

As some organizations struggle to decline in a healthful way, others are struggling to either expand or remain stable in the face of a shrinking labor force and increased competition from global competitors. Organizations accustomed to having virtually limitless resources, loyal employees, and enough time to meet the challenges imposed by rapid change are facing finite resources, new technology, and the pressures of volatile market conditions (Drucker, 1986; Hetzner, Eveland, & Tornatzky, 1986).

Many service intensive industries, such as supermarket and fast food franchisers who once relied on a seemingly endless supply of teenage workers are finding it difficult recruit new hires as the Baby Boom matures. These organizations are being forced to increase wages in many regions where labor is scarce. Health care enterprises are similarly concerned that the declining birth rate coupled with the increasing number of elderly people in need of personal care is creating a long-term shortage of available workers.

Understanding commitment, at the organizational level and at the more immediate task level may be one way in which organizations can hold onto their human resources in coming years. New entrants into the labor force are not as likely as the generations before them to develop organization commitment. Corporate activities involving psychologically

volatile activities like mergers, acquisitions, and divestitures have created an acute awareness in the labor force of the need for even greater geographic and lateral career mobility as well as for the adaptability to confront new work situations (Brophy, Walsh, Kalb, & Kyle, 1987; Gumbel & Sease, 1987; Kanter & Seggerman, 1987; Karmin et al., 1987; Kennedy, 1987).

Perhaps a result of the increased choices and mobility that individuals have, people in today's work force simply do not hold the same views about organizational commitment as they did prior to the New Age.

If the investment model can enhance performance of college student subjects, it also holds implications for industry when individuals' best efforts and loyalty are desired. In the private sector, workers should be reminded of their role within the context of the organization, and of alternative job opportunities (or absence of them). Ratios of the cost of their participation (shift work, overtime, risks) to the rewards received (insurance, personal, and sick leaves, paid vacations), and the value gained from their association with the employer that is transferable to other situations (interpersonal and technical skill training) can be made salient through informal and formal communication networks.

Another setting for which consideration of the investment model of commitment holds insight is in

employment counseling for the economically disadvantaged. Users of public welfare services are processed as quickly as possible through necessary paperwork, and case workers seldom have the time to explain more than what is required for processing applications. Many public assistance clients are unaware of available alternatives and their chances of success at those options. When job training and remedial education programs are offered to them, or when they feel forced to participate in those programs, performance can hardly be expected to reach levels adequate to instill confidence and further efficacy. In a fashion similar to college students in this study who felt they must participate in research, welfare clients are assigned difficult goals in an already difficult and arousing situation. It stands to reason that individuals having low skill and self-esteem levels will approach job tests and employment interviews with low expectations of success. Low-cost programs emphasizing components of the investment model might garner commitment from clients to exert greater effort in training programs, thereby increasing self-efficacy expectations and ending dependence on public support.

Bandura (1982) discussed the concept of collective efficacy, or the aggregate confidence and expectancies that organized groups hold regarding social reform. With recent large scale changes occurring in the alignment and balances

of political boundaries, military power, and economies, research focused on individual and collective efficacy in terms of socio-political goals and degree of change accomplished would be an interesting direction for continuing similar lines of research.

As increased pressure forces organizations to become better at managing their human resources, perhaps this study, which began as 'a case of semantics' regarding the differences between acceptance and commitment, will provide insight to managers needing to bring their subordinates' performance to new standards, help in the outplacement adjustments of retiring and unnecessary workers, and retain employees deemed valuable to their organizations. The information age brings with it the power for individuals to reassess and redirect their allegiances, and organizations will do well to remember that task or career commitment is conceptually distinct from organizational commitment, and dependent on both the information one receives and the way it is processed.

Ethical considerations cannot be ignored regarding the ways in which investment model information is made salient and to whom it is directed. Human subject review committees, who oversee the ethical concerns of academic research, do not, for the most part, object to the use of deception unless sensitive social issues are the subject of inquiry. For example, studies which looked at sensitive

social issues (reverse discrimination based on sex or race) that involved deception were seen as more damaging than those looking at less sensitive issues (e.g, discrimination by weight and height) in a study conducted by Ceci, Peters, and Plotkin (1985). The current study did not result in the subjects' feeling as if they had been taken advantage of or humiliated in any way. During exit interviews, they expressed gratitude for the opportunity to learn more about their own skill development, and were given a source to contact regarding actual employment. Full debriefing in the study would have jeopardized the pool of naive subjects had they come into the lab knowing that there were no real job opportunities there. Industry does not have such stringent considerations when it comes time to implement new strategies. Once sold on a popular motivational technique, ethical impacts are rarely considered until damage has been done. In the private sector, great care must be made, preferably by committee, of the approach by which components of the investment model are selected and made salient to workers. On the surface, it would seem beneficial to use the investment model to retain valued employees while simultaneously helping others to prepare for retirement or outplacement. Beneath the surface, it is likely that litigation would eventually result if investment model information were differentially applied in such a way that it violates federal Equal Employment Opportunity Commission

guidelines. Unless a healthy climate of trust is present in the organization before such investment model information is made salient, the information disseminated by management might be perceived as propaganda by employees, and ruin the effectiveness of otherwise sound motivational programs. The motivational impact of investment information appears powerful, and the ethical responsibility for its industrial applications must not be taken lightly. When used conscientiously to control quality and profitability, managers will want to make the time to elicit commitment.

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APPENDICES

A

Informed Consent Form

OLD DOMINION UNIVERSITY
Department of Psychology

Project: The Right Type
Investigator: Brian Kaufman

This is to certify that I, _____,
hereby agree to participate as a volunteer in a scientific
investigation as a part of the educational and research
programs at Old Dominion University under the supervision of
Dr. Albert S. Glickman.

The investigation and the nature of my participation have
been described and explained to me, and I understand the
explanation. I understand that I will be asked to answer a
series of questionnaires about my interests and abilities
related to my own employment experiences.

I have been given an opportunity to ask questions, and all
such questions have been answered to my satisfaction. I am
aware that the exact nature of this study will be explained
to me during a debriefing at the end of the study.

I also understand that any data or answers to questions will
remain confidential with regard to my identity.'

I further understand that I am free to withdraw my consent
and terminate my participation at any time, without penalty.

I have been informed that I have the right to contact either
Brian Kaufman, 622-7638, Dr. Albert Glickman, 683-4244, or
Dr. C.J. Adkins of the Psychology Department Committee for
the protection of Human Subjects, 683-4494, and/or the
University Committee should I wish to express any opinions
regarding the conduct of this study.

Date: _____
Signature: _____

Date of Birth: ____/____/____ Witnessed by: _____

B

Tidewater Area Skills Survey: Labor Pool Availability
and Work History Form

Name_____

City of residence_____

College Major_____

Are you currently employed? Yes_____ No_____

If yes, are you employed full_____ or part- time_____?

Circle the days you could be available to work:

Sun Mon Tue Wed Thu Fri Sat

Check the shifts that you are available to work:

Days _____ Evenings_____ Weekends_____

I prefer to work: Part-time_____ Full-time_____

I am currently interested in employment opportunities:
Yes_____ No_____

What is the maximum length of commute you would consider?

Time_____ (minutes) Distance _____ (miles)

Have you ever had a security clearance? Yes_____ No_____

How many words per minute do you type? _____ wpm

How accurate is your typing performance? _____ % accurate

Do you have your own transportation? _____ YES _____ NO

** Please continue on the next page **

Using the scale below, indicate how frequently you work with some kind of computer or typewriter keyboard:

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
Not much, a few times each year		once or twice a month		once or twice each week		a little each day

List your recent employment experiences below: (most recent first)

Type of Business: _____

Position
held: _____

Salary: _____ weekly/hourly

Type of Business: _____

Position held: _____

Salary: _____ weekly/hourly

Type of Business: _____

Position held: _____

Salary: _____ weekly/hourly

C

Commitment to Study Scripts

High Commitment condition:

TIDEWATER AREA SKILLS SURVEY

Background and Instructions

Steady growth in Hampton Roads enables local municipalities of this area to enjoy an expanding economic base and very low unemployment rates. While such conditions of growth are beneficial to those entering the job market, the increased demand for skilled labor presents a problem for many employers. Competing for a limited amount of available labor often means difficulty filling job openings. Traditionally, employers have sought job applicants who have the basic skills necessary for the position available and then trained newly hired workers in the specific demands of the job. Developing and then maintaining training programs is costly.

The Tidewater Area Skills Survey is a regional effort to determine such training needs by assessing various levels of skill held by the local labor force. This information will then be made available to both current and prospective employers needing to make hiring decisions and develop their human resource strategies. The diversity and experience of the skilled labor force in Hampton Roads are two reasons prospecting companies choose this region over many others.

The information you provide regarding your personal interests and abilities will be of great assistance in detailing the present and future training needs of the area's labor force. Your participation in this project is greatly appreciated, and your responses to today's questions are entirely confidential.

Phase Three: Keyboard Skills

They may now be taken for granted, but word processors and computer work stations were a high-tech innovation when first introduced to the work place in the early 1980's. Now many users with little or no experience are finding computers on their desks and work benches. At the same time, employers faced with the challenge of engaging inexperienced staffers in a working relationship with their computers. Keyboard skills learned on the typewriter are now basic requirements for computer applications such as word processing, desk-top publishing, and data-base management. As computers move up the hierarchy of jobs in the business world, managers are finding that technology is ahead of the work force. Now, existing keyboard skills must be examined to determine the nature and extent of training that is necessary and optimal.

The Tidewater Area Skills Survey is assessing keyboard experience and skills among college educated entrants into

the work force. We expect to find a wide range of skill levels among the participants in this study. Past experience, finger dexterity, visual acuity, reading level, and even interest will influence one's speed and accuracy on the keyboard tasks.

Today's experiment is actually a simulation of a common situation encountered at all levels in the work force. As employers seek to stay competitive by getting the most value from each worker, they frequently assign staff members to a variety of projects requiring many different skills. Sometimes this means asking an employee to help out in a different department that is under an unusually heavy workload. It may also entail assisting a co-worker who can not keep up with his/her work or is away on vacation, maternity, or military leave. At other times, growth within a company necessitates testing new systems and procedures, and each worker gains some additional responsibilities. Many employers believe that employees should work at a variety of tasks within the organization to gain a better understanding of the company and its mission.

In the past, it was common for staff members to be trained in only one task. Consequently, all personnel needed to be on duty at the same time for the work to get done. Fortunately, such rigidity in scheduling is becoming a thing of the past. Now, cross-training of skills makes it possible for men and women to remain employed while

continuing their formal education or sharing responsibility for young children or elderly parents. Limited career advancement was another drawback inherent in training employees to perform just one task. People often retired from the same positions they had held when first entering the work force. Career paths based on multiple skills training allow opportunities for personal and economic growth that had not existed before.

Cultivating multiple skills within each employee does more than just improve productivity. Greater flexibility in staffing and scheduling accommodates the quickly changing needs of today's employers and staff alike. This makes the work place less stressful and broadens the horizons of valuable human resources.

A common experience for today's worker involves reporting to a work station and receiving a packet of standardized instructions. The instructions are easily understood by anyone needing to get the job done with minimal input from other staff members. When the job is completed, the worker then resumes his/her usual responsibilities or moves on to another assignment. This is especially true for temporary workers, the fastest growing segment of the contemporary work force. These workers, "the contingent work force," hold 30% of all jobs today ranging from file clerks to physicians. They choose when and where they want to work,

and are in great demand as companies realize the benefits of hiring contingent help.

To make this simulation as real as possible, try to follow the instructions closely without asking questions of the experimenter. He/she will be able to view your progress on the task on another computer monitor, and will help you if any problems arise. Please hold any other questions you may have until after you have completed this task.

Instructions: Please read these carefully!!

1. When you begin today's keyboard skills tests, you will be presented with a display of several lines of text. You are to type the text just the same as it appears on the screen. A small triangular cursor will move along right beneath the letters that you are supposed to type. If you finish all of the text before the time is up, the text will start over at the beginning and will keep appearing until the time is up.
2. These tests do not permit you to back up or delete letters to correct mistakes. As you type, the triangular cursor will appear beneath the next letter or space you need to type. If you accidentally hit a wrong key or inadvertently touch the space bar, an arrow will be displayed under the letter (or space) that was 'mistyped'. Remember that you cannot go back to correct these errors. Just continue to type the remaining text as best as you can.

3. Use this keyboard as you would use a traditional typewriter keyboard. You will not need to use any of the keys marked with a red dot. The carriage return function should be done automatically when you come to the end of the line. If new words do not appear on the screen when you reach the end of the line, press the space bar once or twice, until new text appears.

4. You will now go through a series of steps leading up to a standard typing test used by many employment agencies in this area. It is important that you are permitted to fully warm up, because only then will we get a realistic estimate of your typing skills. You will begin by just getting familiar with the feel of the keyboard, then you will be given some warm-up exercises before taking the actual test. Begin your task now by carefully following these instructions:

- a) Press the letter 'L'. (The computer will say "Enter minutes")
- b) Press the number '2'.
- c) Press the letter 'C'. (Computer will say "Standard, All keys, or Custom Test?")
- d) Press the letter 'C' again. Do not go on until the computer stops "humming". Computer will now say, "Enter name". Go to step 'e')
- e) Press the letter 'F'.

f) Press the 'enter' key. (This key is marked with a blue dot)

g) Press the 'enter' key again. STOP, and continue reading.

You should now see how the text will appear on the screen, with the small triangular cursor beneath the first letter to be typed. When you type the first letter, the timer will begin counting. This first test is only to give you an opportunity to get the feel of the keyboard. You may now begin by typing the first letter. When the time is up, the computer will say "End of test". Now, press the letter L, then the number 3 to change the time to three minutes.

Press enter to begin a keyboard warmup. At the end of three minutes, the computer will say "End of test, press enter to begin." Do Not Press Enter! Go To Step 5.

5. This next exercise will be for warming up and refreshing your skills. It will be longer than the previous test, and more like real sentences.

- a) Press the letter 'L'.
- b) Press the number '5'.
- c) Press the letter 'C'.
- d) Press the letter 'C' again.
- e) Press the letter 'W'.
- f) Press the 'enter' key.
- g) Press the 'enter' key again. STOP.

You now see the text for your five minute warm-up test. You may take a moment to look over the text and see where letters are located on the keyboard. When you are ready, begin by typing the first letter. When over, go to step 6. 6. This next test will come even closer to the kind of test that would be given at an employment agency. This will be your last practice before the standard test. This test will last five minutes.

- a) Press the letter 'L'.
- b) Press the number '5'.
- c) Press the letter 'C'.
- d) Press the letter 'C' again.
- e) Press the letter 'P'.
- f) Press the 'enter' key.
- g) Press the 'enter' key again. STOP.

You now see the text for the practice test. The timer will begin when you type the first letter. When you finish this test, go on to the next page.

7. By now you should be getting the feel for the keyboard and an understanding of how the computer works. This is the way that most of the new electronic typewriters work, and your testing experience here should help when you need to prepare your school papers. [high investment]. At this point, it is a good opportunity to tell you a little more about the Tidewater Area Skills Survey. You may like to flex and rest your fingers while you read this section.

You may notice that this testing is different from most other psychology experiments. It would be difficult for students to find other opportunities from which to benefit so much for putting in so little effort [alternatives]. Because this study is basically like a "snapshot" of student skill levels, and because so much of your attention is demanded during this testing component, follow-up visits to the lab, daily record-keeping, and new acquisition of added skills are unnecessary for your results to have value [cost]. Even more important is the fact that you need not risk embarrassment in front of your peers as often happens in experiments, or submit yourself to physically or morally controversial treatments [alternatives]. Most participants have reported that although this testing process takes up almost two hours that would otherwise be used for studying or relaxing, it is a worthwhile investment [investment]. Unlike other experiments, this one looks at experiences that you would expect to really encounter in the work place

[investment, alternatives]. Being in control at a computer work station has enhanced the self-confidence of many participants when handling new situations, and viewing detailed results of typing performance has shown them how to quickly refine their skills [reward]. Knowledge of one's own skills is a proven selling point for individuals going on to market their qualifications for various job opportunities [reward].

You will receive 2 credits for participating, and data generated in this performance assessment laboratory will benefit your community by pinpointing specific training needs [extrinsic, intrinsic reward] . This will enable Hampton Roads businesses to compete more effectively, attract new enterprises, and cultivate more economic opportunities for its labor force [intrinsic reward].

You are now ready to take the standard test preferred by many local personnel agencies:

- a) Press the letter 'C'.
- b) Press the letter 'C' again.
- c) Press the letter 'S'.
- d) Press the 'enter' key.
- e Press the 'enter' key again. STOP.

This is the text for the standard five-minute test. When you type the first letter, the timer will begin. When the time limit is up, the computer will say "End of test". At this time, go on to step 8.

8. Review the analysis of your typing by first looking at the upper right section of the computer monitor. This section will display your words per minute and your accuracy rates for the test that you just took. For a more detailed look at your error patterns:

Press 'D'- These graphs display your speed and accuracy by hand and keyboard row.

Press 'Enter'- These graphs show performance by each (blue key) finger.

Press 'Enter'- These graphs show performance for each letter.

Press 'Enter' twice. These graphs explain your most frequent error patterns.

Press 'Escape' key (green) to exit the program.

9. Now, open the top right-hand drawer and take out a questionnaire packet. Read the instructions, and complete the questionnaires.

When you are finished, please let the experimenter know so that you may get your credit slip signed and other paperwork completed.

Thank you for your cooperation in this study.

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Low Commitment-to-study condition:

TIDEWATER AREA SKILLS SURVEY

Background and Instructions

Steady growth in Hampton Roads enables local municipalities of this area to enjoy an expanding economic base and very low unemployment rates. While such conditions of growth are beneficial to those entering the job market, the increased demand for skilled labor presents a problem for many employers. Competing for a limited amount of available labor often means difficulty filling job openings. Traditionally, employers have sought job applicants who have the basic skills necessary for the position available and then trained newly hired workers in the specific demands of the job. Developing and then maintaining training programs is costly.

The Tidewater Area Skills Survey is a regional effort to determine such training needs by assessing various levels of skill held by the local labor force. This information will then be made available to both current and prospective employers needing to make hiring decisions and develop their human resource strategies. The diversity and experience of the skilled labor force in Hampton Roads are two reasons prospecting companies choose this region over many others.

The information you provide regarding your personal interests and abilities will be of great assistance in detailing the present and future training needs of the

area's labor force. Your participation in this project is greatly appreciated, and your responses to today's questions are entirely confidential.

Phase Three: Keyboard Skills

They may now be taken for granted, but word processors and computer work stations were a high-tech innovation when first introduced to the work place in the early 1980's. Now many users with little or no experience are finding computers on their desks and work benches. At the same time, employers faced with the challenge of engaging inexperienced staffers in a working relationship with their computers. Keyboard skills learned on the typewriter are now basic requirements for computer applications such as word processing, desk-top publishing, and data-base management. As computers move up the hierarchy of jobs in the business world, managers are finding that technology is ahead of the work force. Now, existing keyboard skills must be examined to determine the nature and extent of training that is necessary and optimal.

The Tidewater Area Skills Survey is assessing keyboard experience and skills among college educated entrants into the work force. We expect to find a wide range of skill levels among the participants in this study. Past experience, finger dexterity, visual acuity, reading level,

and even interest will influence one's speed and accuracy on the keyboard tasks.

Today's experiment is actually a simulation of a common situation encountered at all levels in the work force. As employers seek to stay competitive by getting the most value from each worker, they frequently assign staff members to a variety of projects requiring many different skills. Sometimes this means asking an employee to help out in a different department that is under an unusually heavy workload. It may also entail assisting a co-worker who can not keep up with his/her work or is away on vacation, maternity, or military leave. At other times, growth within a company necessitates testing new systems and procedures, and each worker gains some additional responsibilities. Many employers believe that employees should work at a variety of tasks within the organization to gain a better understanding of the company and its mission.

In the past, it was common for staff members to be trained in only one task. Consequently, all personnel needed to be on duty at the same time for the work to get done. Fortunately, such rigidity in scheduling is becoming a thing of the past. Now, cross-training of skills makes it possible for men and women to remain employed while continuing their formal education or sharing responsibility for young children or elderly parents. Limited career advancement was another drawback inherent in training

employees to perform just one task. People often retired from the same positions they had held when first entering the work force. Career paths based on multiple skills training allow opportunities for personal and economic growth that had not existed before.

Cultivating multiple skills within each employee does more than just improve productivity. Greater flexibility in staffing and scheduling accommodates the quickly changing needs of today's employers and staff alike. This makes the work place less stressful and broadens the horizons of valuable human resources.

A common experience for today's worker involves reporting to a work station and receiving a packet of standardized instructions. The instructions are easily understood by anyone needing to get the job done with minimal input from other staff members. When the job is completed, the worker then resumes his/her usual responsibilities or moves on to another assignment. This is especially true for temporary workers, the fastest growing segment of the contemporary work force. These workers, "the contingent work force," hold 30% of all jobs today ranging from file clerks to physicians. They choose when and where they want to work, and are in great demand as companies realize the benefits of hiring contingent help.

To make this simulation as real as possible, try to follow the instructions closely without asking questions of

the experimenter. He/she will be able to view your progress on the task on another computer monitor, and will help you if any problems arise. Please hold any other questions you may have until after you have completed this task.

Instructions: Please read these carefully!!

1. When you begin today's keyboard skills tests, you will be presented with a display of several lines of text. You are to type the text just the same as it appears on the screen. A small triangular cursor will move along right beneath the letters that you are supposed to type. If you finish all of the text before the time is up, the text will start over at the beginning and will keep appearing until the time is up.
2. These tests do not permit you to back up or delete letters to correct mistakes. As you type, the triangular cursor will appear beneath the next letter or space you need to type. If you accidentally hit a wrong key or inadvertently touch the space bar, an arrow will be displayed under the letter (or space) that was 'mistyped'. Remember that you cannot go back to correct these errors. Just continue to type the remaining text as best as you can.
3. Use this keyboard as you would use a traditional typewriter keyboard. You will not need to use any of the keys marked with a red dot. The carriage return function should be done automatically when you come to the end of the

line. If new words do not appear on the screen when you reach the end of the line, press the space bar once or twice, until new text appears.

4. You will now go through a series of steps leading up to a standard typing test used by many employment agencies in this area. It is important that you are permitted to fully warm up, because only then will we get a realistic estimate of your typing skills. You will begin by just getting familiar with the feel of the keyboard, then you will be given some warm-up exercises before taking the actual test. Begin your task now by carefully following these instructions:

- a) Press the letter 'L'. (The computer will say "Enter minutes")
- b) Press the number '2'.
- c) Press the letter 'C'. (Computer will say "Standard, All keys, or Custom Test?")
- d) Press the letter 'C' again. Do not go on until the computer stops "humming". Computer will now say, "Enter name". Go to step 'e')
- e) Press the letter 'F'.
- f) Press the 'enter' key. (This key is marked with a blue dot)
- g) Press the 'enter' key again. STOP, asnd continue reading.

You should now see how the text will appear on the screen, with the small triangular cursor beneath the first letter to be typed. When you type the first letter, the timer will begin counting. This first test is only to give you an opportunity to get the feel of the keyboard. You may now begin by typing the first letter. When the time is up, the computer will say "End of test". Now, press the letter L, then the number 3 to change the time to three minutes. Press enter to begin a keyboard warmup. At the end of three minutes, the computer will say "End of test, press enter to begin." Do Not Press Enter! Go To Step 5.

5. This next exercise will be for warming up and refreshing your skills. It will be longer than the previous test, and more like real sentences.

- a) Press the letter 'L'.
- b) Press the number '5'.
- c) Press the letter 'C'.
- d) Press the letter 'C' again.
- e) Press the letter 'W'.
- f) Press the 'enter' key.
- g) Press the 'enter' key again. STOP.

You now see the text for your five minute warm-up test. You may take a moment to look over the text and see where letters are located on the keyboard. When you are ready, begin by typing the first letter. When over, go to step 6.

6. This next test will come even closer to the kind of test that would be given at an employment agency. This will be your last practice before the standard test. This test will last five minutes.

- a) Press the letter 'L'.
- b) Press the number '5'.
- c) Press the letter 'C'.
- d) Press the letter 'C' again.
- e) Press the letter 'P'.
- f) Press the 'enter' key.
- g) Press the 'enter' key again. STOP.

You now see the text for the practice test. The timer will begin when you type the first letter. When you finish this test, go on to the next page.

7. By now you are probably experiencing some finger or hand fatigue and discomfort [cost]. Because this kind of fatigue and eye strain is very common when working on this kind of task, use this next section like an intermission [satisfaction]. Reading this will help prevent the headaches that staring at a computer screen can cause, and it give any finger cramps some time to go away [cost]. It is a good opportunity to tell you a little more about the Tidewater Area Skills Survey. Flex and rest your fingers while you read this section.

You will notice that this testing is very similar to most other psychology experiments [alternatives]. These 'experiments' offer opportunities for students to derive benefits even though they require almost no effort [alternatives]. This study is just a brief look at student skill levels, but your test results will be of interest to the statisticians to compile labor market data. [low investment, low reward]. Even more important is the fact that the embarrassment of performing poorly on these tasks finally motivates many students to work hard at trying to better their skills [cost]. Most participants have reported that although the tasks take hardly any time, participation in the study is still a worthwhile investment [low investment]. The frustration of being alone at a computer work station has made some students question their ability to handle new work situations, but after viewing detailed

results of their typing performance they realize that some people are just not meant to be involved in this kind of work [**low intrinsic reward**]. This kind of knowledge of your skills is a selling point for when you go on to market your qualifications for various jobs.

You will receive 2 credits for participating [**extrinsic reward**] . Scientists have already collected more than enough data to explain how people respond to the automation of the work place, but while grant money remains your results will allow us to throw some more of evidence into the hopper [**low intrinsic reward**]. It was hoped that these results would benefit the region by attracting new enterprises and cultivating opportunities for its labor force, but recent changes in projected economic growth for and a general lack of interest by the business sector have made many of the results of our research unnecessary for the near future **low intrinsic reward**].

You are now ready to take a standard five-minute typing test.

You are now ready to take the standard test preferred by many local personnel agencies:

- a) Press the letter 'C'.
- b) Press the letter 'C' again.
- c) Press the letter 'S'.
- d) Press the 'enter' key.
- e Press the 'enter' key again. STOP.

This is the text for the standard five-minute test. When you type the first letter, the timer will begin. When the time limit is up, the computer will say "End of test". At this time, go on to step 8.

8. Review the analysis of your typing by first looking at the upper right section of the computer monitor. This section will display your words per minute and your accuracy rates for the test that you just took. For a more detailed look at your error patterns:

Press 'D'- These graphs display your speed and accuracy by hand and keyboard row.

Press 'Enter'- These graphs show performance by each (blue key) finger.

Press 'Enter'- These graphs show performance for each letter.

Press 'Enter' twice. These graphs explain your most frequent error patterns.

Press 'Escape' key (green) to exit the program.

9. Now, open the top right-hand drawer and take out a questionnaire packet. Read the instructions, and complete the questionnaires.

When you are finished, please let the experimenter know so that you may get your credit slip signed and other paperwork completed.

Thank you for your cooperation in this study.

D

Texts for Typing Tests

Text for Commitment-to-study condition:

One of the sad things in life is that many times friction may be eroding at its base. It does not have to be visible or audible in order to be dangerous. One little spark of friction can trigger chain reactions that upset the entire balance of an office, a business, or a friendship. Friction can develop between friends, between employer and employee, between teacher and student. It may manifest itself through attitudes, conversation, letters, or facial expressions. Often it can have a personal cause, such as friction between what is inside of us and what is outside of us; between what we are doing and what we would like to be doing, between what we are saying and what we would like to be saying.

What causes friction in a home, factory, or office? Before a dispute breaks out, there is usually a specific problem and a general feeling of discontent present in the air. If the feeling of discontent can be kept low, all parties will have a much better chance to work out the problem to the benefit of all. Therefore, the best time to use tact is before an individual has the chance to think he has been mistreated. Do not wait for the squeak that causes us to realize that friction is present to apply the oil, but

rather try to anticipate problem areas and eliminate the cause. Because of our personal quirks, all of us are inclined to argue when things seem to go against our wishes. Nevertheless, envy, impatience, rumors, and jealousy remain the most prolific causes of friction between mankind today just as they did four or five hundred years ago.

There are many useful applications of friction in mechanics and physics, but friction between people who are living and working together is wasteful of their time and energy. One way in which friction can be reduced is to adjust our behavior to the world as it is, by learning how it works. Part of this plan is to look favorably on the ideas of those with whom we live and work. If we are to progress through life without friction, we must develop the art of making allowances for people's eccentric acts. Personalities must be forgotten and instead we must think of major goals: the plans to be made, things to be done, and the crisis to be eliminated. There is a certain deep-down satisfaction in dealing with people's problems.

(word count: 413)

Text for Commitment-to-Job/Goal Level condition:

The complaints at present are severe pain and weakness over both of the extremities. The patient has had progressive bilateral foot drop and sensory changes in the aspect of both lower extremities since December, 1987. She previously had been worked up elsewhere in great detail with a diagnosis of peripheral neuropathy. She has been unable to mover her foot in plantar or dorsiflexion. She has complained of numbness of the feet up the ankle at midcalf, bilaterally. She has constant pain which she described as burning, which she feels has been getting worse. She is admitted this time for a repeat myelography and attempted new drugs for pain relief.

Under satisfactory general anesthesia and in the supine position, the patient was prepped and draped in the usual manner. A right subcostal incision was made and the right rectus muscle was divided transversely. In dividing the abdominal wall tissues, a considerable amount of inflammatory edema was noted. On entering the peritoneal cavity, a large amount of pus was found immediately and after this was evacuated an abscess cavity formed by the anterior abdominal wall and omentum and hepatic flexure of colon surrounding the gallbladder was easily entered. This further evacuated of pus, and the gallbladder was defined. It was swollen and edematous with a necrotic area of

perforation at the dome. Due to the access cavity, it was relatively free of adhesions to surrounding tissues, and it was elected to remove it in a retrograde fashion.

The cystic duct was identified to a point approximately one cm. from the common bile duct. Two large Weck clips were placed on the cystic duct and this was divided, leaving a stump approximately 1/2 cm. long. The gall bladder was then removed from the table. Hemostasis was secured with the electrocautery. Argyle sump tubes were placed in the subhepatic and right subdiaphragmatic area accompanied by 1-inch Penrose drains. A #22 Red Robinson catheter was likewise placed in the subhepatic space for later irrigation with triple antibiotic solution. All of these drains were led out through separate lateral stab wounds. The right upper quadrant was then irrigated freely with large amounts of saline and approximately 30 cc. of diluted triple antibiotic solution were instilled into the right subhepatic space. The wound was then closed with interrupted 00 cotton sutures in the posterior rectus fascia and peritoneum. The anterior rectus fascia and fascia of the external and internal oblique were likewise closed with interrupted 00 toudede.

(word count: 412)

E

Keyboard Confidence Questionnaire

You have just experienced the situation encountered by more and more numbers of workers. You came into a work place, and found that your task involved your ability to follow instructions and then enter information into a computer. We can no longer tell which jobs will be surprising workers with computer requirements. Service stations, restaurants, landscapers, and social workers are all fair game for involvement in the computer revolution.

This questionnaire asks you to estimate your ability to effectively confront computers when you find them where you work. A fair estimate is needed so that adequate training and preparation may be provided where needed. Please read the instructions and then complete the survey.

You have just participated in a simulation of an experience that is becoming more common in the work place. Many workers are experiencing the surprise of finding computers and other keyboard controls at their jobs. We need to know how confident individuals are with the prospect of performing computer tasks requiring different levels of speed and accuracy. Error rates usually increase when speed increases. Some computers will be more tolerant of errors, but some have not been made to be "user friendly" yet. At many installations, so many users share one computer that speed is an important consideration.

This questionnaire taps how confident you would feel if you came to work and learned that a special project had varying requirements for speed and accuracy at the keyboard. Could you be counted on to handle it, would extra help need to be brought in, or could your skills be improved with just a little training? These are some of the questions we need to answer. Please read the instructions below, and then begin the questionnaire.

It is often the case that a novice types at a speed of 20 words per minute (wpm) with 80% accuracy. An expert may be able to type 80 wpm with 90% accuracy. Some jobs, such as transcribing live debates or testimony requires the ability to type very quickly without so much emphasis on accuracy.

You will be asked to estimate how certain you are that you could type at a certain speed and at a specific accuracy for that speed. First, however, please consider this example on the next page:

50 words per minute:

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all Very
certain certain

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete Accuracy

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Now, estimate your own typing speed and accuracy based on your knowledge of your personal skill:

1. 10 wpm:

a. I believe that I can type 10 wpm

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
 Not at all Very
 certain certain

b. I believe that I can type 10 wpm with

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
 No Accuracy Complete
 Accuracy

2. 20 wpm:

a. I believe that I can type 20 wpm

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
 Not at all Very
 certain certain

b. I believe that I can type 20 wpm with

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
 No Accuracy Complete
 Accuracy

Continue on Next Page

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all Very
certain certain

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete Accuracy

4. 40 wpm:

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all Very
certain certain

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete Accuracy

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0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all Very
certain certain

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete Accuracy

6. 60 wpm:

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all : Very
certain certain

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete Accuracy

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7. 70 wpm:

a.I believe that I can type 70 wpm

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all Very
certain certain

b.I believe that I can type 70 wpm with

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete
Accuracy

8. 80 wpm:

a.I believe that I can type 80 wpm

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all Very
certain certain

b.I believe that I can type 80 wpm with

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete
Accuracy

Continue on Next Page

9. 90 wpm:

a. I believe that I can type 90 wpm

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all Very
certain certain

b. I believe that I can type 90 wpm with

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete
Accuracy

10. 100 wpm:

a. I believe that I can type 100 wpm

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
Not at all Very
certain certain

b. I believe that I can type 100 wpm with

0%—10%—20%—30%—40%—50%—60%—70%—80%—90%—100%
No Accuracy Complete
Accuracy

End of Questionnaire

F

Office Automation Diagnostic Survey

This questionnaire was developed as part of a study of jobs and how people react to them. The questionnaire helps to determine how jobs can be better designed by obtaining information about how people react to different kinds of jobs.

On the following pages you will find several kinds of questions about the job sample that you just participated in. Specific instructions are given at the start of each section. Please read them carefully. It should take no more than 10 minutes to complete the entire questionnaire.

The questions are designed to obtain your perceptions of this kind of job and your reactions to it.

Your answers will be kept completely confidential. Please answer each item as honestly and frankly as possible. You may not be very familiar with the kind of job that you sampled today, but it will be sufficient if you answer the questions based on your experience and expectations.

SECTION ONE

This part of the questionnaire asks you to describe today's job as objectively as you can.

Please do not use this part of the questionnaire to show how much you liked or disliked today's job. Instead, try to make your descriptions as accurate and as objective as you possibly can.

A sample question is given below.

A. To what extent did today's job require you to work with mechanical equipment?

1-----2-----3-----4-----5-----6-----
7

Very little; the
job requires almost
no contact with
mechanical equipment of
any kind.

moderately

very much; the
job requires
constant work
with mechanical
equipment.

You are to choose the number which is the most accurate description of the job. Then, mark your answer in pencil on the Scantron sheet.

If, for example, the job required you to work with mechanical equipment a good deal of the time-- but also required some paperwork-- you might choose the number six, as was done in the example above.

If you do not understand these instructions, please ask for assistance.

If you do understand them, turn the page and begin.

50. How much autonomy would there be in this job? That is, to what extent would the job permit you to decide on your own how to go about doing the work?

1-----2-----3-----4-----5-----6-----7		
Very little, the job gives me almost no personal "say" about how and when the work is done.	moderate autonomy; many things are standardized and not under my control, but I can make some decisions about the work.	very much; the job gives me almost complete responsibility for deciding how and when the work is done.

51. In general, how significant or important is the job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

1-----2-----3-----4-----5-----6-----7		
Not very significant; the outcomes of my work are <u>not</u> likely to have important effects on other people.	moderately significant.	Highly significant; the outcomes of my work can affect other people in very important ways.

52. To what extent would doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing--aside from any "feedback" co-workers or supervisors may provide?

1-----2-----3-----4-----5-----6-----7		
Very little; the job itself is set up so I could work forever without finding out how well I am doing.	Moderately; sometimes doing the job provides "feedback" to me; sometimes it does not.	Very much; the job is set up so that I get almost constant "feedback" as I work about how well I am doing.

SECTION TWO

Listed below are a number of statements which could be used to describe a job.

You are to indicate whether each statement is an accurate or an inaccurate description of the job you sampled today.

Once again, please try to be as objective as you can in deciding how accurately each statement describes the job--regardless of whether you liked or disliked the job.

Mark your answer on the Scantron sheet using the following scale:

How accurate is the statement in describing your job?

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
Very	Mostly	Slightly	Uncertain	Slightly	Mostly	Very
Inaccurate	Inaccurate	Inaccurate	Accurate	Accurate	Accurate	Accurate

____ 53. Just doing the work required by the job provides many chances for me to figure out how well I am doing.

____ 54. This job is one where a lot of other people can be affected by how well my work gets done.

____ 55. The job denies me any chance to use my personal initiative or judgment in carrying out the work.

____ 56. The job itself provides very few clues about whether or not I am performing well.

____ 57. The job gives me considerable opportunity for independence and freedom in how I do the work.

____ 58. The job itself is not very significant or important in the broader scheme of things.

SECTION THREE

Now please indicate how you personally feel about this job.

Each of the statements below is something that a person might say about his or her job. You are to indicate your own, personal feelings about this job by marking how much you agree with each of the statements.

Mark your answer on the Scantron sheet using the following scale:

How much do you agree with the statement?

1	2	3	4	5	6	7
Disagree	Disagree	Disagree	Neutral	Agree	Agree	Agree
Strongly	Slightly			Slightly		Strongly

____ 59. My opinion of myself would go up when I do this job well.

____ 60. Generally speaking, I could be very satisfied with this job.

____ 61. I would feel a great sense of personal satisfaction when doing this job well.

____ 62. I would frequently think of quitting this job.

____ 63. I would feel bad and unhappy if I discovered that I had performed poorly on this job.

____ 64. I would be generally satisfied with the kind of work performed in this job.

____ 65. My own feelings generally would not be affected much one way or the other by how well I would do on this job.

SECTION FOUR

Now, please indicate how satisfied you would be with each aspect of this job listed below. Once again, mark your answer on the Scantron sheet using the following scale:

How satisfied would you be with this aspect of the job?

1	2	3	4	5	6	7
Very Dissatisfied		Slightly	Neutral	Slightly	Satisfied	Very
DisSatisfied	Dissatisfied				Satisfied	Satisfied

____ 66. The amount of job security I would have.

____ 67. The amount of pay and fringe benefits I would receive.

____ 68. The amount of personal growth and development I would get in doing my job.

____ 69. The feeling of worthwhile accomplishment I would get from doing my job.

____ 70. The degree to which I would be fairly paid for what I contribute to the organization.

____ 71. The amount of independent thought and action I could exercise in this job.

____ 72. How secure things look for me in the future in this organization.

____ 73. The amount of challenge in my job.

SECTION FIVE

(This scale was not included in the present study)

Listed below are a number of characteristics which could be present on any job. People differ about how much they would like to have each one present in their own jobs. We are interested in learning how much you personally would like to have each one present in your job.

Using the scale below, please indicate on the Scantron sheet the degree to which you would like to have each characteristic present in the job.

Note: The numbers on this scale are different from those used in previous scales!

4-----5-----6-----7-----8-----9-----10
Would like Would like Would like
having this only having this having this
a moderate amount very much <u>extremely</u> much
(or less)

____ 74. High respect and fair treatment from my supervisor.

____ 75. Stimulating and challenging work.

____ 76. Chances to exercise independent thought and action in the job.

____ 77. Great job security.

____ 78. Very friendly co-workers.

____ 79. Opportunities to learn new things from my work.

____ 80. High salary and fringe benefits.

____ 81. Opportunities to be creative and imaginative in my work.

____ 82. Quick promotions.

____ 83. Opportunities for personal growth and development in my job.

____ 84. A sense of worthwhile accomplishment in my work.

78. I am much more aware of my skills now that I have had a chance to test them:

1-----2-----3-----4-----5-----6-----7
 Not at Very
 all true true
REWARD/FEEDBACK

79. I think that the task I participated in had negative qualities.

1-----2-----3-----4-----5-----6-----7
 Few negative Many negative
 qualities qualities
COST

80. I think that the task I worked on today in the lab will help me with the work I will do in the future

1-----2-----3-----4-----5-----6-----7
 Very small Very Large
INVESTMENT

81. A different experiment would probably have been more interesting to me:

1-----2-----3-----4-----5-----6-----7
 Not at Very
 all true true
ALTERNATIVES

82. The results of studies similar to this one are:

1-----2-----3-----4-----5-----6-----7
 Relatively Relatively
 Important Unimportant
REWARD

83. I feel that the time I contributed today was worthwhile.

1-----2-----3-----4-----5-----6-----7
 Not at all It was very
 worthwhile worthwhile
INVESTMENT

ALTERNATIVES

1-----2-----3-----4-----5-----6-----7
Not very noticable Very Noticeable
COST

1-----2-----3-----4-----5-----6-----7
Not at all Very much
REWARD

1-----2-----3-----4-----5-----6-----7
Not Very Helpful Very Helpful
REWARD/FEEDBACK

1-----2-----3-----4-----5-----6-----7
Very Not at
true all true
ALTERNATIVES

G

Contract of Non-disclosure
Tidewater Area Skills Survey

I have received two credits for my participation in the Tidewater Area Skills Survey project at Old Dominion University (Phase Three: The Right Type).

I further understand that it is very important to the integrity of the study that those individuals participating are unbiased and unrehearsed upon their arrival, and therefore they should not know in advance the full extent of the purpose of the experiment or the nature of the skills being tested.

My signature below is certification of completion of The Right Type study, and I hereby agree not to disclose any information about the study's purpose or procedures.

Participant's Signature_____

Date____/____/____

H

Scripts for Commitment to Job Manipulation

High Commitment to Job:

Yes, Ann please. Hi, Ann. This is Brian over at ODU.

Well, I've tried a few times, but you're not easy to track down. (Pause). Yeah. Well, I figured I'd call to find out more about the problem you said you were having.

(Pause)

Going great. Yes, we're still running some of the typing components.

(Pause)

You're kidding! So now they want us to get more data on that for you? Yeah, but according to the contract, we did fulfill our obligation. Well, that's beside the point, if you need it we can get it for you. (Pause) No, there shouldn't be any problem with that. (Pause) Yeah, we can get you ten more by then. So the board is holding off on the salary decision until then? (Pause) Alright. We'll get right on it. (Pause). Oh, wait. Before you go, you left two messages on my machine about some job openings. (Pause) Well, ten dollars an hour to start sounds great, but you'll need to back up a bit and tell me what you're looking for. (Pause).

Ok, so they've decided to hold off on the accounts payable for awhile. That's too bad, I just had someone in here the other day who tested out real well--I would have loved to send her over. (Pause). I'd like to, but once we finish processing them in the lab we get rid of any identifying labels. We'd have no way of getting back in touch with them. So what do you need filled? (Pause)

OK, you still have two openings in medical records open. (Pause) I see, that's a good idea. You're right, it is easier to find a few who would want to share the hours. Especially if you're targeting college students. Most of them can only work part time, and right now the job market in this area is awful.

You're right. Most of them are real eager and able to learn--they just soak it up. What kind of system do you use? Wow, that must take some training to learn that many programs. (Pause) OK, so they get paid for the training? Great! Those are the most popular right now. How many days is the training? Ok. It's 5 two-hour sessions. Good. They should be experts by then! Ands they'll be running into those wherever they work next.

Let me jot this down. These are part time, \$10 an hour, training is paid. Yeah, breaking them in slowly is the best approach with that kind of training. And by the time they catch up on converting those files, your quality assurance program will be up and ready for the expansion. Is there

any chance that these might turn into regular positions?

OK, that's definitely a selling point. Actually, you don't need to worry about a selling point. It's a great part time job. That department is real close to

_____, anyway, so it's real convenient to commute. Are you looking for a particular shift? I know you keep that area open 24 hours. (Pause) That's good. So they can just sign in with the guard and work whenever they want. Can they park in the secured lot? I remember you telling me that there was a good deal of vandalism over there. OK, you'll get them a pass for the lot? Good. I'm surprised they are included right off for sick and vacation hours. That's incredibly generous. I know that would come in handy during exam times.

Do you have a dress code for that unit? Alright. (Pause) No, I just like to have these answers ready. And they'll be transcribing medical records for insurance audits. Ok.

Right. Yeah, I guess with all the policy changes this year there's a lot to go back over. (Pause) Who is the contact person? (Pause). Oh, sure, we were at a workshop on how to build teamwork. She was a lot of fun to work with. I remember we all used to tease her because she kept getting perfect scores in all the exercises. She was almost too nice. (Pause). Listen, I have to get back to work. I have someone in the lab now. Right! Which test do they need to take? (Pause) Well that's the same one you need the data

on anyway, so that will be perfect. That's the Epstein test, is that correct? What were the cutoff scores you were looking for? Well, since you're in a bind, will you take anything lower? (Set goals: easy = 5 above baseline, difficult = 10 above baseline)

(Pause) Well, you are in a bind. No, that really isn't going to be difficult to fill. We've had people call here wanting 60 wpm, but we rarely get anyone that fast. But we never know, after all, that's what the whole study is about! Ten dollars an hour is great for the college students part time, but if you went through an agency you'd have to pay them twice that. I don't think we'll have any trouble at all finding someone. Look, I really have to get off the phone! I promise. I will. Call me back with the rest of the information. Well, the sooner you find out if the budget line was approved for the positions, the sooner I can start screening interested students.

You too. I will. Talk to you later.

Low Commitment to Job:

Yes, Ann please. Hi, Ann. This is Brian over at ODU.

Yeah, I've been trying to call you back, but you're never at your desk. (Pause). Yeah. Well, I figured I'd call to find out more about the problem you said you were having.

(Pause)

Going alright, I guess. We're all getting pretty tired of it, though. Yeah, we're still running some of the typing components, but we're looking forward to starting another set of tasks in 2 weeks. (Pause)

You've got to be kidding! (Pause) So now they want us to get more data on that for you? Yeah, but according to the contract, we've finished with that obligation. Well, that's beside the point, (Pause) Well, I'm not going to argue with you about it, I should be used to this by now. This has been one of the trickiest contracts I've ever dealt with. OK, if you need it we'll get it for you. (Pause)

No, there shouldn't be any problem with that. (Pause)

Yeah, we can get you ten more by then. So the board is holding off on the salary decision until then? (Pause)

Alright. We'll get right on it. (Pause). Oh, wait.

Before you go, you left two messages on my machine about some job openings. (Pause) Well, ten dollars an hour to start sounds fair, but the agencies are paying much better than that for good office help now. Well, I guess using college students as slaves is one way to work with your budget cuts. Listen, before I get in over my head with this, back up a bit and tell me what you're looking for. (Pause).

Ok, so they've decided to hold off on the accounts payable for awhile. That's too bad, I just had someone in here the other day who tested out real well--I would have loved to

send her over. (Pause). Oh well, there are more positions sitting open these days waiting to be filled, I know she won't be looking for work long. Even if I could get back in touch with her, I'm not so sure I'd be willing to send her over to work with you. That place is just a mess. It's a classic example of an organization in distress. No, once we finish processing them in the lab we get rid of any identifying labels. We'd have no way of getting back in touch with them. Look you mentioned you had some other openings....So what do you need filled? (Pause)

OK, you still have two openings in medical records open. (Pause) I see, that's a good idea. You're right, it is easier to find a few who would want to share the hours. Especially in that cramped little office. I can't imagine anyone wanting to sit in there for more than a few hours at a time anyway. Well, as long as you're looking for college students. Most of them can only work part time anyway, and right now the job market in this area is so easy they can always try it for a day and quit if they can't stand it. You're right. They're real eager and able to learn--they just soak it up. What kind of system do you use? I thought everyone switched over to the new standard. I don't think you're gonna find anyone who even uses that system anymore. (Pause) OK, so they get paid for the training? Great! Good, because it's not the kind of thing they can use when they go anywhere else to work! (Pause) OK, so it's just

minimum wage for training and then go to full pay. How many days is the training? Five two-hour sessions? OK. Let me jot this down. These are part time, \$10 an hour, training is 10 hours at minimum. Yeah, breaking them in slowly is the best approach with that kind of training. And by the time they catch up on converting those files, your quality assurance program will be up and ready for the expansion. Is there any chance that these might turn into regular positions? Oh, that's too bad.

Actually, you dont need to worry about a selling point. Some of these students will jump at anything. That department is real close to (far away, inconvenient place), anyway, so it's going to be hard to find someone willing to spend all that commuting time. Are you looking for a particular shift? I know you keep that area open 24 hours. (Pause) That's good. So they can just call to see if there's a desk open when they want to come in? Can they park in the secured lot? I remember you telling me that there was a good deal of vandalism over there. Oh, I didnt realize the parking was so tight. The temps usually park at the municipal lot? OK. Will they get a parking pass? OK. It's a dollar a day with the pass? OK, I guess the security has to come out of somebody's pocket.

(Pause) I'm surprised they're not included right off for sick and vacation hours. Every other place around here is

.

doing that. That's pretty stingy. I guess you get a lot of absenteeism around exam times.

Do you have a dress code for that unit? Alright. (Pause)

No, I just like to have these answers ready. And they'll be transcribing medical records for insurance audits. Ok.

Right. Yeah, I guess with all the policy changes this year there's a lot to go back over. (Pause) Who is the contact person? (Pause). Yeah, I know her. We attended a workshop together on managing subordinates. She had a lot to say. I remember we all used to tease her because she kept getting scores matching the worst manager in all the exercises. She was never too nice. (Pause). Listen, I have to get back to work. I have someone in the lab now. Right! Which test do they need to take? (Pause) Well that's the same one you need the data on anyway, so that will be perfect. That's the Epstein test, is that correct? What were the cutoff scores you were looking for? Well, since you're in a bind, will you take anything lower?

(Set goals: easy = 5 above baseline, difficult = 10 above baseline)

(Pause) Well, you are in a bind. No, that really isn't going to be difficult to fill. We've had people call here wanting 60 wpm, but we rarely get anyone that fast. But we never know, after all, that's what the whole study is about! Ten dollars an hour will hook some of the college students - they don't know what the agencies are paying! I don't think

we'll have any trouble at all finding someone. Look, I really have to get off the phone! I promise. I will. Call me back with the rest of the information. Well, the sooner you find out if the budget line was approved for the positions, the sooner I can start screening interested students.

You too. I will. Talk to you later.

Autobiographical Statement

Brian Jay Kaufman was born May 19, 1957 in Brooklyn, New York. He received his Bachelor of Arts degree in Psychology at the State University of New York at Stony Brook in May, 1978. He continued his education at Rensselaer Polytechnic Institute in Troy, New York, where he received the Master of Science degree in Industrial/Organizational Psychology in August, 1980.