A Longitudinal Test of a Proposed VIE Theoretic Control Systems Model of Self-Regulated Human Performance

Vernon A. Peterson

University of Nebraska at Omaha

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A Longitudinal Test of a Proposed VIE Theoretic Control Systems Model of Self-Regulated Human Performance

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Presented to the
Department of Psychology
and the
Faculty of the Graduate College
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In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
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by
Vernon A. Peterson
January 1, 1990
Thesis Acceptance

Acceptance for the faculty of the Graduate College, University of Nebraska, in partial fulfillment of the requirements for the degree Master of Arts, University of Nebraska at Omaha.

Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonia S. Cheek</td>
<td>Psychology</td>
</tr>
<tr>
<td>Kenneth A. Deffenbacher</td>
<td>Psychology</td>
</tr>
<tr>
<td>Robert E. Carlson</td>
<td>Communication</td>
</tr>
<tr>
<td>James M. Thomas</td>
<td>Psychology</td>
</tr>
</tbody>
</table>

Wayne Harrison  
Chairman  
1/8/70  
Date
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Abstract

Research by Campion and Lord (1982) suggested that the goal-setting process could be explicated by a control systems model of self-regulated behavior. However, as noted by Campion and Lord (1982), the model did not specify the process performers used to select their standards. To address this deficiency and to further specify the control process, I proposed an expanded model of human performance: an integration of VIE theory (Vroom, 1964) and control systems theory (Carver & Scheier, 1981). The model posited that performers select standards of performance based on their motivational force. It also specified when cognitive or behavioral control responses would be applied and the direction of those responses. Further, it specified the temporal relation among control responses and the role of self-focus, a personality variable, in the control process. A test of six hypotheses derived from the model was conducted over a 15-week academic semester. The test employed a sample of two hundred and forty subjects enrolled in an introductory psychology course. The study found that when corrections were made for unreliability, motivational force accounted for over 77% of the variance in the choice of a performance standard. It also found that when the focal standard and performance were disparate and the motivational force of the focal standard was no longer sufficient to elicit performance consistent with the standard, that performers more frequently elected to change their focal standard. Further, it found that performers more frequently applied effort change to ameliorate performance-standard disparities when the motivational force of the focal standard remained prepotent than when the motivational force of the focal standard degraded. In sum, this research did not prove to be an appropriate test of the hypothesized temporal relation among control responses, nor did it support the hypothesized role of self-focus in the control process. However, this research provides strong support for the integration of VIE and control theory. It found that performers select standards of performance based on their motivational force. Further, it advances the control theory perspective of the goal-setting and changing process by specifying when effort or standard changes are made and the direction of those changes.
A Longitudinal Test of a Proposed VIE Theoretic Control Systems Model of Self-Regulated Human Performance

Campion and Lord (1982) posited that the goal setting process could be explicated by a control systems model of self-regulated behavior. To test their model, Campion and Lord (1982) employed a series of questionnaires to measure student test and course grade expectations, effort, and performance over a 10-week academic quarter. Based on the results of their study, the researchers concluded that the control systems model was an apt descriptor of the goal setting process. However, as noted by Campion and Lord (1982), their research did not specify the process performers used to select their standards.

To address this deficiency and to further specify the control process, research was conducted to test a model of human performance: an amalgam of valence-instrumentality-expectancy (VIE) theory and control systems theory. Before presenting the results of that research, I will present an introduction to the model and its constituents.

To begin, control systems theory will be presented followed by a presentation of VIE theory, the rationale for their integration, and the specification of an integrated model. Following a discussion of the Campion and Lord (1982) study and the contributions of an integrated model, hypotheses derived from the integrated model and a research methodology will be presented. To conclude, a presentation of the results, a discussion of the findings, and their implications will follow.
Control Systems Theory

Control systems theory has been with us for some time (Cannon, 1929; Wiener, 1948). It has been applied to such areas as physiology, mathematics, engineering, and economics (Balakrishnan, 1973; Berkovitz, 1974; Cannon, 1929; Dransfield, 1968). It has also been applied to such topics in psychiatry and psychology as runaway build-up of rage in paranoids (Shibutani, 1968), drug addiction (Wilkins, 1968), human behavior (Powers, 1973), goal setting (Campion & Lord, 1982), skilled performance (Pew, 1970), and organizational behavior (Lawler, 1976). The control systems model, a cybernetic (Wiener, 1948) or an information processing (Lindsay & Norman, 1977) model, portrays a process whereby sensors abstract information from the environment, compare this information via a comparator against a standard, and effect change when appropriate. Though a qualitative description of control theory is quite simple, when considered in detail it can become an abstract and complex process (Carver & Scheier, 1981a), often requiring highly sophisticated mathematical techniques (Rouse, 1977). Because control systems theory can be easily understood and applied at a qualitative level, presentation will be void of a discussion of the differential equation, or alternatively, multivariate and time-series analyses employed within the context of discrete-time systems (Rouse, 1977).

Control systems theory is fundamentally a theory of selective information processing and control (Powers, 1973). Though it can be conceptualized as a process supportive of an organism’s effort to persevere in a particular behavior in spite of perturbations from its internal or external environment (Cannon, 1932; Jones, 1973), it can also be viewed as an agent of change (Campion & Lord, 1982). Regardless of one’s control theory perspective, feedback is central to the control systems process.

Open and Closed Loop Control

Feedback is such a common part of our lives (Peterson, 1982), that the extent to which we depend on it is often overlooked. When absent, task performance that would otherwise be
considered quite simple becomes difficult. Eliminating feedback, that is, interrupting the flow of information from the output back to the system input, provides no way to detect and correct for discrepancies. In contrast, feedback by way of a closed loop system provides a means of minimizing the effects of environmental perturbations (Jagacinski, 1977).

**The Nature of Feedback Loops**

Because the thermostat is an oft-cited exemplar of control theory, it may lead one to believe that all control systems attempt to minimize deviations between the present environmental state and the standard (Carver & Scheier, 1982a). Though negative feedback loops are common, deviation-amplifying or positive feedback loops exist, as well (Carver & Scheier, 1982a). Such feedback systems act to exaggerate sensed discrepancies. Positive feedback loops taken by themselves are inherently unstable and self-destructive (Maruyama, 1963); if they are not inputs to a superordinate system which can restrain them, they continue to amplify until the system self-destructs.

**Hierarchical Organization**

Because control theory is fundamentally a theory of information processing and control, a hierarchical ordering of standards is assumed (Powers, 1973). A hierarchically ordered system is one in which attainment of a subsystem requisite is linked to attainment of a superordinate system requisite (Powers, 1973); the standard of the subordinate system is an output of a superordinate system. At the very lowest level of the behavioral hierarchy in an animal system, the behavior manifests itself as changes in muscle tension (Carver & Scheier, 1982b). Whereas changes in muscle tension results in the movement of body parts, likewise, body parts results in changes to the environment.

**Information Abstraction**

Through the control system’s behavioral hierarchy, the results of behavior are presumed to be a function of monitoring selective information inputs at various levels of abstraction (Norman, 1981; Reason, 1979). Information, "anything that reduces uncertainty
(Brody, 1970)," can be abstracted in terms of the characteristics that exist at the various levels of analysis to which it has been subjected (Hubel & Wiesel, 1963, 1965; Palmer, 1977). For example, scores obtained from students enrolled in an introductory psychology course are by themselves informative, though marginally. From this same set of scores, when subjected to a higher level of analysis, it is possible to abstract additional information (e.g., group means). A still higher level of analysis could yield information regarding the distribution of score deviations about the mean, the nature of differences between the means of groups, the significance of group differences, and the probability that groups were drawn from different populations. It can be seen from the test score analog that we can selectively attend to and abstract information from a variety of sources within our environment and at various levels, as well.

**Selective Attention**

In the main, attention refers to the intensity and the distribution of an orientation towards a stimulus or stimuli (Bourne, Dominowski, & Loftus, 1979). As such, attention can be conceptualized as a process of focusing, to varying degrees of selectivity and vigilance, on one or more stimuli from a distribution of possible stimuli (Broadbent, 1958; Norman, 1968; Treisman, 1969). Because control theory is concerned with control through the selective processing of information (Powers, 1973), control theory places emphasis on the informative aspects of a specific stimulus or group of stimuli.

**Self-focus**

Carver and Scheier (1981a) present an environmental/self-focus dichotomy. They suggest that information processing is directed towards information which originates from the environment or from within the person. Further, they (Carver, 1979; Carver & Scheier, 1981a, 1981b, 1982a) posit that control at a specific level within the hierarchy of control loops depends in part on the person's self-focus. Specifically, Carver and Scheier (1982a) suggest:

that directing attention to the self, when a behavioral standard has been evoked
by the nature of one's role or the setting, engages the comparator at the level of control that is superordinate. The result is a tendency to compare one's perceptions of one's present state or behavior against the standard, leading (when possible) to a reduction of perceptible discrepancies between the two. (p. 144)

Support for the environment/self-focus dichotomy can be found in research by Carver and Scheier (1982a) and Hollenbeck and Williams (1987) which found that persons with higher levels of self-focus tended to seek information that facilitated the comparison process. Self-directed attention resulted in increased comparison of a present state to a standard. Further, empirical evidence shows that a stronger relation between a performance standard and performance exists for high self-focus persons relative to those low in self-focus (Carver, 1974, 1975; Scheier, Fenigstein, & Buss, 1974).
Expectancy Theory

Building on earlier work by Lewin (1938), Rotter (1955), Peak (1955), Davidson, Suppes, and Siegel (1957), Atkinson (1958), and Tolman (1959), Vroom (1964) put forth a cognitive model of motivation. As noted by Vroom (1964), the model assumes "that the choices made by a person among alternative courses of action are lawfully related to psychological events occurring contemporaneously with the behavior." Essentially, Vroom (1964) postulated two models. One model serves to guide predictions concerning the valence of an outcome, the other predicts force/effort towards behavior (Messmer, Solomon, & Liddel, 1983). However, before further elaborating on Vroom's (1964) work, two points should be made.

First, numerous extensions and refinements (Campbell, Dunnette, Lawler, & Weick, 1970; Lawler, 1971; Porter & Lawler, 1968) have been made to Vroom's (1964) initial effort. However, in the absence of clear evidence to favor an alternative specification and because many researchers continue to find Vroom's (1964) original model acceptable in general terms (Pinder, 1987), I rely on Vroom's (1964) original model. Second, though VIE theory has captivated and held the attention of many researchers over the years, some doubt the testability, if not the viability, of the theory (Arnold, 1981; Campbell & Pritchard, 1976; Locke, 1975; Pinder, 1977).

Valence

According to Vroom (1964), valence refers to the orientation that a person holds towards an outcome. If the orientation towards a particular outcome is one of preference, it is said to carry a positive valence or be positively valent. Likewise, if a person's orientation towards a particular outcome is one of disdain or indifference, the outcome is said to be negatively valent or hold zero valence, respectively, for that person (Vroom, 1964). Vroom (1964) stated:

It is important to distinguish between the valence of an outcome to a person
and its value to that person. An individual may desire an object but derive little satisfaction from its attainment, or he may strive to avoid an object which he later finds to be quite satisfying. At any given time there may be a substantial discrepancy between the anticipated satisfaction from an outcome (i.e., its valence) and the actual satisfaction that it provides (e.g., its value). (p. 15)

Said another way, whereas the value of an outcome refers to the satisfaction or worth a person obtains from an outcome, valence refers to the satisfaction or worth a person expects to receive from an outcome (Pinder, 1987).

**Instrumentality**

Instrumentality is an outcome-outcome association, according to Vroom (1964), "that can take values ranging from -1, indicating a belief that attainment of the second outcome is certain without the first outcome and impossible with it, to +1, indicating that the first outcome is believed to be a necessary and sufficient condition for the attainment of the second outcome." It is a probability belief which links one outcome (performance) to other outcomes (Ilgen, Nebeker, & Pritchard, 1981; Pinder, 1987).

**Expectancy**

Because specific outcomes attained by a person are dependent not only on the choices that a person makes but also on events which are beyond that person's control, it seems clear that the person's behavior is affected by preferences among a field of possible outcomes and the degree to which the person believes these outcomes to be probable (Vroom, 1964). Accordingly, "expectancy is an action-outcome/effort-performance (Ilgen, Nebeker, & Pritchard, 1981) association," as put forth by Vroom (1964), that "takes values ranging from zero, indicating no subjective probability that an act will be followed by an outcome, to 1, indicating certainty that the act will be followed by the outcome."

**Force/Effort**

Vroom (1964) conceptualized the motivational force, which acts on an individual, as "a
monotonically increasing function of the product of valence and expectancy." Thus, according to Vroom (1964):

An outcome with high positive or negative valence will have no effect on the generation of a force unless there is some expectancy (e.g., some subjective probability greater than zero) that the outcome will be attained by some act. As the strength of an expectancy that an act will lead to an outcome increases, the effect of variations in the valence of the outcome on the force to perform the act will also increase. Similarly, if the valence of an outcome is zero (e.g., the person is indifferent to the outcome), neither the absolute value nor variations in the strength of expectancies of attaining it will have any effect on forces.

(p. 19)

As stated above, motivational force, according to Vroom (1964), is the product of valence and expectancy. It should be noted, however, that such a representation is a simplification or reduction of terms, one which does not make explicit the contribution of instrumentality. In more explicit terms, the model, \( F_{ij} = E_i V_j \), where \( V_j = I_k V_k \), states that the motivational force (F) acting on an individual performer (i) to obtain a first level outcome (j) is equal to the product of expectancy (E)--the probability that the performer (i) will be successful in obtaining a first level outcome (j)--and valence (V)--the satisfaction or worth a person expects to receive from the first level outcome (j). Because the valence of the first level outcome (j) is the product of instrumentality (I), the contingent relation between a first level outcome (j) and a second level outcome (k), and the valence (V) of the second level outcome (k), expressed as \( V_j = I_k V_k \), Vroom's model (1964) may alternatively be expressed as \( F_{ij} = E_i (I_k V_k) \).

Hierarchical Organization

Though somewhat obvious, it is important to stress the hierarchical organization of Vroom's model (1964): the relation between first-level outcomes and second-level outcomes through instrumentality and valence (Vroom, 1964). Because instrumentality, by definition, is
an index of the perceived contingency between attainment of first-level performance and actually receiving the associated second-level outcome, hierarchical ordering is mandated. The hierarchical nature of VIE theory is further evident through the contribution to the valence of the first-level outcome made by a second-level outcome, a multiplicative function of valence and instrumentality.
Rationale for Integrating VIE and Control Theory

The preceding sections introduced control theory and VIE theory. Building on the preceding, this section will provide the rationale for their integration. First, it will specify structural aspects common to both theories. Second, it will address substantive similarities evident through (a) a common focus on performance, (b) the link between control responses and the constituents of VIE theory, (c) goal commitment research, and (d) the feedback process.

Structural Similarities

It should be recalled that control theory and VIE theory present hierarchical models. Both theories recognize the influence of second level states on first level behaviors. As control theory links first level behavior by way of the standard output from a second level loop, VIE theory links first and second level outcomes via instrumentality and the contribution to the valence of the first-level outcome made by a second-level outcome, a multiplicative function of valence and instrumentality.


Substantive Relations

Beyond the structural similarities, the relation between VIE theory and control theory is substantively evident through (a) a common focus on performance, (b) the link between control responses and the constituents of VIE theory, (c) goal commitment research, and (d) the feedback process. In the following, support for this substantive relation will be presented. A discussion concerning a common focus on performance will be presented first.
**Performance.** Ilgen, Nebeker, and Pritchard (1981) and Mitchell (1987) posit that performance is primarily a function of ability and motivation. Whereas control theory describes the process whereby performance is self-regulated (Carver & Scheier, 1981a), VIE theory, one which implicitly or explicitly addresses the role of ability (Vroom, 1984; Porter & Lawler, 1968, respectively), describes the motivational process that underlies performance (Vroom, 1964). Further, the construct, effort, plays an important role in both VIE and control theory.

**Control responses and VIE constituents.** In VIE theory, Vroom's effort model (Galbraith & Cummings, 1967) states that effort is equal to the product of the expectancy that effort leads to performance and the sum of the products of instrumentality of performance for the attainment of second-level outcomes and the valence of the second-level outcomes (Seybolt & Pavett, 1979). In control theory, changing effort is a control response fundamental to the control process (Campion & Lord, 1982; Hollenbeck & Williams, 1987). A second control response, changing the set level of the standard, provides additional support for a substantive relation between the two theories.

Because the human propensity to align attitudes, beliefs, and expectations with behavior has been well documented (Bentler & Speckart, 1979; Cooper & Fazio, 1984; Festinger, 1957; Fishbein & Ajzen, 1975), it is reasonable to propose that, by-and-large, people select for themselves performance outcomes that are grounded in valencies moderated by expectancy and instrumental probabilities. As such, the control theory process of selecting outcomes or standards and the second control response, changing the set level of a standard (Campion & Lord, 1982; Hollenbeck & Williams, 1987), may be linked to expectancy, instrumentality, and valence. Additional, though more circuitous, support for a substantive relation may be found in goal commitment research.

**Goal commitment research.** Locke (1968) posited that goal commitment (commitment to a performance expectation), is a moderating variable in the goal setting process. Locke stated that people who "stop trying when confronted by a hard task (i.e., those
uncommitted to a goal) are people who have decided that the goal [performance expectation] is impossible to reach and who no longer are trying for that goal." Because the extent to which a person will remain committed to a performance expectation may be closely related to the motivational force of that expectation (Locke, Shaw, Saari, & Latham, 1981), a link between the postulates of goal setting and expectancy theory has been suggested (Dachler & Mobley, 1973; Dossett, Latham, & Mitchell, 1979; Kalb & Boyatzis, 1970; Mento, Cartledge, & Locke, 1980; Oldham, 1975; Steers, 1975). Similarly, as stated by Locke, Shaw, Saari, and Latham (1981), "the factors that affect goal acceptance...fit easily into two major categories, which are the main components of expectancy theory." Because control theory has been purported to be an apt descriptor of the goal setting process (Campion & Lord, 1982; Hollenbeck & Williams, 1987) and because of the relation between VIE theory and goal setting (Dachler & Mobley, 1973; Dossett, Latham, & Mitchell, 1979; Kalb & Boyatzis, 1970; Locke, 1968; Locke, Shaw, Saari, & Latham, 1981; Mento, Cartledge, & Locke, 1980; Oldham, 1975; Steers, 1975), one may reason that expectancy theory and control theory can be effectively integrated. Additional support for an integrated model lies in the potentially complementary relation between VIE and control systems theory.

**Feedback.** Fundamental to control theory is the notion of feedback. Though it may be difficult to envision expectancy theory in the absence of feedback, expectancy theory (Vroom, 1964) does not explicitly address feedback. As noted by Seybolt and Pavett (1979):

Hypothetically, the individual should use whatever feedback is available as he formulates his motivation force to perform. Moreover, feedback should specifically influence the individual's instrumentality and expectancy by giving him additional information to facilitate his examination of these parameters.

(p. 93)

Research by Seybolt and Pavett (1979) supports this position when effort is calculated in accord with Vroom's effort model. Likewise, implied in control theory is the notion of an
impetus.

Though the control theory model is useful in portraying the application of control responses to self-regulated behavior, the impetus for such control is less than explicit. When taken together, control theory may make a contribution to expectancy theory through explicit recognition of the role of feedback, and expectancy theory may contribute to our understanding of the process by which feedback provides the impetus to mediate control.
A Proposed VIE-Control Systems Model

The immediately preceding section presented the rationale for integrating VIE theory and control theory. Given this rationale, this section will present the principal aspects of that integration. It will specify how we select a standard of performance, the types of control responses we employ, the role of feedback in the control process, the temporal relation between control responses, and the role of individual differences in the attentional process.

**Selection of a Performance Standard**

As previously mentioned, the VIE model (Vroom, 1964) is useful in predicting the effort that a performer will put forth. It can make such predictions because it represents the force that a potential outcome exerts on the performer. According to Vroom (1964), the greater the force, the greater the effort. More important, the VIE model is useful because it specifies the elements that contribute to the force acting on the performer and the relative contribution made by each element.

Outcome valences and outcome expectancies exert control over behavior because they signal the probability of reinforcement and provide an estimate of the reinforcer's magnitude. As such, both carry information that directs the performer's attention and the performer's behavior. Thus, the outcome that exerts the greatest force on the performer is the outcome to which the performer selectively attends, the performance standard. For example, the potential control of a course grade-outcome of "B" on a performer, the force \(F_{ik}\) acting on the performer \(i\) to obtain a course grade of "B" \(k\), is the product of the performer's subjective probability estimate of obtaining a course grade of "B" \(k\) and the satisfaction or worth \(V\) that the performer expects to derive from the course grade.

In sum, the standard to which a performer selectively attends is a function of the product of information concerning the valence and the expectancy of the outcome. Given that the magnitude of the outcome valence-expectancy product can vary and that greater outcome valence-expectancy products exert greater force on the performer, the integrated model.
suggests that performers select the outcome carrying the highest motivational force as their standard.

**Control Strategies**

The integrated model is useful in predicting control responses and the conditions of their application. It was stated that performers evoke control responses, cognitive or behavioral, to minimize performance-standard discrepancies. It was also stated that the standard to which a performer selectively attends is a function of the product of the information concerning the outcome's valence and the outcome's expectancy. Performers select as their performance standard the outcome carrying the highest motivational force. Thus, it follows that in the presence of a performance-standard disparity, when the motivational force of the standard is no longer sufficient to compel performance consistent with the standard, the performer will employ a cognitive control response, i.e., change the standard. The performer's attention will be selectively diverted from the prior standard to the standard that currently carries the highest motivational force. In contrast, when the motivational force of the focal standard remains prepotent in the presence of a performance-standard disparity, the performer will employ a behavioral control response, i.e., change the effort. Faced with the possibility of failing to reach the standard, given its high motivational force, the performer will intensify goal directed behaviors.

**The Role of Feedback in the Control Process**

Consistent with control theory, the integrated model acknowledges the application of control responses to minimize differences between the performance and the standard (Campion & Lord, 1982; Harrison, Klawsky, Suh, & Shanahan, 1989). Further, it suggests that feedback loops arise from the application of the control response employed to minimize such deficiencies. As will be shown, this relation manifests itself through changes in the standard and changes in effort.

Changing the standard serves to minimize differences between the performance and
the standard. When applied, a negative feedback loop results. For example, students who have selected a course grade of "B" as their focal standard, could opt for a course grade of "C" to bring the standard in line with the performance.

In lieu of changing the focal standard, increasing effort, a maximizing deviation control strategy, can be applied to subordinate outcomes that link to the focal standard. When applied, a positive feedback loop results. In contrast to the negative feedback loop at the superordinate level, which serves to bring the focal standard in line with performance, the positive feedback loop at the subordinate level serves to bring performance in line with the focal standard. For example, students who have as their standard a course grade-outcome of "B" and who obtain a test grade of "C", could endeavor to raise future test performance expectations.

**Temporal Relation Among Control Responses**

Based on research by Harrison et al. (1989), the integrated model posits that the choice of the control response systematically varies with temporal changes in the performance process. Because a change in effort does not require the abandonment of preferred outcomes and, in fact, may facilitate acquisition of those outcomes, it follows that effort changes will more frequently be applied in the earlier stages of the performance process. However, as time continues and our probability estimates decline, a cognitive response would be expected to reduce the impending disparity. Thus, changes in effort will more frequently be chosen to remediate performance-standard disparities in the earlier stages of the performance process, whereas changes in standard will more frequently be chosen in the later stages.

**Individual Differences in the Attentional Process**

The perceptual process is believed to depend on the comparison of stimuli to standards held in recognitory structures (Neisser, 1976), the environment in which perceptions occur. Such aside, Duval and Wicklund (1972) present an environmental-self-focus attentional dichotomy. Though they do not take exception to the monistic view put forth by Nieser (1976),
they assert that a dualistic perspective is useful in explicating individual differences in the attentional process. They posit that a performer’s attention may be directed to the environment or to the self. As noted by Carver and Scheier (1981a), this dichotomy has been shown to be useful because persons high in self-focus tend to seek information that facilitates the comparison process (Carver, 1974, 1975; Carver & Scheier, 1982a; Scheier, Fenigstein, & Buss, 1974). Thus, the integrated model suggests that self-focus serves to moderate the performance-standard relation; persons high in self-focus are therefore expected to manifest smaller performance-standard disparities than performers low in self-focus.
Discussion of the Campion and Lord Study and Contributions of the Integrated Model

Having specified the principal aspects of the integrated model, this section will highlight questions that arise from the Campion and Lord (1982) study and the contributions that follow from the integration of VIE theory and control theory.

Though the control theory model put forth by Campion and Lord (1982) provides a framework to conceptualize the goal setting process, many questions important to goal setting are left unanswered. Though control theory assumes that performers have a standard of performance, it provides no information regarding the origin of that standard. It does not tell us how we select our standards of performance. It does not explain why some performers select standards so high and others so low. And it does not contribute to our understanding of commitment. Why, in the face of adversity, do some remain committed while others are quick to abandon their goals. A control theory model tells us only that in the face of a performance-standard disparity we will evoke a control response. It does not even specify which control response will be applied.

In contrast, the integrated model specifies that we select for ourselves standards of performance, based on the satisfaction or the worth (valence) that we believe will follow from outcomes and our estimate of the probability (expectancy) that these outcomes are achievable. It posits that the potential of outcomes, through the multiplicative combination of valence and expectancy as a motivational force (Vroom, 1964), serves to compel goal directed behavior.

The integrated model further specifies that in the presence of a performance-standard disparity, when the motivational force of the standard is no longer sufficient to compel performance consistent with the standard, the performer will employ a cognitive control response, i.e., change the standard. In contrast, when the motivational force of the focal standard remains prepotent in the presence of a performance-standard disparity, the performer
will employ a behavioral control response, i.e., change the effort.

Additionally, the integrated model specifies the temporal relation between cognitive and behavioral control responses. Because a change in effort does not require us to abandon our preferred outcomes and, in fact, may facilitate acquisition of those outcomes, it follows that effort changes will more frequently be applied in the earlier stages of the performance process. However, as time continues and our probability estimates decline, a cognitive response would be expected to reduce the impending disparity.

Finally, the integrated model acknowledges individual differences. Though all individuals seek information from their environment, individuals differ in the type of information and in the amount of information they seek. Individuals high in self-focus seek more information from their environment to facilitate the comparison process relative to that sought by persons low in self-focus. Based on such, the integrated model posits that performance-standard disparities will be less for performers high in self-focus than for performers low in self-focus.
Hypotheses

As it may be recalled, I began our overview of this research with an introduction to VIE and control theory. I followed that introduction with the rationale for integrating VIE and control theory and presented a model of that integration. In the immediately preceding section, I showed the applicability of the integrated model to questions, important to the goal setting process, which arose from the Campion and Lord study (1982). Given the foregoing, this section will specify the 6 hypotheses that follow from the integrated model.

_Hypothesis 1_

The outcome carrying the highest motivational force, calculated as $F_{ij} = E_{ij}V_{ij}$, where $V_{ij} = \sum_{k} V_{ik}$, will be selected as the focal standard.

_Hypothesis 2_

When the focal standard and performance are disparate, the performer will elect to either increase effort or change the focal standard.

_Hypothesis 3_

When the focal standard and performance are disparate and the motivational force of the focal standard is no longer sufficient to elicit performance consistent with the standard, the performer will elect to change the focal standard.

_Hypothesis 4_

Performers will more frequently apply effort change to ameliorate performance-standard disparities when the motivational force of the focal standard remains prepotent than when the motivational force of the focal standard does not remain prepotent.

_Hypothesis 5_

Performers will more frequently rely on changes in effort to remediate a performance-standard disparity in the earlier stages of the performance process and will increasingly rely on changes to the focal standard in later stages of this process.
Hypothesis 6

The relation between the motivational force of potential standards \( F_{ij} = E_{ij} V_j \), where \( V_j = \prod_k V_{kj} \), and the prioritization of potential standards will be stronger for persons high in self-focus than for persons low in self-focus.
Method

Overview

The hypotheses derived from the integrated model were tested on a sample of students enrolled in Psychology 101, in which four 50-item multiple choice tests were administered as part of the course requirements. At the beginning of the course, prior to the first course examination, subjects were asked to complete a Pre-Test Questionnaire calling for demographic information, information concerning course performance expectations, and study (effort) intentions. Included as part of the Pre-Test Questionnaire, subjects completed the Self-Consciousness Scale developed by Fenigstein, Scheier, and Buss (1975) and a 9-item anxiety scale modeled after Spielberger’s (1971) State-Trait Anxiety Inventory. They were also asked to complete a rating Questionnaire (VIE component measures) directed at measuring the expectancy and valence of course grade outcomes. Following each of the first three examinations, a Post-Test/Pre-Test Questionnaire was administered to all subjects. The Post-Test/Pre-Test questionnaire asked subjects to report the performance they obtained on their last examination, to indicate the effort that contributed to their performance and, once again, to indicate their study intentions. They were also asked, again, to complete the Rating Questionnaire (VIE component measures).

Subjects

Two hundred and forty subjects were initially drawn from a population of undergraduate students, enrolled in Psychology 101, who volunteered to participate in a study of self-regulated human performance. Students were given the opportunity to volunteer through sign-up sheets posted on bulletin boards in appropriate areas of UNO, Arts and Sciences Hall, and announcements were made at Psychology 101 lectures and discussion sections. Of this initial sample, 34 subjects (14%) failed to complete all four examinations, resulting in a terminal sample of 206 subjects.
**Instruments and Measures**

Three questionnaires were used to collect all data, perceptual and behavioral. These included (a) the Rating Questionnaire (Appendix B), (b) the Pre-Test Questionnaire (Appendix C), and (c) the Post-Test/Pre-Test Questionnaire (Appendix D).

**The rating questionnaire.** The Rating Questionnaire was used to collect subjects' expectancy and primary valence ratings of potential course grades. Because this study was not directly interested in the instrumental relation between course grades and grade point average or other higher level outcomes, measures of instrumentality were not solicited. The valence of each outcome was measured by importance ratings, provided by subjects, on a scale ranging from -4 to +4. Verbal anchors ranged from "It is extremely important that I obtain this outcome," through "It makes no difference whether or not I obtain or avoid this outcome," to "It is extremely important that I avoid this outcome."

Expectancy was measured through subjects' probability ratings, expressed as a percent (0% to 100%), that the combination of their ability and their effort would result in a particular level of grade performance in the course. The decision to rate expectancy as a probability was based on Vroom's (1964) conceptualization of expectancy as that which "takes values ranging from zero...to +1."

**The pre-test questionnaire.** The Pre-Test Questionnaire called for such demographic information as ID number, age, gender, major, and college status. It asked subjects to list their course grade expectations and their study intentions. It also asked subjects to rank order the 9 performance outcomes with regard to priority (e.g., goal, expectation, intention, etc.). In addition, the Pre-Test Questionnaire included a 9-item anxiety scale modeled after Spielberger's (1971) State-Trait Anxiety Inventory and a 17-item measure of self-focus developed by Fenigstein et al. (1975). This measure, called the Self-Consciousness Scale, "attempts to tap dispositional differences in the degree to which individuals' primary focus of attention is the self, rather than the environment (Hollenbeck &
Williams, 1987)."

The self-consciousness scale. Though research by Fenigstein et al. (1975) suggested a two dimensional measure, private and public self-consciousness, in other studies (Hollenbeck & Williams, 1987), the subscales were found to be more highly correlated ($r = .67$) than items within the scale; principle components factor analysis failed to support a two-factor structure. Within the context of a unidimensional measure, the internal consistency estimate of reliability was .78 (Hollenbeck & Williams, 1987).

Turner, Scheier, Carver, and Ickes (1978) found the Self-Consciousness Scale to be significantly correlated ($r = .40$) with the Guilford-Zimmerman Thoughtfulness Scale and the Pavio Imagery Inventory. It was also found by Glass (1976) to correlate significantly with self-monitoring (Snyder, 1974).

In contrast, measures of social desirability (Crown & Marlow, 1964), self-esteem (Morse & Gergen, 1970), and emotionality (Buss & Plomin, 1975) were found by Turner et al. (1978) to not relate significantly to the Self-Consciousness Scale. Measures of IQ (Otis, 1954), need for achievement (Edwards, 1957), test anxiety (Mandler & Sarason, 1952), and impulsivity (Buss & Plomin, 1975) were, likewise, found by Carver and Glass (1976) to be uncorrelated with the scale.

The post-test/pre-test questionnaire. In addition to the topics covered by the Pre-Test Questionnaire, the Post-Test/Pre-Test Questionnaire asked subjects to report the grade they received on their last test and provide two separate ratings to indicate the amount of effort they intended to spend in preparation for the next exam as compared to the last exam. The first rating used a scale from 1 to 5, with verbal anchors ranging from "much less" through "about the same" to "much more." The second rating used a scale from 1 to 7, with verbal anchors ranging from "much less" through "about the same" to "extraordinarily more."
Pre-administration test of measures. A sample of 60 subjects was drawn to test the readability of the questionnaires and to collect data from which reliability coefficients could be generated. Though it was anticipated that subjects’ ratings of valence, instrumentality, and expectancy were subject to change over time, it was expected that the ratings would be relatively free from wild undulation over a relatively short period of time (De Leo & Pritchard, 1981; Ilgen, Nebeker, & Pritchard, 1974). Thus, stability coefficients were calculated to serve as estimates of reliability. Two test-retest intervals were used, 24 hours and 72 hours. Readability was assessed through interviews included as part of the debriefing procedure following the administration of all remaining questionnaires.

Procedure

Two weeks after beginning the semester, time 1, subjects were randomly assigned to two groups to facilitate alternating the order in which Pre-Test and Rating Questionnaires were presented. At that time, group 1 subjects were asked to first complete the Pre-Test Questionnaire and then to complete the Rating Questionnaire. In contrast, group 2 subjects were asked to first complete the Rating Questionnaire and then to complete the Pre-Test Questionnaire.

At time 2, time 3, and time 4, one week following the first exam, the second exam, and the third exam, respectively, subjects were asked to once again complete the Rating Questionnaire and to complete the Post-Test/Pre-Test Questionnaire. For all subjects, order of presentation (of questionnaires) was alternated from that of the previous administration.
Results

All data entries were verified three times and corrections to input errors were made. Though all measures were self-report, grade outcomes were verified against grade reports furnished by the course instructor. Errors were uncommon; over 95% of the subjects reported accurately the grades they received. When errors were detected, corrections were made, and the data were retained. Though subjects may have been excluded from a particular analysis because of missing data, they were not dropped from the study. Thus, the number of subjects in an analysis sometimes exceeded the number of subjects in a preceding analysis.

Descriptive grade-goal data are provided in Appendix A.

Reliability

The test-retest method was used to estimate the reliability of questionnaires applied in this study. Two retest intervals were used: twenty-four hours and seventy-two hours. As noted in Table 1, the analyses suggested that responses provided by subjects were quite consistent over time. Reliability coefficients obtained at time 1-2 did not differ from those obtained at time 1-3, \( r_{1-2} = .85; r_{1-3} = .85 \). Probability estimates—subjects’ estimates of the probability that they would obtain a specific grade-outcome (A+ to F)—showed the most stability, \( r = .985 \). In contrast, importance ratings—subjects’ estimates of the importance of obtaining a specific grade-outcome (A+ to F)—showed the least stability, \( r = .73 \).

Hypothesis 1

The standard carrying the highest motivational force, calculated as \( F_x = E_x V_x \), will be selected as the focal standard.

Data analysis and results. Hypothesis 1 was analyzed in three ways. The first assessed the strength of the relation between grade goal and motivational force through a mean within-subjects correlation coefficient. A correlation coefficient was calculated, for each subject, to assess the strength of the relation between the subject’s top four grade goals and
Table 1.

**Coefficients of Stability Based on a Twenty-Four and Seventy-Two Hour Retest Interval.**

<table>
<thead>
<tr>
<th>Response Items</th>
<th>Coefficient Time 1-2 (n=60)</th>
<th>Coefficient Time 1-3 (n=60)</th>
<th>Mean Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>.85</td>
<td>.85</td>
<td>.850</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.87</td>
<td>.86</td>
<td>.865</td>
</tr>
<tr>
<td>Goal</td>
<td>.87</td>
<td>.79</td>
<td>.830</td>
</tr>
<tr>
<td>Importance</td>
<td>.76</td>
<td>.70</td>
<td>.730</td>
</tr>
<tr>
<td>Probability</td>
<td>.98</td>
<td>.99</td>
<td>.985</td>
</tr>
<tr>
<td>Self-Focus</td>
<td>.79</td>
<td>.80</td>
<td>.795</td>
</tr>
</tbody>
</table>
their corresponding motivational force. Following this procedure, each correlation was transformed to a Fisher-Z score to normalize the distribution, and the mean correlation was calculated. The obtained mean within-subjects correlation was \( r(n=240) = .72 \) (\( z = .90348 \)). Note, however, that the obtained correlation understates the strength of the relation between grade goal selection and motivational force due to the unreliability of the measures.

To obtain a more accurate estimate of this relation, the obtained mean within-subjects correlation was corrected for unreliability. Correcting for unreliability in the predictor, motivational force estimates (\( r_{T1-3} = .85 \)), and in the criterion, grade goal (\( r_{T1-3} = .79 \)), over 77% of the variance in goal selection was accounted for by motivational force; \( r_{corr} = .88 \).

Second, because subject’s ability or willingness to prioritize potential outcomes may have weakened as outcomes became less probable, another test of hypothesis 1 was conducted. This test examined, at times 1, 2, 3 and 4, the proportion of subjects who selected the outcome carrying the highest motivational force as their number one grade goal.

Because the null hypothesis predicted no relation between motivational force and selection of a performance standard, it followed that each of the 9 course grades, A+ to F, had an equal probability of being selected as the focal standard. Given such and that subject’s responses were dichotomized, select/do not select, Chi-Square tests were conducted with expected cell frequencies of 1:8. Before presenting the results of those analyses for all time periods, a more detailed explanation, using time 1 only, may be helpful.

Based on the data for time 1 and an expected cell frequency ratio of 1:8, we expect that 26 subjects would select the outcome carrying the highest motivational force (HMF) as their number one grade goal and that 204 would not. The results indicated that 99 subjects selected the outcome carrying the HMF as their number one goal; in contrast, 131 subjects did not. A Chi-Square test indicated that the obtained distribution was significantly different than that predicted by the null hypothesis, \( X^2(1) = 231.08, p < .002 \). In other words, more subjects selected, at time 1, the outcome carrying the highest motivational force (HMF) as their number
one goal than would be expected to occur by chance.

<table>
<thead>
<tr>
<th></th>
<th>select as standard</th>
<th>did not select as standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>ef=26</td>
<td>ef=204</td>
<td></td>
</tr>
<tr>
<td>of=99</td>
<td>of=131</td>
<td></td>
</tr>
</tbody>
</table>

Note. ef = expected cell frequency  
of = obtained cell frequency

Overall (across times one, two, three, and four), motivational force predicted subjects' number one grade goal 45% of the time (Table 2).

To further examine the relation between motivational force and goal selection, a third analysis was undertaken to determine if a selection pattern, as found for goal one, similarly existed for goals two, three, and four. This test was conducted in the same manner as was the preceding analysis, a Chi-Square test with an expected cell frequency ratio of 1:8. Unlike the preceding test, however, which examined the relation between selection as the number one grade goal and its corresponding motivational force, this test examined the relation between selection as the number two grade goal, the number three grade goal, the number four grade goal and its corresponding motivational force. The results revealed that, on the average, thirty-six percent of the time, motivational force estimates predicted goal choice (Table 2).

_Hypothesis 2_

When the focal standard and performance are disparate, the performer will elect to either increase effort or change the focal standard.

_Data analysis and results._ Subjects' data were analyzed in the context of 2 x 2 contingency tables with expected cell frequencies set by the marginals. To avoid violation of the assumption of independence of observations, three 2 x 2 contingency tables were constructed, one for time 1, one for time 2, and one for time 3. The results revealed that for
Table 2.

*Motivational Force-Goal Comparisons: Number of Subjects Whose Grade-Goal Corresponded With Its Motivational Force.*

<table>
<thead>
<tr>
<th>Goal</th>
<th>Time 1 (n = 230)</th>
<th>Time 2 (n = 235)</th>
<th>Time 3 (n = 219)</th>
<th>Time 4 (n = 206)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>99 (43%)</td>
<td>101 (43%)</td>
<td>99 (45%)</td>
<td>103 (50%)</td>
</tr>
<tr>
<td>2</td>
<td>87 (38%)</td>
<td>85 (36%)</td>
<td>83 (38%)</td>
<td>85 (41%)</td>
</tr>
<tr>
<td>3</td>
<td>71 (31%)</td>
<td>82 (35%)</td>
<td>81 (37%)</td>
<td>85 (41%)</td>
</tr>
<tr>
<td>4</td>
<td>51 (22%)*</td>
<td>82 (35%)</td>
<td>81 (37%)</td>
<td>85 (41%)</td>
</tr>
</tbody>
</table>

*Note. All percentages, except for goal #4 at time 1 (*), were significant, p < .002*
each time period, subjects more frequently made control responses in the presence of a performance-standard disparity than in the presence of performance-standard congruence (Table 3). For example, at time 1, 79% of the subjects who experienced a performance-standard disparity employed a control response (change of effort or change of standard). In contrast, 55% of the subjects who obtained their preferred outcome made a control response, $X^2(1) = 6.39, p<.01$.

When averaged across all time periods, 73% of the time, subjects who experienced a performance-standard disparity employed a control response (change of effort or change of standard) (Table 3). A breakdown of the direction of the disparity, type of control response, and direction of the control response is provided in Table 4. In contrast, 31% of the time, subjects who obtained their preferred outcome made a control response (Table 3). Of the 31% who made a control response, having obtained their preferred outcome, 40% lowered their standard, 4% increased their standard, 35% increased their effort, 17% decreased their effort, and 4% lowered their standard while increasing their effort.

**Hypothesis 3**

When the focal standard and performance are disparate and the motivational force of the focal standard is no longer sufficient to elicit performance consistent with the standard, the performer will elect to change the focal standard.

**Data analysis and results.** Hypothesis 3 was analyzed in two ways. First, $t$-tests were conducted to compare, in the presence of a performance-standard disparity, the standard change when the motivational force of the standard remained prepotent--carried the highest motivational force--to the standard change when the motivational force of the standard no longer remained prepotent.

The results revealed that subjects made significantly greater changes to their focal standard in the presence of a performance-standard disparity when the motivational force of that standard was no longer prepotent than when the motivational force remained prepotent.
Table 3.

Control Response Comparisons: Percentage of Subjects Who Employed a Control Strategy or Who Did Not Employ a Control Strategy in the Presence of Performance-Standard Congruence or Disparity.

<table>
<thead>
<tr>
<th>Group</th>
<th>NoCR</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disparate (Across All Time Periods)</td>
<td>27%</td>
<td>73%</td>
</tr>
<tr>
<td>Time Period 1-2 (N = 191)</td>
<td>21%</td>
<td>79%</td>
</tr>
<tr>
<td>Time Period 2-3 (N = 180)</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>Time Period 3-4 (N = 165)</td>
<td>32%</td>
<td>68%</td>
</tr>
<tr>
<td>Congruent (Across All Time Periods)</td>
<td>69%</td>
<td>31%</td>
</tr>
<tr>
<td>Time Period 1-2 (N = 28)</td>
<td>45%</td>
<td>55%</td>
</tr>
<tr>
<td>Time Period 2-3 (N = 22)</td>
<td>81%</td>
<td>19%</td>
</tr>
<tr>
<td>Time Period 3-4 (N = 24)</td>
<td>83%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Note. Time 1, $p < .01$; time 2 and time 3, $p < .001$
Table 4.


<table>
<thead>
<tr>
<th>Disparity</th>
<th>n</th>
<th>Type/Direction of Control Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtained More Than Expected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2%)</td>
<td>5</td>
<td>Raised Standard</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Raised Standard and Effort</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Lowered Standard</td>
</tr>
<tr>
<td>Obtained Less Than Expected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(98%)</td>
<td>5</td>
<td>Raised Standard</td>
</tr>
<tr>
<td></td>
<td>53</td>
<td>Lowered Standard</td>
</tr>
<tr>
<td></td>
<td>198</td>
<td>Raised Effort</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Lowered Effort</td>
</tr>
<tr>
<td></td>
<td>110</td>
<td>Raised Standard and Effort</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Lowered Goal and Effort</td>
</tr>
</tbody>
</table>
(Table 5). For example, when the focal standard at time 3 was no longer prepotent at time 4, the mean change to the standard (time 3 - time 4), in the presence of a performance-standard disparity, was 0.61 (1.00 is equal to a one-half grade change). In contrast, when the focal standard at time 3 was also prepotent at time 4, the mean change to the focal standard (time 3 - time 4), was 0.16, \( t(161) = 3.92, p < .002 \).

To further examine this hypothesis, a Chi-Square test was conducted in the context of a 2 x 2 contingency table with expected cell frequencies set by the marginals. Within the group of subjects who experienced a performance-standard disparity, the number of subjects who changed their standard when the motivational force of the standard did not remain prepotent was compared to the number of subjects who changed their standard when the motivational force of the standard remained prepotent. As shown in Table 6, for times 1-2, 2-3, and 3-4, subjects seldom made standard changes when the motivational force of the standard remained prepotent. However, when the motivational force of the standard was no longer prepotent, subjects more frequently made changes to their standard (Table 6). For example, in the presence of a performance-standard disparity, when the focal standard at time 3 was no longer prepotent at time 4, 49 subjects changed their standard and 54 subjects did not. In contrast, when the focal standard at time 3 was also prepotent at time 4, 7 subjects changed their standard and 53 subjects did not, \( X^2(1) = 21.67, p < .001 \).

It should be noted that many subjects did not change their standard when the motivational force of the standard no longer remained prepotent. Because such a finding was not expected in light of the hypothesis, further t-test analyses were conducted to identify a possible moderator. The results revealed that subjects for whom the motivational force of the standard no longer remained prepotent did not significantly differ in self-focus, anxiety, or the amount of change in motivational force from subjects for whom the motivational force of the standard remained prepotent; a moderator was not found.
Table 5.

Mean Change to the Focal Standard in the Presence of a Performance-Standard Disparity for Times 1-2, 2-3, and 3-4.

<table>
<thead>
<tr>
<th>Group</th>
<th>Time 1-2 Mean Change (n = 187)</th>
<th>Time 2-3 Mean Change (n = 179)</th>
<th>Time 3-4 Mean Change (n = 163)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disparate &amp; Not Prepotent</td>
<td>0.65 (n = 136)</td>
<td>0.56 (n = 125)</td>
<td>0.61 (n = 103)</td>
</tr>
<tr>
<td>Disparate &amp; Prepotent</td>
<td>0.09 (n = 51)</td>
<td>0.16 (n = 54)</td>
<td>0.16 (n = 60)</td>
</tr>
</tbody>
</table>

*Note.* For each time period, $p < .002$. 
Table 6.


<table>
<thead>
<tr>
<th>Time</th>
<th>n</th>
<th>Group</th>
<th>Change</th>
<th>No Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>136</td>
<td>Disparate &amp; Not Prepotent</td>
<td>41%</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>51</td>
<td>Disparate &amp; Prepotent</td>
<td>8%</td>
<td>92%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(n = 56)</td>
<td>(n = 80)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(n = 4)</td>
<td>(n = 47)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>187</td>
<td>(Total N for Time 1-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td>125</td>
<td>Disparate &amp; Not Prepotent</td>
<td>41%</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>54</td>
<td>Disparate &amp; Prepotent</td>
<td>13%</td>
<td>87%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(n = 51)</td>
<td>(n = 74)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(n = 7)</td>
<td>(n = 47)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>179</td>
<td>(Total N for Time 2-3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-4</td>
<td>103</td>
<td>Disparate &amp; Not Prepotent</td>
<td>48%</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>Disparate &amp; Prepotent</td>
<td>12%</td>
<td>88%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(n = 49)</td>
<td>(n = 54)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(n = 7)</td>
<td>(n = 53)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>163</td>
<td>(Total N for Time 3-4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. For each time period, \( p < .001 \).
Hypothesis 4

Performers will more frequently apply effort change to ameliorate performance-standard disparities when the motivational force of the focal standard remains prepotent than when the motivational force of the focal standard does not remain prepotent.

Data analysis and results. Hypothesis 4 was analyzed in two ways. First, $t$-tests were conducted to compare, in the presence of a performance-standard disparity, the effort change when the motivational force of the standard remained prepotent to the effort change when the motivational force of the standard no longer remained prepotent, for time 2-3 and for time 3-4.

The results revealed that, at time 2-3, subjects made significantly greater changes in effort in the presence of a performance-standard disparity when the motivational force of the standard was prepotent than when the motivational force of the standard was no longer prepotent, $t(177) = 1.71, p < .02$ (Table 7). However, at time 3-4, this effect was, at best, marginal, $t(161) = 1.41, p = .12$.

To further examine this hypothesis, a Chi-Square test was conducted in the context of a 2 x 2 contingency table with expected cell frequencies set by the marginals. Within the group of subjects who experienced a performance-standard disparity, the number of subjects who changed their effort when the motivational force of the standard remained prepotent was compared to the number of subjects who changed their effort when the motivational force of the standard was no longer prepotent. For example, in the presence of a performance-standard disparity at time 2-3 (Table 8), 46 subjects changed their effort and 79 did not, when the motivational force of the standard no longer remained prepotent. In contrast, when the motivational force of the standard remained prepotent, 40 subjects changed their effort and 14 did not, $X^2(1) = 20.98, p < .001$.

As shown in Table 8, for time 2-3 and 3-4, subjects made significantly more effort changes when the motivational force of the standard remained prepotent than when it did not.
Table 7.

*Mean Effort Change in the Presence of a Performance-Standard Disparity for Times 2-3 and 3-4.*

<table>
<thead>
<tr>
<th>Group</th>
<th>Time 2-3 Mean Change</th>
<th>Time 3-4 Mean Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 179)</td>
<td>(n = 163)</td>
</tr>
<tr>
<td>Disparate &amp; Not Prepotent</td>
<td>0.36</td>
<td>0.38</td>
</tr>
<tr>
<td></td>
<td>(n = 125)</td>
<td>(n = 103)</td>
</tr>
<tr>
<td>Disparate &amp; Prepotent</td>
<td>0.46</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td>(n = 54)</td>
<td>(n = 60)</td>
</tr>
</tbody>
</table>

*Note. For time 2-3, p < .02; for time 3-4, p = .12.*
Table 8.

Percentage of Subjects Who Made an Effort Change, in the Presence of a Performance-Standard Disparity, When the Motivational Force of the Focal Standard Remained Prepotent and When the Motivational Force of the Focal Standard No Longer Remained Prepotent, for Times 2-3 and 3-4.

<table>
<thead>
<tr>
<th>Time</th>
<th>n</th>
<th>Group</th>
<th>Change</th>
<th>No Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-3</td>
<td>125 Disparate &amp;</td>
<td>37%</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not Prepotent</td>
<td>(n = 46)</td>
<td>(n = 79)</td>
</tr>
<tr>
<td></td>
<td>54</td>
<td>Disparate &amp;</td>
<td>74%</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prepotent</td>
<td>(n = 40)</td>
<td>(n = 14)</td>
</tr>
<tr>
<td></td>
<td>179</td>
<td>(Total N for Time 2-3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-4</td>
<td>103 Disparate &amp;</td>
<td>36%</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not Prepotent</td>
<td>(n = 37)</td>
<td>(n = 66)</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>Disparate &amp;</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prepotent</td>
<td>(n = 45)</td>
<td>(n = 15)</td>
</tr>
<tr>
<td></td>
<td>163</td>
<td>(Total N for Time 3-4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. For each time period, p < .001.
However, as reflected in Table 6, time 3-4, subjects demonstrated considerable variability in the magnitude of such changes.

**Hypothesis 5**

Performers will more frequently rely on changes in effort to remediate a performance-standard disparity in the earlier stages of the performance process and will increasingly rely on changes in the focal standard in later stages of this process.

**Data analysis and results.** For this hypothesis, data from subjects who made a control response in the presence of a performance-standard disparity were analyzed. To view these control behaviors over time, the analysis was conducted in the context of a 2 x 2 contingency table, a comparison of the standard change occurring at time 1-2 to that occurring at time 3-4. As reflected in Table 9, at time 1-2, 127 subjects changed their standard and 60 subjects did not. In contrast, at time 3-4, 107 subjects changed their standard and 56 subjects did not. The ratio of subjects who made a standard change to those who did not at time 1-2 was not significantly different than that same ratio at time 3-4, $X^2(1) = .21, ns$.

**Hypothesis 6**

The relation between the motivational force of potential standards ($F_a=E_aV_a$) and the prioritization of potential standards will be stronger for persons high in self-focus than for persons low in self-focus.

**Data analysis and results.** Subjects’ data were dichotomized based on the mean of the self-focus scores for all subjects. With an overall self-focus-score mean of 42.22 ($SD = 7.67; SE = 0.52$), subjects with self-focus scores greater than 42.22 were designated the high self-focus group. In contrast, subjects with self-focus scores less than 42.22 were designated the low self-focus group. For both groups, a correlation coefficient was calculated, for each subject, to assess the strength of the relation between each subject’s top four grade goals and their corresponding motivational force. Following this procedure, each correlation was transformed to a Fisher-Z score to normalize the distribution, and a mean correlation
Table 9.

**Standard Change Comparisons: Percentage of Subjects Who Changed Their Standard, in the Presence of a Performance-Standard Disparity, for Times 1-2 and 3-4.**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Change Standard</th>
<th>No Change Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1-2 (n = 187)</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>Time 3-4 (n = 163)</td>
<td>66%</td>
<td>34%</td>
</tr>
</tbody>
</table>

*Note. p > .10*
was calculated for each group and for both groups combined. The combined mean correlation was \( r = .90 \) \( (SD = 1.09; SE = .07) \). The analyses indicated that the obtained mean within-subjects correlation for high self-focus subjects was not significantly different from that obtained for low self-focus subjects (Table 10). Likewise, when Z-scores for all subjects were regressed on self-focus scores, no relation was found, \( r(n = 230) = -.05, ns \).
Table 10.

**Self-Focus Comparisons: Mean Within-Subject Motivational Force/Goal Choice Correlations for High and Low Self-Focus Scoring Subjects.**

<table>
<thead>
<tr>
<th>Group</th>
<th>Z-Score</th>
<th>Mean-r</th>
</tr>
</thead>
<tbody>
<tr>
<td>LoSF (n = 104)</td>
<td>.88</td>
<td>.71</td>
</tr>
<tr>
<td>HiSF (n = 126)</td>
<td>.93</td>
<td>.73</td>
</tr>
</tbody>
</table>

*Note.* No significant difference between groups.
Discussion

It may be recalled that though research by Campion and Lord (1982) suggested that the control systems model was an apt descriptor of the goal setting process, their research left several questions unanswered. First, their research did not specify the process performers use to select their standards: why some performers set their standards of performance so high while others set them so low. Second, their research did not explain the goal commitment process: why some remain committed to their goals while others quickly abandon their goals. Third, though their research found that in the presence of a performance-standard disparity, performers evoke a control response, either behavioral or cognitive, it did not specify the conditions under which these control responses were applied. To address the aforementioned, thus further specifying the control process, research was conducted to test a model of human performance: the integration of VIE and control systems theory. The following will discuss the results of that investigation, the implications, and directions for further research.

The results of this study clearly suggest that the structural similarities and the substantive relations common to VIE theory and control theory are more than fortuitous. Though hypotheses five and six were not supported, hypotheses one through four provide the strong evidence essential to the integration of VIE and control systems theory.

Hypothesis 1 suggested that we select for ourselves, standards of performance based on the satisfaction or the worth (valence) that we believe will follow from outcomes and our estimate of the probability (expectancy) that these outcomes are achievable. It posited that the standard carrying the highest motivational force, calculated as \( F_{ik} = E_{ik} V_k \), will be selected as the focal standard. The results of this study revealed that when corrections were made for unreliability in the predictor and in the criterion, over 77% of the variance in goal selection was accounted for by motivational force and that subjects selected the outcome carrying the highest motivational force as their number one grade goal 45% of the time. However, given the strong correlation between goal selection and motivational force, \( r_{crit} = .88 \), the finding that
subjects selected the outcome carrying the highest motivational force as their number one goal 45% of the time may be less than satisfying. It should be noted, however, that the former statistic reflects corrections for unreliability whereas the latter does not. In the absence of such corrections, the variance in goal selection accounted for by motivational force was 52%. Such aside, it should also be noted that individuals may differ in the importance they attach to valence and to expectancy estimates. Though the Vroom (1964) effort model suggests that the force acting on an individual is the multiplicative combination of valence and expectancy estimates, it is possible that individuals differ in the way they combine such information. For some, the combination may be as suggested by Vroom (1964). That is, regardless of the position a valence or an expectancy rating holds relative to their respective scales, the motivational force may be the product of valence and expectancy estimates. In such a case, an individual would be expected to respond equally to the outcome carrying a valence of 7 and an expectancy of .50 as to the outcome carrying a valence of 5 and an expectancy of .70. For others, however, the outcome with a valence of 5 and an expectancy of .70 may be more motivating than the outcome with a valence of 7 and an expectancy of .50, given the higher probability of success. Because such would be expected to influence the outcomes of a Chi-Square test and a correlational test, both findings may understate the role of valence and expectancy estimates. Thus, though this research clearly suggests that valence and expectancy estimates, in combination, underlie the goal selection process, the results of the aforementioned tests may understate the role of valence and expectancy due to individual differences in the weighting of such information.

Hypothesis 2 was a retest of the control systems model. It stated that when the focal standard and performance are disparate, the performer will elect to either increase effort or change the focal standard. The results of that test were consistent with those found by Campion and Lord (1982). When averaged across all time periods, subjects employed a control response (change of effort or change of standard) in the presence of a performance-
standard disparity 73% of the time. Under the same conditions, the Campion and Lord (1982) study reported that subjects employed a control response 64% of the time. Further, consistent with the Campion and Lord (1982) study which unexpectedly found that 36% of the subjects made control responses in the presence of performance-standard congruence, this study found that 31% of the subjects made control responses under similar conditions. Notwithstanding the possible contribution of measurement error, an integration of VIE and control theory would posit that such findings suggest that the control systems model, as tested by Campion and Lord (1982), was an underspecification. Specifically, though VIE theory would acknowledge that prior outcomes influence expectancy estimates, it would also suggest that prior outcomes, narrowly defined, are not the sole determinant of goal selection. Such a perspective would also highlight the expected value of the outcome. Though the integrated model acknowledges that information concerning the success of an immediate prior outcome aids prediction, it would also suggest that valence and expectancy estimates improve prediction. From this VIE-control systems perspective, when prediction was based solely on prior outcomes and valence and expectancy estimates were not considered, it is not surprising to find that of the 31% who made a control response having obtained their preferred outcomes, that 57% lowered their effort or their standard, 39% increased their effort or their standard, and 4% increased one and lowered the other.

Hypothesis 3, a further specification of the goal-setting control process, posited that when the focal standard and performance are disparate and the motivational force of the focal standard is no longer sufficient to elicit performance consistent with the standard, the performer will elect to change the focal standard. The results of this study revealed that subjects made smaller changes to the focal standard in the presence of a performance-standard disparity when the motivational force of standard remained prepotent than when the potency of the standard degraded. Further, this study revealed that in the presence of a performance-standard disparity, far fewer subjects made changes to their standard when the
motivational force remained prepotent than when it did not. Unexpectedly, however, in the presence of a performance-standard disparity when the motivational force of their standard degraded, subjects were as likely as not to make a change to their standard. Though such a finding could be an artifact of measurement error, I suggest that it would be inappropriate to use such an explanation for an unpredicted result in a 4-cell test and then to suggest that the remaining 3-cells, which supported the hypothesis, were somehow impervious to such error. Thus, given the obtained cell patterns, it is more likely that another variable moderated the relation. Though such may be the case, attempts to identify a moderator were unsuccessful. Subjects for whom the motivational force of the standard no longer remained prepotent did not differ in self-focus, anxiety, or the amount of change in motivational force from subjects for whom the motivational force of the standard remained prepotent.

In sum, the results of these analyses suggest that subjects remain committed to their goals in the presence of a performance-standard disparity, when the motivational force of the standard remains prepotent. However, when the motivational force of the standard becomes degraded, behavior is less predictable.

Hypothesis 4, posited that performers will more frequently apply effort change to ameliorate performance-standard disparities when the motivational force of the focal standard remains prepotent than when the motivational force of the focal standard does not remain prepotent. The results of this study supported this hypothesis. When the motivational force of standard remained prepotent in the presence of a performance-standard disparity, 74.5% of the subjects increased their effort and 25.5% of the subjects made no effort change. Likewise, performers made greater effort changes in the presence of a performance-standard disparity when the motivational force remained prepotent than when it did not.

Though the above hypotheses, essential to the integration of VIE and control theory were supported, hypotheses 5 and 6, representing a further specification of an integrated model, were not.
Hypothesis 5, posited that performers will more frequently rely on changes in effort to remediate a performance-standard disparity in the earlier stages of the performance process and will increasingly rely on changes in the focal standard in later stages of this process. The results of this study revealed no difference between the proportion of subjects who made standard changes in the earlier stages of the performance process and the proportion who made such changes in the later stages of the performance process. Though such a finding is inconsistent with the finding of Harrison et al. (1989), it is likely that two factors rendered the comparison ineffectual. First, this study compared the number of subjects who made standard changes during time 1-2, three to five weeks into the semester, to the number of subjects who made such changes during time 3-4, nine to twelve weeks into the semester. Additionally, approximately three weeks remained between the latter measure and the end of the performance period. Thus, the lack of support for the suggested temporal relation between control responses is likely a type II error. Because of the close temporal proximity of measures (time 1-2 and time 3-4) and that subjects had approximately three weeks following time 3-4 to make changes, an effect would likely go undetected.

Hypothesis 6, posited that the relation between the motivational force of potential standards (\(F_{ik} = E_{ik} V_{ik}\)) and the prioritization of potential standards will be stronger for persons high in self-focus than for persons low in self-focus. The results of this study were not supportive of this hypothesis; self-focus scores did not influence the relation between goal selection and motivational force. There was no difference between high self-focus and low self-focus performers in the strength of this relation. Though it is difficult to account for such a finding, given the large sample size, it is unlikely that such was due to restriction of range, given an overall self-focus mean of 42.22, a standard deviation of 7.67, and an overall Z-score mean of 0.90, a standard deviation of 1.09.

Though this research was conducted in the context of goal setting, it should be noted that the VIE-control systems model was developed to account for self-regulated behavior. As
such, aspects of this research, of specific interest to the goal setting literature, will be addressed next in the context of a more complete discussion of the model.

The VIE component of the integrated model suggests that we select behaviors for ourselves that we believe will lead to outcomes that are satisfying or worthwhile. It also suggests that such a choice occurs within the context of a field of behavioral options drawn from past personal experience or vicarious observation. Further, it suggests that our behavioral choice is moderated by our subjective estimates of the probability that preferred outcomes will follow. Thus, motivated to achieve desired outcomes, we select and shape our environment in ways that we believe will enhance the probability of success. At the same time, we continue to abstract information from our environment; we continue to assess our estimates of the worth or satisfaction we expect will follow from behavior and the probability that we will achieve our desired outcomes.

Though some would suggest that such a perspective is hedonistic, that it lowers the dignity of human behavior, I suggest that we must separate efforts to model the behavior process from efforts to advance human endeavor. If the integrated model predicts hedonistic behavior, it does so only because we find self-indulging behavior satisfying or worthwhile. If, however, we value equity, distributive and procedural justice, or self-actualization the predictions that follow from the integrated model will be of a different kind. Likewise, if we place a higher value on minimizing costs than on maximizing outcomes, are unaware of the full range of human potential, under-estimate the probability of success in our assessment of environmental conditions or perceive ourselves as ineffectual, we will set for ourselves standards of performance that are less than those that otherwise may be achieved.

The control component of the integrated model suggests that control responses, behavioral or cognitive, minimize performance-standard disparities. Because we continue to abstract information from our environment concerning the potential worth or satisfaction of outcomes and the probability of achieving preferred outcomes, subjective interpretation of
performance feedback from our environment underlies the on-going assessment process. Thus, feedback mediates goal selection, in this dynamic process, through on-going assessment of the VIE component.

In the face of a performance-standard disparity, when the VIE component remains prepotent, we not only remain committed to our standard, but we change our effort to minimize performance-standard disparities. Given a prepotent standard, if the disparity takes the form of outcomes exceeding our standard, we will reduce effort to bring performance in line with the standard. Doing such, increases the potential value of the outcome by reducing its cost. Alternatively, if the disparity takes the form of outcomes falling short of the standard, we increase effort.

However, in the face of a performance-standard disparity, when the motivational force of the VIE component becomes degraded, we evoke cognitive change: abandon our commitment to prior standards and select for ourselves the outcome that currently carries the highest motivational force. Given a degraded standard, regardless of whether the outcome exceeds or fails to meet our standard, we select a standard consistent with our current motivational force.

Though the above control component could be viewed as a homeostatic process, the introduction of the VIE component suggests otherwise. Given that we are motivated to seek outcomes we believe will be satisfying or worthwhile, homeostasis follows from the integrated model only when we place high value on maintaining the status quo. Thus, the integrated model suggests that behavioral and cognitive attempts to minimize disparity should not be interpreted as pervasive efforts to achieve homeostasis, but rather, a result of attempts to achieve satisfying and worthwhile outcomes.

It is also important that we not overlook the hierarchical nature of the integrated model. Though the strength of the instrumental relation between first-level and second-level outcomes and the valence of second-level outcomes defines the valence of first-level outcomes, it should
be noted that more distal objectives, by themselves, are seldom powerful enough to elicit on-going behavior. Given our need to reduce uncertainty and that the reinforcement magnitude of potential outcomes diminishes as a function of reinforcement delay, a sub-goal approach to motivation, the Moses phenomenon, is essential to the maintenance of behavior. Despite the strength of Moses, chosen by God to lead the people of Israel to the promised land, a sign from God, through the burning bush, provided Moses the information needed to sustain and to act on his religious beliefs. Though the magnitude and the frequency of feedback necessary to sustain behavior may vary as a function of individual differences, only under extraordinary conditions should we expect that individuals will persevere in the absence of such information.

At one level of analysis, the VIE-control systems model and this research restates that we already knew. We find self-regulated behavior to be a control process in which the person extracts information from the environment and compares that information to a standard of performance. Further, we find that the information abstracted from the comparison process mediates self-regulation through behavioral or cognitive control responses. Along similar lines, we find that the multiplicative combination of the valence and the expectancy of a potential outcome exerts a force that motivates behavior. At another level of analysis, the VIE-control systems model and this research suggest much more.

First, valence and expectancy estimates determine our standards of performance and mediate persistent behavior. Because the standards we select for ourselves are based on valence and expectancy estimates, commitment to a standard is a function of their potency. When the multiplicative combination of valence and expectancy is no longer prepotent, we no longer remain committed.

Second, driven to obtain outcomes that are worthwhile or satisfying, we continuously seek feedback from our environment to reduce uncertainty. We continue to abstract valence information to update our estimates of the potential satisfaction or the worth of future outcomes. Further, we continue to abstract expectancy information to guide behavior bearing
on future outcomes.

Third, based on the valence-expectancy information that is abstracted from the standard and the environment, we engage control responses to facilitate the acquisition process. We make behavioral changes to bring performance in line with the standard or cognitive changes to bring the standard in line with valence and expectancy estimates. As such, homeostasis becomes a by-product of efforts to obtain preferred outcomes.

Though the results of this study provide strong support for the integration of VIE and control theory, this research did not attempt to test all aspects of the integrated model nor did it attempt to test all correlates. Further, this study did not attempt to objectively measure effort change. Likewise, it did not acknowledge alternative behavioral changes (e.g., dropping another course or lowering performance expectations in other areas that may compete with grade-goal objectives pertaining to this study). Nor did this study examine the influence of related cognitive processes (e.g., rationalization or attributional changes) on self-reported grade goals. More important, the results of this study may have been influenced by psychological reactance to the research design or by pre-test sensitization. Though it is likely that the lack of support for hypothesis five, which specified the temporal relation between behavioral and cognitive change, arises from deficient procedures, such an explanation is speculative and warrants further research. Likewise, additional research is needed to further specify the role of individual differences: differences in the weighting of valence-expectancy values, differences in the attentional process, and differences in the willingness to tolerate uncertainty and ambiguity mediated by delays of reinforcement.

Further, though the integrated model provides a better understanding of individual behavior, it is important to acknowledge that behavior frequently occurs in an interdependent social context. Given the findings of this research and that organizational behavior is heavily a person-interaction outcome, future research efforts should also consider possible links between the VIE-control systems model and interdependence theory (Kelley & Thibaut, 1978),
an analysis of variance model of interdependent relations.
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Appendix A
## Distribution of Grade-Goals for All Time Periods

### #1 Goal: Most Preferred Grade Outcome

<table>
<thead>
<tr>
<th>Grade</th>
<th>Time 1 (n = 237)</th>
<th>Time 2 (n = 235)</th>
<th>Time 3 (n = 237)</th>
<th>Time 4 (n = 234)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A +</td>
<td>28% (n = 66)</td>
<td>9% (n = 21)</td>
<td>7% (n = 16)</td>
<td>15% (n = 34)</td>
</tr>
<tr>
<td>A</td>
<td>40% (n = 94)</td>
<td>34% (n = 81)</td>
<td>7% (n = 17)</td>
<td>3% (n = 7)</td>
</tr>
<tr>
<td>B +</td>
<td>19% (n = 46)</td>
<td>34% (n = 82)</td>
<td>41% (n = 96)</td>
<td>2% (n = 5)</td>
</tr>
<tr>
<td>B</td>
<td>10% (n = 25)</td>
<td>17% (n = 39)</td>
<td>29% (n = 70)</td>
<td>43% (n = 102)</td>
</tr>
<tr>
<td>C +</td>
<td>2% (n = 4)</td>
<td>5% (n = 11)</td>
<td>13% (n = 31)</td>
<td>21% (n = 49)</td>
</tr>
<tr>
<td>C</td>
<td>1% (n = 2)</td>
<td>1% (n = 1)</td>
<td>3% (n = 7)</td>
<td>14% (n = 33)</td>
</tr>
<tr>
<td>D +</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>1% (n = 3)</td>
</tr>
<tr>
<td>D</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>1% (n = 1)</td>
</tr>
<tr>
<td>F</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
</tr>
</tbody>
</table>

### #2 Goal: Second Preferred Grade Outcome

<table>
<thead>
<tr>
<th>Grade</th>
<th>Time 1 (n = 238)</th>
<th>Time 2 (n = 238)</th>
<th>Time 3 (n = 238)</th>
<th>Time 4 (n = 238)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A +</td>
<td>23% (n = 55)</td>
<td>11% (n = 26)</td>
<td>6% (n = 15)</td>
<td>13% (n = 30)</td>
</tr>
<tr>
<td>A</td>
<td>38% (n = 90)</td>
<td>27% (n = 64)</td>
<td>8% (n = 20)</td>
<td>4% (n = 10)</td>
</tr>
<tr>
<td>B +</td>
<td>20% (n = 49)</td>
<td>35% (n = 83)</td>
<td>36% (n = 86)</td>
<td>5% (n = 11)</td>
</tr>
<tr>
<td>B</td>
<td>13% (n = 30)</td>
<td>17% (n = 42)</td>
<td>29% (n = 69)</td>
<td>39% (n = 94)</td>
</tr>
<tr>
<td>C +</td>
<td>3% (n = 7)</td>
<td>7% (n = 17)</td>
<td>16% (n = 38)</td>
<td>21% (n = 50)</td>
</tr>
<tr>
<td>C</td>
<td>3% (n = 7)</td>
<td>3% (n = 6)</td>
<td>4% (n = 8)</td>
<td>16% (n = 38)</td>
</tr>
<tr>
<td>D +</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>1% (n = 2)</td>
<td>1% (n = 3)</td>
</tr>
<tr>
<td>D</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>1% (n = 2)</td>
</tr>
<tr>
<td>F</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
</tr>
</tbody>
</table>
### #3 Goal: Third Preferred Grade Outcome

<table>
<thead>
<tr>
<th>Grade</th>
<th>Time 1 (n = 220)</th>
<th>Time 2 (n = 220)</th>
<th>Time 3 (n = 219)</th>
<th>Time 4 (n = 218)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A +</td>
<td>20% (n = 45)</td>
<td>8% (n = 18)</td>
<td>5% (n = 10)</td>
<td>11% (n = 24)</td>
</tr>
<tr>
<td>A</td>
<td>32% (n = 71)</td>
<td>26% (n = 57)</td>
<td>6% (n = 14)</td>
<td>4% (n = 9)</td>
</tr>
<tr>
<td>B +</td>
<td>20% (n = 44)</td>
<td>32% (n = 69)</td>
<td>34% (n = 75)</td>
<td>8% (n = 18)</td>
</tr>
<tr>
<td>B</td>
<td>17% (n = 37)</td>
<td>18% (n = 40)</td>
<td>29% (n = 64)</td>
<td>34% (n = 74)</td>
</tr>
<tr>
<td>C +</td>
<td>9% (n = 19)</td>
<td>9% (n = 19)</td>
<td>16% (n = 35)</td>
<td>22% (n = 47)</td>
</tr>
<tr>
<td>C</td>
<td>2% (n = 4)</td>
<td>6% (n = 14)</td>
<td>7% (n = 15)</td>
<td>15% (n = 33)</td>
</tr>
<tr>
<td>D +</td>
<td>0% (n = 0)</td>
<td>1% (n = 3)</td>
<td>3% (n = 6)</td>
<td>4% (n = 8)</td>
</tr>
<tr>
<td>D</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>2% (n = 5)</td>
</tr>
<tr>
<td>F</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
</tr>
</tbody>
</table>

### #4 Goal: Fourth Preferred Grade Outcome

<table>
<thead>
<tr>
<th>Grade</th>
<th>Time 1 (n = 207)</th>
<th>Time 2 (n = 207)</th>
<th>Time 3 (n = 206)</th>
<th>Time 4 (n = 207)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A +</td>
<td>20% (n = 41)</td>
<td>8% (n = 16)</td>
<td>4% (n = 9)</td>
<td>13% (n = 27)</td>
</tr>
<tr>
<td>A</td>
<td>29% (n = 60)</td>
<td>25% (n = 51)</td>
<td>6% (n = 13)</td>
<td>1% (n = 3)</td>
</tr>
<tr>
<td>B +</td>
<td>23% (n = 47)</td>
<td>30% (n = 62)</td>
<td>30% (n = 61)</td>
<td>7% (n = 14)</td>
</tr>
<tr>
<td>B</td>
<td>18% (n = 37)</td>
<td>18% (n = 39)</td>
<td>27% (n = 55)</td>
<td>31% (n = 64)</td>
</tr>
<tr>
<td>C +</td>
<td>5% (n = 11)</td>
<td>14% (n = 29)</td>
<td>21% (n = 42)</td>
<td>19% (n = 38)</td>
</tr>
<tr>
<td>C</td>
<td>5% (n = 10)</td>
<td>4% (n = 8)</td>
<td>8% (n = 17)</td>
<td>21% (n = 44)</td>
</tr>
<tr>
<td>D +</td>
<td>0% (n = 0)</td>
<td>1% (n = 2)</td>
<td>4% (n = 9)</td>
<td>4% (n = 8)</td>
</tr>
<tr>
<td>D</td>
<td>0% (n = 1)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>4% (n = 9)</td>
</tr>
<tr>
<td>F</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
<td>0% (n = 0)</td>
</tr>
</tbody>
</table>
RATING QUESTIONNAIRE

The following exercises are designed to develop a better understanding of student's beliefs regarding the importance and probability of achieving specific course grades.

The overall format of the questionnaire is straightforward. There are no 'trick' questions. For this reason, it is important that you clearly understand the instructions and that you do not hesitate to ask questions, at any time.

Before you begin rating, please provide the following information.

Full Name: ____________________________________________

First Name  Middle Initial  Last Name

Student Identification Number: ________________________________

Age: __________  Sex: __________  Major: ____________________________

Status:  Freshman  Sophomore  Junior  Senior

Home Phone Number: __________________________  Work Phone Number: __________________________

Course Title: ____________________________________________

Instructor: ________________________________________________

Teaching Assistant: ____________________________________________

Discussion Section: ____________________________________________

Day  Time  Section Number

Time Number (from researcher): ________________________________

Please turn to the next page and continue.
Section 1: IMPORTANCE RATINGS
INSTRUCTIONS and IMPORTANCE RATING SCALE

You will be given a list of potential course grade outcomes and will be asked to judge the importance of each potential outcome. The following rating scale will be used for these judgments:

Importance Rating Scale

-4 -3 -2 -1 0 +1 +2 +3 +4

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely</td>
<td>Moderately</td>
<td>It makes no</td>
<td>Moderately</td>
</tr>
<tr>
<td>important</td>
<td>important</td>
<td>difference</td>
<td>important</td>
</tr>
<tr>
<td>to avoid</td>
<td>to avoid</td>
<td>either way</td>
<td>to obtain</td>
</tr>
<tr>
<td>to obtain</td>
<td>to obtain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For each potential outcome, you will be asked to rate its IMPORTANCE. It is important that you note that IMPORTANCE RATINGS range from -4 to +4. Ratings preceded by a plus (+), are to be used for potential outcomes that you wish to achieve. Ratings preceded by a minus (-), are to be used for potential outcomes that you wish to avoid.

Before rating the IMPORTANCE of potential outcomes, read the outcome statement carefully. Then, circle the rating that best reflects the importance of the outcome.

Please turn to the next page and continue.
EXERCISE NUMBER 1.01

Instructions:
Circle your importance ratings.

### Course Grade Outcomes

<table>
<thead>
<tr>
<th>Importance Rating Scale</th>
<th>extremely important</th>
<th>moderately important</th>
<th>it makes no difference</th>
<th>moderately important</th>
<th>extremely important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Grade Outcomes</th>
<th>Importance Rating Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>01) Obtain a course grade of A+</td>
<td>-4 -3 -2 -1 0 +1 +2 +3 +4</td>
</tr>
<tr>
<td>02) Obtain a course grade of A</td>
<td>-4 -3 -2 -1 0 +1 +2 +3 +4</td>
</tr>
<tr>
<td>03) Obtain a course grade of B+</td>
<td>-4 -3 -2 -1 0 +1 +2 +3 +4</td>
</tr>
<tr>
<td>04) Obtain a course grade of B</td>
<td>-4 -3 -2 -1 0 +1 +2 +3 +4</td>
</tr>
<tr>
<td>05) Obtain a course grade of C+</td>
<td>-4 -3 -2 -1 0 +1 +2 +3 +4</td>
</tr>
<tr>
<td>06) Obtain a course grade of C</td>
<td>-4 -3 -2 -1 0 +1 +2 +3 +4</td>
</tr>
<tr>
<td>07) Obtain a course grade of D+</td>
<td>-4 -3 -2 -1 0 +1 +2 +3 +4</td>
</tr>
<tr>
<td>08) Obtain a course grade of D</td>
<td>-4 -3 -2 -1 0 +1 +2 +3 +4</td>
</tr>
<tr>
<td>09) Obtain a course grade of F</td>
<td>-4 -3 -2 -1 0 +1 +2 +3 +4</td>
</tr>
</tbody>
</table>

Please turn to the next page and continue.
Section 2: PROBABILITY RATINGS
INSTRUCTIONS and a PROBABILITY RATING SCALE

You will be given a list of potential course grade outcomes and will be asked to rate the probability that the combination of your ability and effort will result in the specific course grade outcomes.

The following rating scale will be used for this judgment:

**Probability Rating Scale**

<table>
<thead>
<tr>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
</table>

You will be asked to rate the probability that the combination of your effort and ability will result in specific course grade outcomes. It is important that you note that PROBABILITY RATINGS range from 0% to 100%. A rating of 100% says that the combination of your effort/ability guarantees that you WILL OBTAIN the course grade outcome. A rating of 0% says that the combination of your effort/ability guarantees that you WILL NOT OBTAIN the course grade outcome.

Please turn to the next page and continue.
There are 9 potential course grade outcomes. In addition to rating the probability of each outcome, you MUST ASSURE that when the probability ratings for all 9 outcomes are added together that they TOTAL 100%. This requirement could have several consequences. For example, if you rate the probability of any particular course grade outcome as 100%, all other ratings must be zero. Also, if the sum of the ratings exceeds 100% or fails to total to 100%, you must review your ratings and make adjustments to achieve an exact total of 100%.

Please turn to the next page and continue.
EXERCISE NUMBER 2.01

Instructions:

Circle your probability rating and enter its value in the space to the right.

Probability Rating Scale

<table>
<thead>
<tr>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
</table>

01) Obtain a course grade of A+  
02) Obtain a course grade of A
03) Obtain a course grade of B+
04) Obtain a course grade of B
05) Obtain a course grade of C+
06) Obtain a course grade of C
07) Obtain a course grade of D+
08) Obtain a course grade of D
09) Obtain a course grade of F

*TOTAL

*Before completing this exercise, please take time to add the probability ratings for the 9 course grade outcomes. If the sum of the ratings exceeds 100% or fails to total to 100%, you must review your ratings and make adjustments to achieve an exact total of 100%.
Appendix C
PRE-TEST QUESTIONNAIRE

Please provide the following information.

Full Name: _________________________________________________________

First Name Middle Initial Last Name

Student Identification Number: ______________________________________

Course Title: _______________________________________________________

Time Number (from researcher): _____________________________________

04) What is the minimum grade you would be satisfied with in the course?
Circle one: A+ A B+ B C+ C D+ D F

05) What is the most important reason that you obtain your minimum grade (item 4 above)?
Circle one: 1 To continue in an athletic program
2 To receive financial aid or reimbursement
3 To get into graduate school
4 Other (please explain below)

06) What is the grade you will actually try for in this course?
Circle one: A+ A B+ B C+ C D+ D F

07) Using the following Difficulty Rating Scale, please rate how difficult you believe it will be to obtain each of the 9 performance outcomes listed below.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not difficult</td>
<td>Somewhat difficult</td>
<td>Very difficult</td>
<td>Extremely difficult</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

.01 Obtain a course grade of A+
0 1 2 3 4 5 6

.02 Obtain a course grade of A
0 1 2 3 4 5 6

.03 Obtain a course grade of B+
0 1 2 3 4 5 6

.04 Obtain a course grade of B
0 1 2 3 4 5 6

Please turn to the next page and continue.
Using the Characteristic Rating Scale, please rate the extent to which you believe the following seventeen (17) statements are characteristic of you.

01 I'm always trying to figure myself out. 0 1 2 3 4 5 6
02 Generally, I'm not very aware of myself. 0 1 2 3 4 5 6
03 I reflect about myself a lot. 0 1 2 3 4 5 6
04 I'm often the subject of my own fantasies. 0 1 2 3 4 5 6
05 I never scrutinize myself. 0 1 2 3 4 5 6
06 I'm generally attentive to my inner feelings. 0 1 2 3 4 5 6
07 I'm constantly examining my motives. 0 1 2 3 4 5 6
08 I sometimes have the feeling that I'm off somewhere watching myself. 0 1 2 3 4 5 6

Please turn to the next page and continue.
<table>
<thead>
<tr>
<th>Statement</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I'm alert to changes in my mood.</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I'm aware of the way my mind works when I work through a problem.</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I'm concerned about my style of doing things.</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I'm concerned about the way I present myself.</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I'm self-conscious about the way I look.</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I usually worry about making a good impression.</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One of the last things I do before I leave my house is look in the mirror.</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I'm concerned about what other people think of me.</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I'm usually aware of my appearance.</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13) In what courses are you currently enrolled?

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please turn to the next page and continue.
10) Below are 9 grade outcomes that could result from taking this course. Of the 9 grade outcomes, please select your TOP FOUR GRADE GOALS. Please indicate by placing a one (1) in front of the statement that best reflects your number one (1) goal. After placing a one (1) in front of your number one (1) goal, place a two (2) in front of your number two (2) goal. Continue this process until you have rank ordered your TOP FOUR GRADE GOALS.

Please begin.

______ .01 Obtain a course grade of A+
______ .02 Obtain a course grade of A
______ .03 Obtain a course grade of B+
______ .04 Obtain a course grade of B
______ .05 Obtain a course grade of C+
______ .06 Obtain a course grade of C
______ .07 Obtain a course grade of D+
______ .08 Obtain a course grade of D
______ .09 Obtain a course grade of F

Please turn to the next page and continue.
14) A number of statements which people have used to describe themselves are given below. Using the rating scale provided, please indicate how you feel, at this time, about the grade you will eventually receive in this course.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Not at all</th>
<th>Somewhat so</th>
<th>Moderately so</th>
<th>Very much so</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

.01 I feel calm about the course grade that I will eventually receive.

.02 I feel tense about the course grade that I will eventually receive.

.03 I feel at ease about the course grade that I will eventually receive.

.04 I feel anxious about the course grade that I will eventually receive.

.05 I feel comfortable about the course grade that I will eventually receive.

.06 I am worried about the course grade that I will eventually receive.

.07 I feel content about the course grade that I will eventually receive.

.08 I feel nervous about the course grade that I will eventually receive.

.09 I am relaxed about the course grade that I will eventually receive.
Appendix D
POST-TEST/PRE-TEST QUESTIONNAIRE

Please provide the following information.

Full Name: ________________________________________________________

First Name Middle Initial Last Name

Student Identification Number: _____________________________________

01) What score (number of points) did you receive on the last test?
   number of points _____

02) What grade did you receive on the last test?
   Circle one:   A+ A B+ B C+ C D+ D F

03) Last time you completed these questionnaires, you indicated the minimum course grade that you would be satisfied with. In the light of your test grade(s), how do things look at this time?
   Circle one: 1 I see no problem.
               2 With a little luck, I should get the grade.
               3 I will wait and see what happens on the next test before I take any action.
               4 My test performance is too far from that minimum course grade. The time has come to make some changes.

04) What is the minimum grade you would be satisfied with in this course?
   Circle one:   A+ A B+ B C+ C D+ D F

05) What is the most important reason that you obtain your minimum grade (item 4 above)?
   Circle one: 1 To continue in an athletic program
               2 To receive financial aid or reimbursement
               3 To get into graduate school
               4 Other (please explain below)

06) What is the grade you will actually try for in this course?
   Circle one:   A+ A B+ B C+ C D+ D F

Please turn to the next page and continue.
07) Using the following Difficulty Rating Scale, please rate how difficult you believe it will be to obtain each of the 9 performance outcomes listed below.

<table>
<thead>
<tr>
<th>Difficulty Rating</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not difficult</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat difficult</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very difficult</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely difficult</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

01. Obtain a course grade of A+ 0 1 2 3 4 5 6
02. Obtain a course grade of A 0 1 2 3 4 5 6
03. Obtain a course grade of B+ 0 1 2 3 4 5 6
04. Obtain a course grade of B 0 1 2 3 4 5 6
05. Obtain a course grade of C+ 0 1 2 3 4 5 6
06. Obtain a course grade of C 0 1 2 3 4 5 6
07. Obtain a course grade of D+ 0 1 2 3 4 5 6
08. Obtain a course grade of D 0 1 2 3 4 5 6
09. Obtain a course grade of F 0 1 2 3 4 5 6

08) Prior to the next exam, how much effort do you intend to spend preparing for the next exam as compared to the last exam?

Circle one:
1. much less
2. a little less
3. about the same
4. a little more
5. much more
6. alot more
7. extraordinarily more

Please turn to the next page and continue.
10) Below are 9 grade outcomes that could result from taking this course. Of the 9 grade outcomes, please select your TOP FOUR GRADE GOALS. Please indicate by placing a one (1) in front of the statement that best reflects your number one (1) goal. After placing a one (1) in front of your number one (1) goal, place a two (2) in front of your number two (2) goal. Continue this process until you have ranked ordered your TOP FOUR GRADE GOALS.

Please begin.

_______ .01 Obtain a course grade of A +

_______ .02 Obtain a course grade of A

_______ .03 Obtain a course grade of B +

_______ .04 Obtain a course grade of B

_______ .05 Obtain a course grade of C +

_______ .06 Obtain a course grade of C

_______ .07 Obtain a course grade of D +

_______ .08 Obtain a course grade of D

_______ .09 Obtain a course grade of F

Please turn to the next page and continue.
11) Compared to the last exam, how much effort will you give studying for the next exam?

Circle one:  -2  -1  0  +1  +2  +3  +4

Much less  About the same  Much more  Extraordinarily more

12) In question number eleven (11), above, you indicated how much effort you will give on the next exam as compared to the last exam. Please explain your rating.

________________________________________________________________________
________________________________________________________________________

13) In what courses are you currently enrolled?

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
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Please turn to the next page and continue.
14) A number of statements which people have used to describe themselves are given below. Using the rating scale provided, please indicate how you feel, at this time, about the grade you will eventually receive in this course.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Scale</th>
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</thead>
<tbody>
<tr>
<td>I feel calm about the course grade that I will eventually receive.</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>I feel tense about the course grade that I will eventually receive.</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>I feel at ease about the course grade that I will eventually receive.</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>I feel anxious about the course grade that I will eventually receive.</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>I feel comfortable about the course grade that I will eventually receive.</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>I am worried about the course grade that I will eventually receive.</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>I feel content about the course grade that I will eventually receive.</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>I feel nervous about the course grade that I will eventually receive.</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>I am relaxed about the course grade that I will eventually receive.</td>
<td>0 1 2 3 4 5 6</td>
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