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Robert Roy Taylor
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PROCRASTINATION: THE PERSONALITY AND
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BEHAVIOR FOR ACHIEVEMENT TASKS.

THE LOUISIANA STATE UNIVERSITY AND
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PROCRASTINATION: THE PERSONALITY AND SITUATIONAL CORRELATES
OF PROCRASTINATION BEHAVIOR FOR ACHIEVEMENT TASKS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Psychology

by
Robert R. Taylor
B.S., Rollins College, 1970
M.A., Louisiana State University, 1975
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ABSTRACT

Some personality and situational correlates of procrastination behavior for three different achievement tasks were studied using 199 students in an Introductory Psychology class. Subjects were assessed with respect to achievement motivation, achievement anxiety, locus of control, their degree of liking of the course, and the perceived importance of both the course and their overall grades for their future career success. Procrastination scores for both an article reading and an IQ test taking task consisted of the number of days between task assignment and task accomplishment. The third procrastination score was derived for a self report of study patterns for the first exam, with patterns being independently rated for level of procrastination.

Results indicate very little relationship between personality variables and procrastination scores across all tasks. The major correlates of procrastination were found to be the measures of importance for the course or grades and degree of liking of the course.

Several phenomenological measures of procrastination were also taken and indicate a consistency between behavioral and phenomenological procrastination measures, as well as a possible overlap between procrastination measures and the construct "studying when one should be studying". Uniformity across all procrastination ratings indicates a potential for distinguishing a consistent personality disposition related to procrastination.

INTRODUCTION

Why do many students wait until the last minute to start writing an assigned paper or start studying for a test? Why does a man put off mowing a lawn or a woman put off going to visit a sick relative? Why does a salesman put off calling an important prospect? All of these instances reflect a rather widespread behavioral phenomenon called procrastination. To procrastinate, according to Webster (1961), is "to put off from day to day; to defer; postpone." Everyday we see procrastination in others and in ourselves, yet this common phenomenon has yet to be subjected to the rigors of scientific investigation. The "why" of procrastination has yet to be explored.

Common sense would tell us that we put off things we really do not want to do. We don't want to study so we put it off until tomorrow. This explanation though, is only a starting point, from which follows a need for scientific explanation. Moreover, this scientific explanation needs a theoretical groundwork on which to build hypothetical deductions. Atkinson and Birch (1974) provide such a base in their discussion of the dynamics of changes in activity in achievement-oriented behavior. Since procrastination is so readily observable in academic institutions, this study will be confined to the investigation of procrastination for achievement-oriented activity in a university setting. Atkinson's and Birch's theory is particularly appropriate in this situation. The principles to be discussed, though, undoubtedly have broader significance, being especially generalizable to the world of business and the

phenomenon of selling.

Even within achievement-oriented activities, there are obviously differences, quantitatively and qualitatively, in the types of tasks that might be studied. Intuitively one would expect individual differences in procrastination depending on the nature of the achievement tasks being assigned. For this reason it was decided to study several types of achievement tasks, each having component elements which theoretically might be expected to elicit more procrastination from some persons than others, depending on certain individuals' personality characteristics.

One task examined involves the reading of an article in a psychology journal. The article is easy to read and likely to be inherently interesting to the unsophisticated college sophomore. It will take a fairly short time to read, will be readily available on reserve at the Psychology Department office and require only one sitting to complete. Two test questions related to this material will appear on the first exam. This makes it somewhat important in terms of test grade but a relatively small part of the overall course grade. The nature of the task is such that it should arouse little anxiety concerning one's performance, since evaluation related to the task is minimal.

The second task is one in which the student is asked to take a short intelligence test and listen to a mini-lecture on psychological testing. The student will be told that some immediate feedback will be given by the examiner concerning the student's test performance. As in the first task, two test questions on the first exam will come from the test session and lecture, since it is intended to provide the student with some insight into how psychological tests are used. This task also

will take only a short time and will be done in one sitting, at a location on campus convenient to the student. Unlike the first task, though, it is one which may arouse some anxiety about performance, since the student will be evaluated, yet it retains the minimal importance of the first task with respect to overall success in the course.

The third and final task is the first exam itself. The nature of the task is somewhat obvious. It is a long, multiple choice exam, requiring considerable time and effort in preparation and comprising an important percentage of the final course grade. Intuitively then, this task should have the elements of both evaluative significance and importance with respect to success in the course. Procrastination time will be measured through several questions, to be asked shortly before the exam is taken, designed to assess when the individual read his textbook assignments and studied for the exam. Since answers to these questions depend on the student's memory and judgement, this type of measure will be less behaviorally accurate than time measurements taken on the first two tasks. Still, there should be a fairly high correlation between an individual's ideas about when he studied for an exam and when he actually did study.

A key aspect of the first two tasks is that they involve only one appearance at a specific location. Since procrastination is being operationally defined in terms of "time between task assignment and completion," then these two tasks permit precise "behavioral" measures of procrastination on the tasks. The time measure for the third task is more ambiguous. Preparing for the exam involves an extended period of time and numerous sequences of behavior. One precise time measure can not be recorded, so a "behavioroid" measure, the individual's own report

of his specific pattern of studying, must be used. Study patterns are independently rated for level of procrastination reflected, and these rating scores are used to designate each individual's procrastination level for task three.

A separate issue in this study concerns an individual's experience of procrastination. In addition to the behavioroid measure used for task three, two exploratory questions were asked before the exam to try to determine what the phenomenological experience of procrastination was for the individual with respect to his study behavior. There may be an important difference between an individual who merely puts off studying for an exam, even though he feels he should be working at the task, and the individual who carefully allocates blocks of time needed to complete the tasks to which he has obligated himself. The former might better be considered the true procrastinator, while the latter would best be called an organized planner. Although it is unlikely, there may be no behavioral difference with respect to actual patterns of study; but there may be a distinct experiential difference. Hopefully, some insight can be gained into the relationship between these behavioral and experiential phenomena and between these and certain personality and situational variables of importance to the life of the student.

The overall intent of the present research is to delineate some of the important factors related to a tendency to procrastinate in the above achievement-oriented activities. To do this, some basic assumptions must be made. The first assumption is that the behavioral life of an individual is a continual stream of thought and activity. Something is always going on: there are no behavioral vacuums. So,

to discuss procrastination implies that we are 'not' discussing the procrastination of activity in general, but the procrastination of a particular activity. To be consistent with the methodology of this study, the act of an assigned academic task will be used as an example throughout this discussion. Also, since an individual is always doing something, then engaging in this task implies that he has to change from doing whatever he was doing in his continuous stream of behavior to doing the assigned task.

Atkinson and Birch (1974, p. 271) note that "a simple change from one activity to another poses the fundamental problem for a psychology of motivation". It encompasses "all the traditional problems of motivation - initiation of an activity, persistence of an activity, vigor of an activity and choice or preference among alternatives". Although this study primarily pertains to the initiation of activity, there is an obvious overlap between the factors that effect this initiation and the factors affecting persistence, vigor, etc.

An important point is that studying a change in activity involves studying motivation, since the assumption is made that all behavior is motivated. Since the chosen task is an academic task, the motivation most likely to be related to initiation of the task is achievement motivation. For this reason, Atkinson's theory of achievement motivation and the work related to it, will provide a basis for some of the hypotheses.

Change in Activity*

Atkinson's and Birch's (1974) model of a change of activity provides the structure within which the effect of achievement motivation and other forces can best be understood. Let us first look at several ways one might view a change in activity. We must first assume that an activity A, which is presently taking place, is taking place because the tendency for activity A (called T_A) is stronger than any competing tendencies ($T_B, T_C, \dots T_X$). Although there are obviously many competing tendencies at any one time, let us assume for illustrative purposes that there is only one competing tendency T_B . If after some period of time (t) action tendency T_B becomes greater than T_A then behavior B will replace activity A. There are numerous ways in which this may occur (see Figure I), which involve T_A and T_B as increasing, decreasing or staying the same.

By way of example, diagram (C) shows an instance where T_A is decreasing and T_B is increasing. T_A may be a tendency to sit and day-dream in the student union and T_B a tendency to engage in an achievement task, to study for an exam. A person may become tired of sitting in the union (decreasing T_A) and simultaneously become more interested in studying, (increasing T_B) from internal forces, e.g. knowing that a test is getting nearer, and external forces, e.g. cues such as the sight of other people studying and the sight of his own books. Thus, a change in the relative strength of tendencies over time - resulting in T_B becoming

*The following section is a condensation of Atkinson's and Birch's "The Dynamics of Achievement Oriented Activity." Chapter 15 in the book Motivation and Achievement, by Atkinson, J. W. and Raynor, J.O., John Wiley & Sons, New York, 1974. Full credit for the ideas, concepts, equations and diagrams belong to these authors.

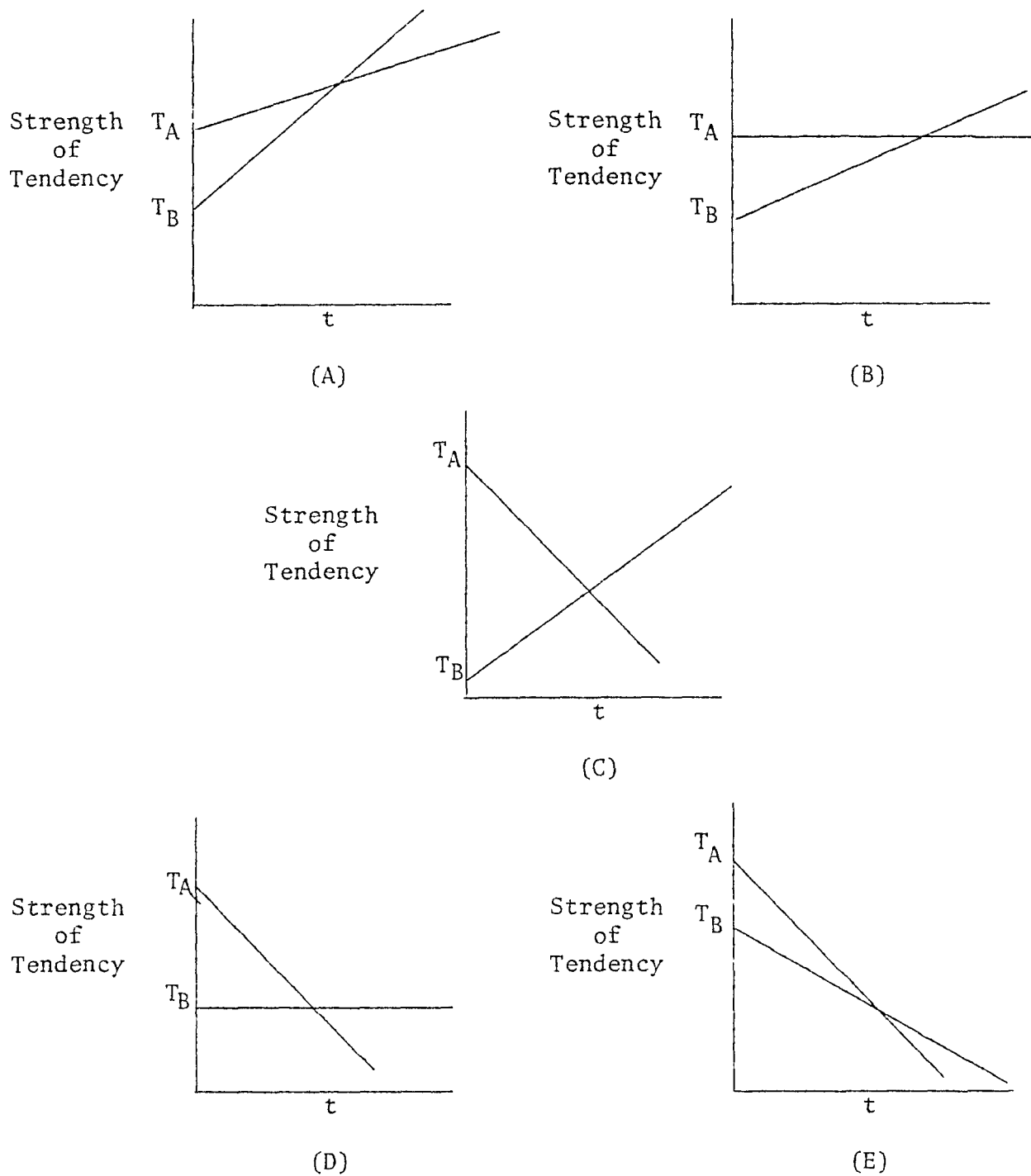


Figure 1: Various ways in which a change in relative strength of T_A and T_B can come about during an interval of time (t).

stronger than T_A - causes a change in behavior. An important assumption is that tendencies do not change spontaneously, but change as a result of internal or external causes. These causes have been labeled forces.

The complete analysis of a change in activity involves primarily three types of forces. One is an instigating force (F), a force which acts to increase a particular inclination to act, or an action tendency (T). The second force is called a consummatory force (C). This force reduces the strength of a particular tendency and is attributable to the expression of that tendency in the activity itself. The third force is called the inhibitory force (I), which also acts to reduce a tendency. Atkinson maintains that the root of this inhibitory force in achievement activity is found in a fear of failure. This fear results in a tendency within the individual to avoid achievement-related activities where failure might ensue. This tendency, labeled a negaction tendency (N) by Atkinson and Birch, serves to reduce the strength of the resultant action tendency (\bar{T}). All three of these forces will be acting simultaneously within the individual for any given action tendency.

According to this model then, any tendency to act (T) can be described and measured in terms of these three forces; instigating force (F), consummatory force (C), and inhibitory force (I). With respect to some forces, F and I as we shall see later, can be combined within the single term \bar{T} , called the resultant tendency. It may help to set I equal to zero for the moment though, so that the effect of F and C on action tendency can best be understood.

If I is assumed to be zero, then the change in a particular tendency to act in any situation depends only on F and C and can be expressed in

the following equation:

$$\frac{T_F - T_I}{t} = F - C \quad (1)$$

T_I = initial strength of the tendency

T_F = final strength of the tendency

t = time period over which tendency is changing

F = instigating force

C = consummatory force

From this equation, it can be seen that if F is greater than C , then the tendency will increase over time period t . This effect is pictured in T_B in Figures 1A, 1B, and 1C, and T_A in Figure 1A. If C is greater than F , then the tendency will decrease over time period t (T_B in Figure 1E; T_A in Figures 1C, 1D, and 1E). If $F = C$, then the tendency will remain constant (T_A in Figure 1B; T_B in Figure 1D). It is important to note that F is seldom, if ever, a continuously acting force. It can vary according to any number of environmental circumstances and internal dispositions. It is best to conceive of F as the average instigating force over any time period, while realizing that it is always a spasmodic or periodic force.

If a tendency is subordinate, or not being acted upon at the present time, then $C = 0$ (there is no consummatory force), and the final strength of a tendency (T_F) depends entirely upon the initial strength of the tendency T_I , the (average) instigating force (F), and the time period of instigation (t). Algebraically changing equation (1) above and setting C equal to 0, renders the following: $T_F = T_I + F \cdot t$ (2)

Remember that F can be externally or internally motivated. Using our

achievement task example, F might consist of achievement motivation, various extrinsic rewards, or possibly a need for acceptance or love which might be perceived by the individual as contingent on successfully completing an achievement task. Thus, other factors being equal, a person with, for instance, a strong need for achievement (nAch), will have a stronger instigating force and thus a stronger tendency to engage in an academic task than a person with a low nAch. It is this conception of F and this type of reasoning which will form the basis for later hypotheses about procrastination behavior.

Now assume that an activity is initiated and internal and external forces associated with the activity are providing continual instigating force F. Because engaging in an activity activates a consummatory force (C), there will be a decrease in the tendency (T) across time. Atkinson and Birch maintain that the strength of a consummatory force will depend on two variables; the consummatory value (c) associated with an activity (and which varies from one activity to another) and the intensity of the activity, which depends on the strength of the action tendency (T). Thus, Atkinson and Birch propose the following relationship.

$$C = c \cdot T \quad (3)$$

The consummatory force of an activity varies according to its consummatory value times the strength of the tendency resulting in the activity. It can be seen then, that a person engaging in an activity is simultaneously exposed to an instigating force (F) which strengthens the tendency directing the activity, and a consummatory force (C) which

weakens this tendency. As mentioned before, if F is greater than C , then T increases. If C is greater than F , then T decreases.

When $C = F$ the strength of the action tendency is constant. Substituting $c \cdot T$ for C in equation (3), we see that C will equal F when $c \cdot T = F$. At that point then, the tendency is no longer increasing or decreasing, and the strength of the tendency is expressed by the following equation:

$$T = F/c \quad (4)$$

At this point, called the point of stabilization, the strength of the action tendency T will depend on the ratio between the instigating force behind T and the consummatory value of the activity resulting from T . If F is high and c low, then T will stabilize at a very high value. If c is high and F low, then T will stabilize at a lower value.

According to Atkinson and Birch (1974, p 278);

"The important implication of the idea that the strength of the tendency sustaining an activity will gradually become stable, if that activity continues, in that an interruption of activity and thus variability of behavior is guaranteed. Sooner or later, the strength of some other tendency that is instigated continuously or intermittently in that environment will catch up, become dominant, and cause a change in activity."

Thus far this discussion has concentrated on a single tendency changing over time. The original problem, though, is a change from one activity (A) to another (B) over time period (t) as a result of the change in relative strength of T_A and T_B .

When the time interval begins, activity A is in progress and the initial strength of tendency T_A (T_{AI}) is greater than the initial strength of tendency T_B (T_{BI}). After some period of time (t), when the final strength of tendency T_B (T_{BF}) is greater than the final

strength of tendency T_A (T_{AF}), activity B becomes dominant. The actual activity change occurs when T_{BF} is slightly larger than T_{AF} . For all intents and purposes when $T_{BF} = T_{AF}$ the change occurs. Substituting T_{BF} for T_F in equation (2) above, the following occurs:

$$\begin{aligned}
 T_{BI} + F_B \cdot t &= T_{BF} \\
 \text{since } T_{BF} &= T_{AF}, \text{ then at the point of change} \\
 T_{BI} + F_B \cdot t &= T_{AF} \text{ and} \\
 t &= \frac{T_{AF} - T_{BI}}{F_B} \qquad (5)
 \end{aligned}$$

This equation represents the length of time between the point when T_B is initially measured and the point when the change to activity B occurs.

Atkinson and Birch (1974, p 278) maintain that this " 'principle of change of activity' identifies the several determinants of time taken by an individual to change from the initial activity to the subordinate activity." At the same time this equation covers the problems of the persistence of one activity (A) and the latency of the instigation of the other activity (B). It is this latency of the instigation of activity B, when it is the assigned achievement task, that is the target for a study of procrastination behavior.

For simplicity of explanation, let's assume the common case where a dominant tendency has become relatively stable. Then one further substitution can be made. Since the strength of a tendency (T_{AF}) at the point of stabilization equals F_A/c_A (See Equation 4), T_{AF} can be replaced in equation 5 by F_A/c_A as follows:

$$t = \frac{F_A/c_A - T_{BI}}{F_B} \qquad (6)$$

Therefore, the time (t) between the initial measure of T_B and the instigation of activity B, which has been operationally defined as procrastination time, is determined primarily by three elements; the ratio between the instigating force behind A (F_A) and the consummatory value of A (c_A), the initial value of T_B (T_{B_I}) and the instigating force behind B (F_B).

Referring back to our achievement example, we can see what this means with respect to procrastination. Let us assume that T_A is a tendency to affiliate with one's friends. The force to sustain such activities (F_A) is produced by one's n Affiliation, the pleasantness involved in the interaction, etc. There is a consummatory value (c_A) associated with the interaction serving to make one tired of the interaction; for instance, running out of things to say. For those who are good talkers and enjoy interacting, F_A may be high relative to c_A and thus, T_A will stabilize at a fairly high level. For these individuals a strong tendency to engage in the achievement task will be needed if a change of activity is to occur.

T_{B_I} in our example, is the initial tendency to engage in an assigned achievement task. At the point of assignment of this task, T_{B_I} would essentially be zero. The instigating force (F_B) associated with the achievement task consists of all the forces pushing the individual toward completing the task. F_B might result from cues associated with the specific task, such as seeing a book that must be read, seeing the library, etc. It also consists of more general internal forces, such as motivation for achievement, the need for acceptance related to achievement in school, and the desire to gain monetary rewards associated with

achievement. The more powerful the achievement cues, and the stronger the internal forces acting on the achievement tendency, the greater the value of F_B . As F_B increases, the ratio of F_A/c_A to F_B becomes smaller and the value of t is diminished. Thus, procrastination time (t) between assignment of the achievement task and the actual achievement activity decreases as the forces acting to induce B become stronger.

It is in this way that the motive to achieve acts as a significant variable, an important force component with respect to influencing a whole family of related activities. These may include studying for an exam, writing a paper, reading an assigned article, career striving, practicing for a sporting event and numerous other activities. The need for achievement may result in a generalized drive state within the individual which acts to tend that individual to seek success or accomplishment. To the extent that the assigned achievement task is considered relevant to what that individual considers to be success, or achievement, then that drive state will add a proportionate force component to the tendency to do that task T_B .

It can be intuited then, that other things being equal, the person with the higher level of achievement motivation should be more willing to engage in achievement tasks sooner and persist at them longer than one in whom this motive is weaker. Thus, the person with the higher $nAch$ will likely procrastinate less than the person lower in $nAch$. The same holds for any other variable in the external environment or in the personality of the individual which will serve to increase F_B or T_{B_I} .

The opposite is likewise true. Any variable which serves to decrease F_B or T_{B_I} would act to increase t or increase procrastination.

Although not the primary concern of this paper, obviously anything that would increase the ratio F_A/c_A , would have the same effect.

Thus far this discussion has been confined primarily to facilitating forces which act to increase a tendency to engage in an achievement task and decrease procrastination time. There is another variable, though, which has been mentioned briefly before as a negative motivational force with respect to academic achievement and other achievement concerns. It might help here to briefly describe how Atkinson and Birch incorporate fear of failure into their model of activity change, and to note how it may affect procrastination behavior. They maintain that fear of failure and expectancy of failure have motivational significance and act in opposition to an achievement activity as a force of resistance to the action tendency.

They maintain that fear of failure results in an inhibitory force (I) which functions to produce a tendency not to engage in an activity. This tendency is called a negaction tendency (N). It should be noted here that I refers to a total of inhibitory forces, of which fear of failure is but one. For our purposes, though, assume I to be totally a result of this fear. Combining T and N yields a resultant action tendency $\bar{T} = T - N$. Paralleling the concept of consummatory force, is the concept "force of resistance" (R) which acts to dissipate or reduce a negaction tendency as it is being expressed. Paralleling the concept of consummatory value (c) of an activity, there is also a value of force of resistance (r), associated with each particular negaction tendency. With a similar logic of development used for T before, a negaction tendency will stabilize at $N = \frac{I}{R}$.*

*Since it is the intent of this discussion only to provide a broad picture of how the concepts relate, the entire development is not presented here. Refer to Atkinson & Birch (1974,pp294-302)for a complete explication of this process.

Now that the terms have been introduced let us turn to the effects on certain tendencies. If activity A is in process then one may assume that \bar{T}_{AI} is greater than \bar{T}_{BI} ; \bar{T}_A being the resultant tendency of $T_A - N_A$ and \bar{T}_B the resultant tendency of $T_B - N_B$. The change from A to B will occur when \bar{T}_{BF} is greater than \bar{T}_{AF} , just after the point where $\bar{T}_{BF} = \bar{T}_{AF}$.

Substituting resultant tendencies for action tendencies in equation (5) the following occurs:

$$t = \frac{\bar{T}_{AF} - \bar{T}_{BI}}{F_B} \quad (7)$$

if \bar{T}_{BI} is expanded then this formula can be expressed as

$$t = \frac{\bar{T}_{AF} - (T_{BI} - N_{BF})}{F_B} \quad (8)$$

When N_{BF} has been stabilized, then it can be changed to $\frac{I_B}{r_B}$ thus providing the final complete equation which incorporates the concept of inhibitory force into both T_A and T_B .

$$t = \frac{\bar{T}_{AF} - T_{BI} + \frac{I_B}{r_B}}{F_B} \quad (9)$$

Thus, the major components are included for the determination of the length of time t (procrastination time), between the initial measurement of the strength of tendency T_B and the point when activity B replaces activity A. These components are similar to those shown in equation (6), the strength of the stabilized tendency \bar{T}_{AF} , the initial strength of tendency to engage in B (T_{BI}), and the instigating force for B (F_B). However, major change has been made with the addition of

negaction tendency represented by the ratio of inhibitory force over force of resistance (I_B/r_B). This addition can have a major effect on procrastination time. As I_B increases, the value of t increases and procrastination is greater. If I is small, then it will have little or no effect on procrastination time. In this case, t will be determined by the other three components. It is in this way that a high fear of failure, resulting in a strong inhibitory force I , may result in more procrastination.

The preceding development has been brief so it may help to picture the effect a negaction tendency has on the initiation of activity B. Figure 2 shows such a representation.

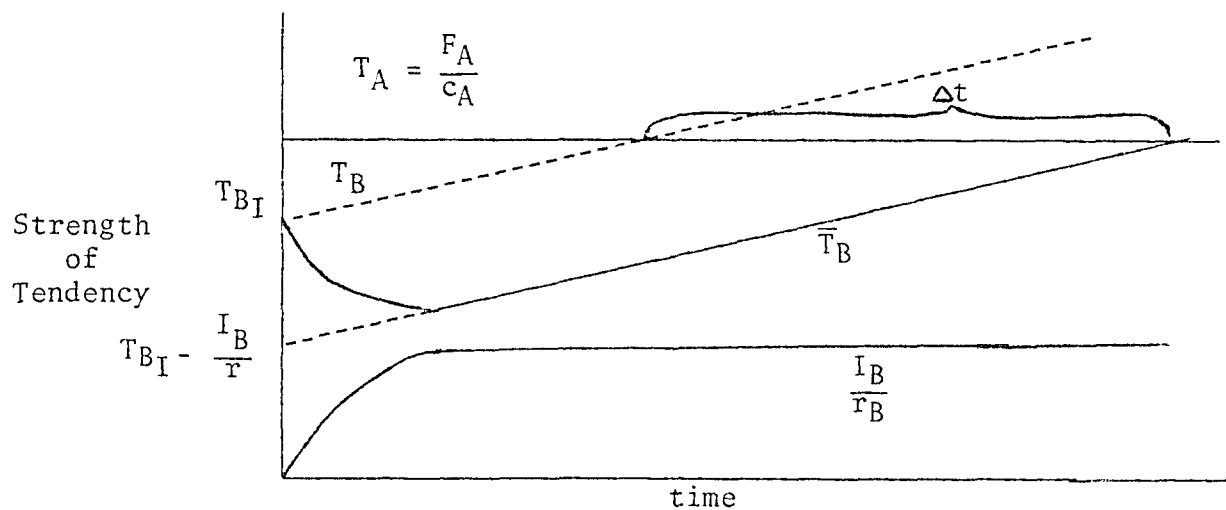


Figure 2: Change of activity diagram.

In Figure 2, activity A is initially in progress and the strength of the stabilized tendency resulting in A is shown by the solid straight line $T_A = F_A/c_A$. The strength of tendency B (without the effect of the negaction tendency) is shown by the dotted line marked T_B . The negaction tendency N_B , shown by a curved line marked N_B , increases rapidly at first, then at some later point stabilizes at a value of I_B/r_B .

Although I_B/r_B is shown above the base line, its effect is negative. Therefore, the strength of the resultant tendency is derived by subtracting N_B from T_B and is represented by the line marked \bar{T}_B . This line curves sharply down, resulting from the early sharp rise in N_B , and then runs parallel to T_B as N_B stabilizes at I_B/r_B .

The net effect of the negaction tendency is obviously an increase in time (by increment Δt) before \bar{T}_B is expressed in activity B, as opposed to the time taken to express T_B if there were no inhibitory force.

It is also apparent that I_B/r_B will stabilize at a higher value as the inhibiting force (here fear of failure) increases. The effect would be a greater differential between T_B and \bar{T}_B , an increase in Δt , and longer latency period before the activity change occurs. Therefore, if two persons are equal in all the forces (including achievement motivation) that comprise T_B , then the person with the greater fear of failure would be expected to take longer (procrastinate more) before T_B is expressed in activity B.

Picture briefly what might happen when inhibitory forces are very strong resulting in a very strong negaction tendency. In Figure 3, N_B inhibits T_B to such an extent, that before the resultant tendency \bar{T}_B can be expressed in activity B, a third tendency T_X is expressed in activity X. It is quite possible that under circumstances when N_B is very strong, \bar{T}_B will never reach a point where it will overcome competing tendencies. This leads to a further conclusion, that given equality of instigating forces, persons in whom the fear of failure is strong are more

likely never to engage in certain assigned tasks than are persons in whom the fear of failure is weak.

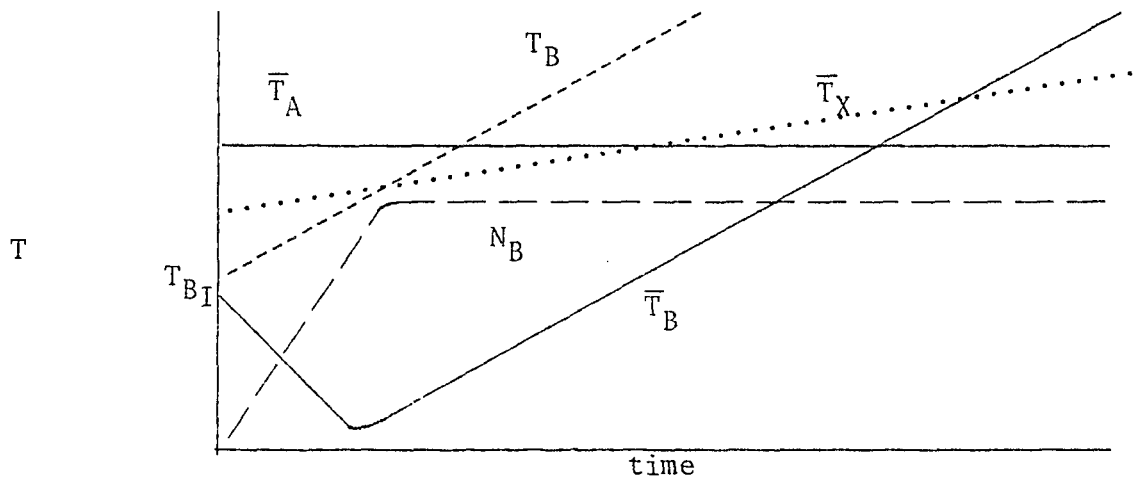


Figure 3: Change of activity diagram with additional tendency, \bar{T}_X .

The preceding discussion has dealt primarily with one tendency overtaking another. Humans, being much more complex, have a multitude of tendencies acting simultaneously; some similar to others and some totally conflicting with others. Each tendency furthermore is composed of a whole family of instigating forces resulting from different motives. Atkinson and Birch maintain that an individual's "hierarchy of motives arranged according to their strengths will greatly influence the way an individual distributes his time among different kinds of activity (Atkinson and Birch, 1974, p 315). Thus, changes in strength of motives can lead to predictions about simultaneous changes in action patterns. Similarly, predictions can also be made about choices between certain behaviors when two motives are competing directly.

The conceptual framework discussed above has provided a somewhat simplified base for the study of activity change in the complex area of achievement-oriented activity. The model is sufficiently clear and

complete, though, to enable one to make predictions about behavior, given the presence or absence of certain personality characteristics and situational circumstances. These variables provide the force components which determine the strength of the action tendencies. The remainder of this discussion is devoted to delineating these variables and providing the rationale for their consideration in this study.

The first such variable that might be expected to effect an action tendency to engage in an academic task is achievement motivation (nAch). This seems intuitively obvious, but there may be some speculation concerning the precise nature of the effect of achievement motivation on the action tendency. Atkinson, in his theory of achievement motivation, provides a description of the relationship between nAch and a tendency to engage in the achievement task, what he calls the tendency to achieve success (T_G). His theory and its implications for procrastination behavior are discussed in the following section.

Atkinson's Theory of Achievement Motivation

Atkinson maintains that the strength of the tendency to achieve success (T_S) on any specific task is a multiplicative function of three variables: motive to achieve success (M_S), strength of the expectancy (or probability) that performance will lead to success (P_S), and the incentive value of, or attractiveness of success (I_S).

$$\text{Thus: } T_S = M_S \times P_S \times I_S \quad (10)$$

Motive for success is considered to be a relatively stable personality characteristic of an individual, reflecting the generalized importance attached to achieving. It is commonly referred to as the achievement motive and has been measured with numerous test devices. Until recently, the most commonly used test was the Thematic Apperception Test of Achievement Motivation developed by David McClelland. Because of its cumbersome scoring procedure, though, it is becoming somewhat less popular. The strength of expectancy refers to the strength of belief (measured in percentages or decimals) that some act will be followed by the desired end result. Incentive value refers to the degree of desirability attached to attaining a certain end or goal.

Research has shown that although M_S has no independent relationship to P_S or I_S , there is an immense relationship between I_S and P_S expressed by the following equation: $I_S = 1 - P_S$ (11)

That is, as the probability of attaining a goal increases, its incentive value, its desirability, decreases. Atkinson (Atkinson and Birch, 1974, p 14) maintains that this commonly observable relationship has attained more or less the status of law rather than theory.

The relationship between the three variables in determining the strength of achievement tendencies is shown in Figure 4. Here the tendency

to achieve success (T_S) is shown as a function of values for I_S and P_S at two different levels of strength for M_S .

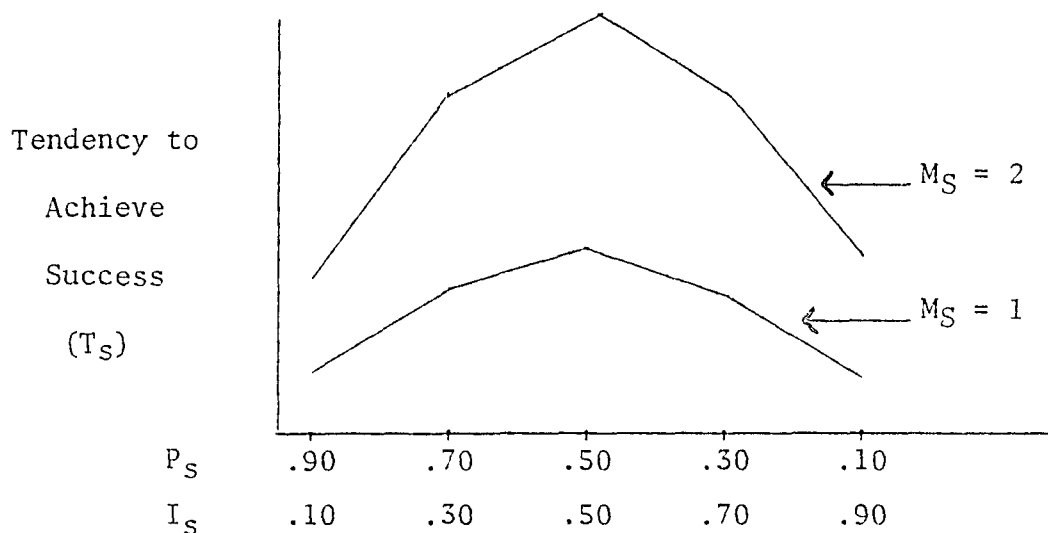


Figure 4: Theoretical implications of assuming that $T_S = M_S \times P_S \times I_S$ and that $I_S = 1 - P_S$ (Atkinson and Birch, 1974, p 15)

As can be seen T_S is maximized when P_S equals .50 because at that point I_S also equals .50. An important point to note is that any increase in M_S (achievement motivation) will result in an elevation of the curve and a corresponding increase in the value of T_S for each level of I_S and P_S .

This model is somewhat of an oversimplification. It well describes achievement tendencies for tasks taken in isolation, such as an individual shooting basketball by himself. In this case, there is a greater incentive value as the probability of making a shot decreases. There is more satisfaction in making a 20 foot shot than a 3 foot shot.

Several other very important variables come into play, though, when the single task is considered with respect to a larger context, such as a game, a season, or an individual's shooting percentage. In this case, additional incentives, both internal and external, play an important role. One's future orientation then becomes very important. Many other incentives

come into play: winning the game, success for the season, monetary rewards, etc. Also the nature of the probabilities change, thus the probability of making the shot is no longer as important as the probability of winning the game. Under these circumstances, there may be an increased likelihood of taking the shorter, higher probability shot - a greater tendency as it were. Within the area of academics, various external incentives and the future orientation of the individual may alter the values of I_S and P_S . This will be discussed more fully later in this section. An important thing to remember is that anything that increases M_S or P_S without decreasing any other component, will serve to increase T_S .

In the section on activity change, the motive to avoid failure was posited as an important negative inhibitory force reducing the resultant tendency to engage in some achievement activity (achievement tendency). Atkinson develops the formula for the tendency to avoid failure ($T-f$) much like that of the tendency for success. He states that $T-f$ is a multiplicative function of the motive to avoid failure (M_{AF}), the probability of failure (P_f) and the incentive value of failure (I_f). Thus: $T-f = M_{AF} \times P_f \times I_f$ (12)

Furthermore, he assumes that the incentive value of failure is negative. Thus, it functions to keep an individual out of achievement related activities, much like shock would keep a rat out of a runway. Atkinson notes that there is little negative affect, disappointments, associated with failing at very difficult tasks and a much greater disappointment associated with failing at easy tasks. He hypothesizes the following relationship: $I_f = -P_S$ (13)

Which means simply that as the probability of success increases, the

negative value of failing becomes proportionately greater. As was the case for T_s in equation 10, the value of $T-f$ will be maximized when P_f is .50. The curve (pictured in Figure 5) will be similar to that in Figure 4, only the effect will be to decrease the strength of the resultant tendency. Again, it is obvious that any increase in M_{AF} will elevate the curve, no matter what the values of P_f and I_f , and increase the tendency to avoid failure.

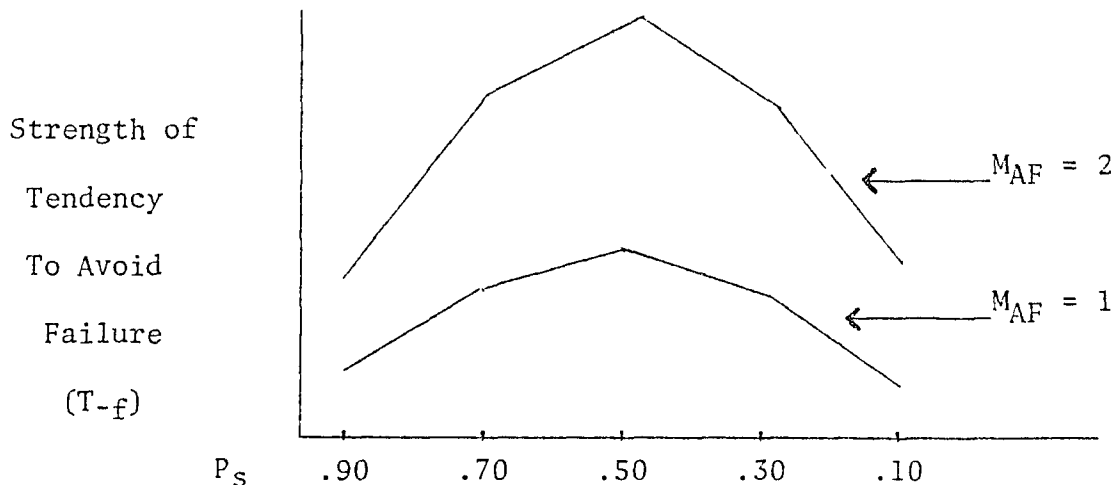


Figure 5: Theoretical implication of assuming that $T-f = M_{AF} \times P_f \times I_f$ and that $I_f = -P_s$ (Atkinson and Birch, 1974, p 17)

The resultant tendency (when $T-f$ is subtracted from T_s) is pictured in Figure 6 as the area between the two plotted curves. Since the effect of $T-f$ is negative, it is subtracted from T_s to get a resultant strength of the individual's tendency to engage in the achievement activity. Figure 6 shows the case where M_s is greater than M_{AF} . The resultant tendency is positive and strong enough to possibly result in actual activity. If M_{AF} were greater than M_s , then the strength of tendency curve for $T-f$ would be above that of the curve for T_s and the resultant tendency would be negative. In this case, there would be no

possibility of the associated achievement behavior. The individual, faced with a choice among various alternatives, would not engage in the achievement-related activity.

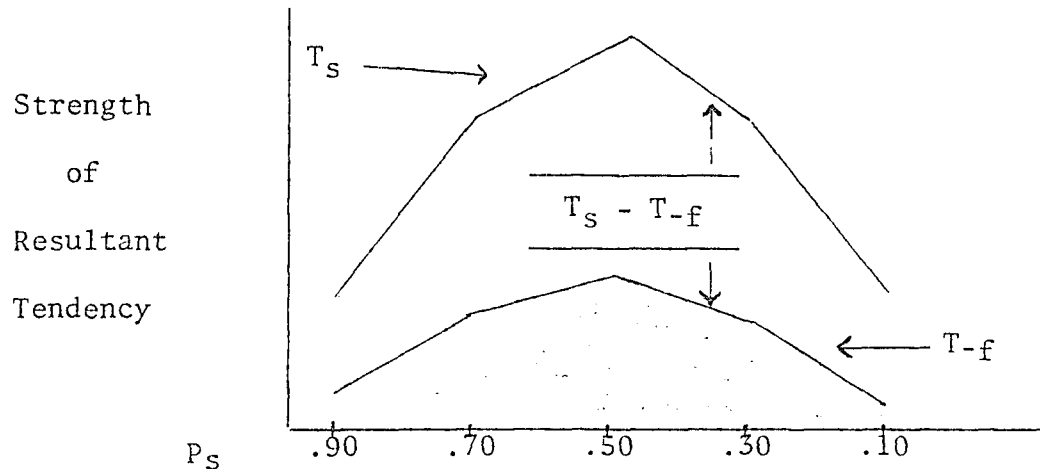


Figure 6: Resultant achievement tendency when M_S is greater than M_{AF} ($T_S - T-f$) (Atkinson and Birch, 1974, p 19)

The individual who has relatively strong tendencies for success (T_S) and for failure avoidance (T_{AF}), when faced with an achievement task, is placed in the classic approach-avoidance situation. Achievement motivation forces are creating excitatory tendencies and failure avoidance motivational forces are acting to create inhibitory tendencies. In this case, the strength of extrinsic rewards might be the factor which determines if achievement behavior will occur.

In any achievement situation there are always some sources of motivation extrinsic to the task itself. They might be a result of monetary reward, authoritative pressures, approval seeking from others, career orientation, etc. These forces serve to increase the excitatory tendency and can overcome tendencies to avoid failure. Figure 7 shows the effect of a constant extrinsic motivation component on a resultant tendency which is negative, achievement avoidance. In this case, the "final strength of the achievement tendency" is the area between the straight and curved lines. With such a tendency it is

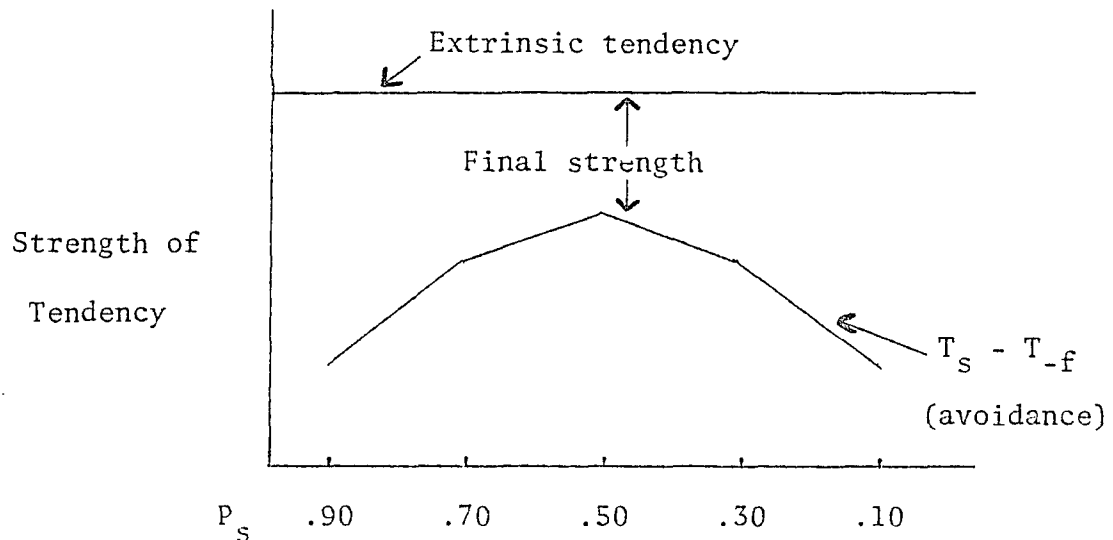


Figure 7. Effect of constant extrinsic tendency to undertake an activity when the motive to avoid failure is dominant in the individual ($M_{AF} > M_S$). (Atkinson & Birch, 1974, p. 20)

possible that the achievement task will take place. The important implication is that the strength of the action tendency to engage in a specific task is affected by different types of motivation other than that which is inherent in the task itself. Since the strength of the tendency is affected, then there is likely to be a corresponding effect on procrastination behavior.

To briefly summarize what has been presented thus far, Atkinson says that there are several components which go into the determining of strength of tendencies to engage in achievement activities. They are the motivation to achieve, the probability of achieving, the incentive value of achieving, the extrinsic motivation forces, and the motivation to avoid failure. Any singular increase in the first four factors or decrease in the last factor, would tend to increase the strength of the achievement tendency to engage in the task.

Referring back to the change of activity equations, the expected effects of these changes in motivational forces and subsequent

changes in tendency strengths should be obvious. A high resultant achievement tendency would result in less procrastination, an earlier initiation of an activity. Low resultant tendencies should result in later initiation of activity or more procrastination. Thus, the important link between achievement motivation and the other motivational components, and procrastination behavior is provided by the effects these forces have on the various action tendencies, since it is assumed that the strengths of these tendencies determine actual sequences of behavior.

Thus far, the groundwork has been laid for the general expectations about procrastination. The remaining sections discuss the specific variables to be measured in this report, how they are to be measured, and their expected effect on the achievement tendency. Also, specific hypotheses will be made for the three tasks involved in this study.

Achievement Motivation and Motive to Avoid Failure

In the preceding sections, two important motives were discussed. The achievement motive was viewed as a positive facilitation force toward academic accomplishment with respect to a specific achievement task. The motive to avoid failure was viewed as a negative inhibitory force working to keep the individual from engaging in achievement tasks. These two motives can be measured and considered together as a resultant motivational force which acts to push the individual to engage in the academic task.

Atkinson and his colleagues have traditionally used McClelland's scoring techniques for the Thematic Apperception Test (TAT) to measure achievement motivation (McClelland, 1953). This test has been successfully validated against numerous measures of achievement-related behavior and, until recently, was considered by Atkinson to be the only sufficiently valid test for this purpose

There would seem to be little need to justify the inclusion of achievement motivation as a relevant variable in the study of procrastination behavior for achievement tasks. Achievement motivation has already been successfully related to numerous other academic performance variables (Atkinson, 1964; Feather, 1966). In a large national survey using the TAT (Veroff, et al, 1974), achievement motivation was positively related to level of academic attainment and to career choices according to a status hierarchy. Wolk and Ducette (1974) mention performance on classroom tests, preference for certain degrees of risk, estimation of future success, and persistence at tasks as performance variables that have been demonstrated to be related to achievement motivation.

Atkinson, in his discussion of the change of activity model, provides the theoretical groundwork in which to incorporate achievement motivation into the discussion of procrastination behavior. Achievement motivation is posited as an important instigating force behind an action tendency, the strength of which is greatly dependent on the strength of one's nAch. Since the strength of a tendency to engage in an achievement task greatly determines when the actual task behavior will occur, then it obviously will affect procrastination time.

The motive to avoid failure in achievement-related areas, is believed by Atkinson to be the source of anxiety experienced in achievement-oriented activities. Thus, measures of anxiety have been used to assess an individual's failure avoidance motivation. The Manifest Anxiety Scale (Taylor, 1953) has, at times, been used for this purpose, although it has proved to be too general for achievement-oriented situations. Two more appropriate tests have attained greater status with Atkinson's researchers. The test Anxiety Questionnaire (TAQ) was developed by Mandler and Sorenson (1953) as a measure of specific anxiety in test-taking situations. The Achievement Anxiety Test (AAT) was developed by Alpert and Haber (1960) as a means to measure both debilitating (negative) anxiety and facilitating (positive) anxiety in academic achievement situations. The debilitating anxiety scale (AAT-) correlated highly with the TAQ, indicating that they measure largely the same underlying behavior (Alpert and Haber, 1960). The facilitating anxiety scale (AAT+) appears to add slightly to the predictive validity of the test, when used in conjunction with the debilitating anxiety scale.

Motivation to avoid failure, as measured with anxiety scales, has also received past research attention sufficient to warrant its inclusion in this study. Kahn (1970) reviewed the literature on the relationship of the Manifest Anxiety Scale to academic performance and found little evidence that performance (grades) was affected by generalized anxiety. In his own study, he again found no correlation between general anxiety and performance. But, this might have been expected, since Taylor developed her scale, not as a tool for predicting academic performance, but as a means of ascertaining individual drive states for the purpose of selecting experimental subjects (Taylor, 1953).

What Kahn did find, though, was a relationship between certain items (those reflecting certain psychosomatic symptoms) and first year college grades, but only for males. His study does suggest that a certain type of anxiety is related to academic performance.

Other researchers have provided more direct evidence of a negative relationship between anxiety and performance. Mandler and Sarason (1952) hypothesized that test anxiety was learned negative drive state associated with past failure or unpleasantness in the testing situation. In their study in which the TAQ was developed, they found that individuals with induced high anxiety took much longer than those with low anxiety to perform Kohs Block Design test. They concluded that anxiety was significant variable affecting test performance. They also note that anxiety responses may be manifested in a number of ways: "feelings of inadequacy, helplessness, heightened somatic reaction, anticipations of punishment or loss of status and esteem, and implied attempts at leaving the test situation." (Mandler & Sarason, 1952, p. 106)

These responses all appear consistent with Atkinson's fear of failure concept and would all act as negative forces reducing the strength of an action tendency.

Alpert and Haber (1960) related test anxiety to a measure of verbal aptitude, to the Scholastic Aptitude Test (SAT), to a set of academic performance indices, including college grade-point averages, and to the final examination, mid-term examination and final course grades in an introductory psychology course. Their findings suggest that the specific anxiety scales (TAQ and both scales of the AAT), but not the general anxiety scales, could be useful as predictors of a number of academic performance variables. Their findings also lend credence to Atkinson's notion that "fear of failure", as measured through the anxiety scales, has motivational significance with reference to academic achievement tasks.

Previously it was stated that the two motivational forces can be added together to attain a measure of the strength of the resultant motivational force. This procedure has been developed by Atkinson and his researchers through several different methods, and the resultant force validated successfully against a number of theoretically related achievement variables.

Mahone (1960) simply separated his subjects according to their position on the TAT and TAQ into four groups, either high on both, low on both, high on TAT and low on TAQ, (hi-lo) or low on TAT and high on TAQ (lo-hi). He found that those with high resultant motivation (the hi-lo group) had much more realistic career aspirations than those with low resultant motivation (the lo-hi group). The hi-hi and lo-lo group fell in the intermediate range as expected.

Other researchers (Feather, 1961; Feather, 1963; Moulton, 1965) have combined the TAT and TAQ as did Mahone, but discarded the middle groups and used only the extreme groups, the hi-lo or lo-hi groups. Feather (1961), for example, related persistence at a task to resultant achievement motivation. He found that those in whom the motive for success exceeded motive to avoid failure (M_S is greater than M_{AF} or hi-lo) were more persistent than the M_{AF} is greater than M_S (lo-hi) group for tasks of intermediate difficulty. The reverse was true when the tasks were extremely easy or hard. This is consistent with Atkinson's theory if one remembers that the tendency to avoid failure is weakest when there is either a very high or very low probability of success. When the success probability is high you fear failure less since you are less likely to fail. When the likelihood of success is minimal, there is little shame (negative affect) associated with failure.

Yet another way of combining the measure of the two motives has been to convert raw scores on the tests to standard scores and note the difference between them. Isaacson (1964) simply subtracted the TAQ z-score from the TAT z-score. If the result was positive then he assumed M_S is greater than M_{AF} for that individual. If it was negative, then the individual was considered to have M_{AF} greater than M_S . Isaacson found that those with higher resultant achievement, M_S greater than M_{AF} , chose careers of intermediate difficulty while those with M_{AF} greater than M_S were more likely to choose careers that were either considered easy or very difficult. The reasoning behind this phenomenon is similar to that used in the Feather study, and is consistent with Atkinson's theory.

All of the studies on resultant achievement motivation cited

previously are consistent with Atkinson's achievement theory and the change of activity model. In addition, they all have used a somewhat similar two-test technique to measure resultant achievement motivation. This technique, especially since it involved the use of the TAT, is somewhat cumbersome. Early in his research endeavor, Atkinson called for a single objective test to measure resultant achievement motivation. It was not until 1968 that such a test was developed. Based on Atkinson's theory, Albert Mehrabian (1968) developed the Mehrabian Achievement Tendency Scales (MATS). These tests (there are separate male and female scales) supposedly measure the relative strength of the two motives within the individual. Thus, if the two forces were the sole components of T_S and T_{AF} , then together they would be the resultant tendency \bar{T} . Unlike other tests of achievement, Mehrabian's scales have achieved a moderate correlation with resultant achievement motivation as measured with the TAT/TAQ technique (Mehrabian, 1968). Also, external validation with other theoretically related scales has proved promising. Mehrabian (1969) reports a positive correlation with two other achievement scales and a shy-adventurous scale. He also has found a strong negative relationship with scales of test anxiety and neuroticism. A desirably low correlation was found between the scales and a social desirability scale. Weiner and Potepan (1970) have also successfully used the MATS in their study of affective reactions of superior and failing college students to exams.

The MATS has received considerable recognition as a valid tool for measuring resultant achievement motivation and will, therefore, be used in the present study. Moreover, its simple, objective scoring procedure

makes it much more convenient, as well as more reliable than the TAT/AAT technique which requires the use of a trained technician to score the TAT protocols for nAch. The AAT scale is used as well to test certain hypotheses related to differences in the assigned tasks. It is a short, objective test requiring only several minutes to take, so the usefulness of the data it provides far outweighs the time and effort expenditure involved in its administration.

The hypotheses that follow concerning the effects of different levels of resultant achievement motivation and achievement anxiety on procrastination are based on Atkinson's achievement theory, the change of activity model, some related research results, and knowledge about the tasks. It is expected that as achievement motivation (M_G) increases in relation to failure avoidance (M_{AF}), MATS scores increase, then the tendency to achieve success should increase in strength. According to the change of activity model then, the effect on behavior would, among other things, be a more rapid initiation of activity. That is, as the tendency to achieve increases, procrastination would be less.

On the other hand, as motivation to avoid failure increases relative to achievement motivation, MATS scores decrease, the effect should be the opposite. The strength of the achievement tendency decreases and the behavioral manifestation is a greater degree of procrastination.

Specific hypotheses follow:

Hypothesis I: There should be a significant negative correlation between resultant achievement motivation and procrastination time reflected on all three tasks. Each task is achievement-oriented and, therefore, should be affected by one's level of achievement

motivation. Since one of the two variables supposedly measured by the MATS (Mehrabian Achievement Tendency Scale) is nAch, then the MATS should correlate negatively with procrastination on all tasks. Those components of the resultant achievement motivation score that reflect achievement motivation should cause procrastination to decrease as they increase. The opposite occurs when the other component, motive to avoid failure, increases or, in this case, is reflected in a lower MATS score. In that case, procrastination should increase.

Hypothesis II: a) The relationship between resultant achievement motivation (measured by MATS) and procrastination time should be stronger for Task 2 (the test and lecture) than for Task 1 (the article reading task). The MATS is designed to reflect both achievement motivation and the motive to avoid failure within a single measure. Thus, the MATS score is made up of two competing components. The more that each of these component motivational forces is aroused by an achievement task, the greater is the expected relationship between the measure of these forces and procrastination for that task. Both tasks should arouse achievement motivation and to approximately the same extent, since the tasks are quite similar in most respects. But, only in Task 2, in which the individual is evaluated with respect to intelligence, will the motive to avoid failure likely be aroused; to the extent that this force affects procrastination time (t_p) and is measured by the MATS, then it is to this extent that the correlation between the MATS and t_p for Task 2 will exceed that correlation for Task 1.

b) Task 2 and Task 1 are very comparable except that Task 2 is expected to arouse achievement anxiety in some individuals. This is expected to cause those individuals to avoid Task 2. Since Task 1 is expected to arouse no such anxiety then, fewer subjects should need to avoid the task. Overall, therefore, there should be a difference in general procrastination on the two tasks. It is hypothesized that procrastination time on Task 2 will exceed procrastination time on Task 1.

Hypothesis III: Individuals with high achievement anxiety (or fear of failure) should avoid tasks that elicit this fear or anxiety, i.e. evaluative tasks. However, non-evaluative tasks that do not elicit this fear should not be affected by individual level of fear of failure. Therefore, there should be a significant positive correlation between achievement anxiety (reflected by AAT scores) and procrastination time (t_p) on Tasks 2 and 3 (the intelligence test and the first exam), but not on Task 1 (the article reading task). In Task 2, the individual is being evaluated by an intelligence test, while in Task 3, the first exam will provide important evaluation. Task 1 requires no immediate evaluation and the importance of later evaluation related to the task is minimal. So, little anxiety or failure avoidance motivation should be aroused for that task. The result is that the anxiety-procrastination correlations for Tasks 2 and 3 should both exceed the anxiety-procrastination correlation for Task 1.

Hypothesis IV: There is a greater likelihood that individuals who are high in achievement anxiety will totally avoid (not just procrastinate) a task in which achievement anxiety is aroused, i.e. an

evaluative task, than a similar type of task in which no evaluation is involved. For individuals who have a low level of achievement anxiety, there should be no greater likelihood to avoid an evaluative task than a similar type of non-evaluative task.

Therefore, those determined to be high in achievement anxiety (using a median split for scores on the AAT-), will tend to avoid Task 2 (the intelligence test - lecture task) to a greater extent than Task 1 (the article reading task). Those low in anxiety will show no greater tendency to avoid Task 2 than Task 1. Task 3, which involves studying for the first exam, is excluded from this type of comparison since the importance of the exam makes it unlikely that anyone will skip it. Extrinsic motivational forces should easily overcome any desire to avoid the first exam.

Hypothesis V: There should be a significant negative relationship between achievement anxiety and resultant achievement motivation. The latter supposedly measures both motivation to achieve and motivation to avoid failure. Since the motive to avoid failure has been theoretically linked to achievement anxiety, then the extent of the relationship between the two should be reflected in a negative correlation between MATS and AAT- scores (stronger motive to avoid failure being reflected by lower scores on the MATS). The purpose of this measure is simply to provide a partial test of the congruence of the two constructs: motivation to avoid failure and achievement anxiety.

Hypothesis VI: Since scores on the MATS supposedly reflect two force components (achievement motivation and failure avoidance motivation),

both of which are theoretically linked to procrastination, then these scores should be found to be more strongly correlated with procrastination time than the scores on the AAT- (achievement anxiety). Thus, the MATS- t_p correlation coefficient should exceed the AAT- - t_p correlation coefficient.

Perceived Instrumentality

It was stated earlier that Atkinson's formula for measuring the tendency to achieve success on a specific task ($T_S = M_S \times P_S \times I_S$) was an oversimplification. It may be valid for tasks taken in isolation, such as a task completed by a subject in an experimental situation. Yet, most achievement tasks are not performed in a laboratory, and each may have important implications for an individual's future. When success at a task is perceived by an individual to be important in relation to some overall future goal accomplishment, it is said to have "Perceived Instrumentality". That is, task accomplishment is perceived to be instrumental for future task accomplishment. When this occurs, a new dimension is added to Atkinson's theory, and the tendency to achieve success (T_S) may be dependent on certain new relationships.

At least two important changes occur when success on a task has important future implications. First, additional incentives, extrinsic to the task itself, come into play and are likely to result in a stronger resultant achievement tendency. Promise of future financial rewards, recognition, etc., may add additional positive forces to an existing positive resultant tendency to achieve. Such task extrinsic incentives could also be strong enough to overcome a resultant tendency in which failure avoidance is dominant (See Figure 7, p. 26) and result in an overall positive action tendency.

The stronger achievement tendency resulting from the increased extrinsic rewards, would be expected to result in an earlier initiation of the related achievement-oriented behavior. Such an incentive increase then, would result in less procrastination on these achievement related tasks. Also, it might mean an increased likelihood that some tasks such

as the paper reading task and the test-lecture task in the present study, would be engaged in at all. This means simply that the increased action tendency has a better chance of "beating out" competing action tendencies, and thus being expressed in actual behavior, i.e. undertaking the task.

A second important change which might result from an increase in perceived instrumentality (written throughout this report as PI) is suggested by Raynor's elaboration of Atkinson's expectancy times value theory of achievement motivation discussed earlier (Atkinson & Raynor, 1974). In this "elaborated theory", as Raynor calls it, he distinguishes between contingent and non-contingent paths. A "contingent" path is a series of tasks wherein success at each level or step in the series is believed by the individual, to guarantee the opportunity to engage in the next step in the path, while failure on any step is believed to eliminate the opportunity to engage in subsequent steps. Tasks which have a high degree of "perceived instrumentality" are thought to be in a contingent path because it is believed that doing well on those tasks is a prerequisite for success on future tasks. Thus, future success is contingent on present task accomplishment. A "non-contingent" path is defined as a situation where immediate success or failure on a step is not perceived to be related to future success or failure along the path. Tasks rated as low in perceived instrumentality (PI) are determined to lie in non-contingent paths.

An important premise of Raynor's elaborated theory is that when an immediate task lies in a contingent path, and is thus rated high in PI, there will be motivational components associated with each step in that path, "in addition to" the motivation aroused solely by the immediate activity itself (which is determined by $M \times P \times I$ for that activity). In other words, there will be motivation aroused by each "possible" future success, or possible failure, that success on the immediate task might allow.

Raynor has developed an equation to reflect the strength of a resultant action tendency that is associated with immediate activity in a contingent path. Without presenting all the details of the development of Raynor's elaborated theory, it may help to see the basics of the theory as revealed through his formula for the strength of a tendency for an activity in a contingent path:

$$\bar{T} = T_S + T_{-f} = (M_S - M_{AF}) \sum_{n=1}^N (P_{1s_n} \times I_{s_n}) \quad (14)$$

\bar{T} = resultant action tendency

T_S = tendency for success (achievement tendency)

T_{-f} = tendency to avoid failure

M_S = motive for success

M_{AF} = motive to avoid failure

N = number of steps in a path

n = specific step in a path

P_{1s_n} = probability (or expectancy that success on step one will lead to success on any step n)

I_{1s_n} = the incentive value associated with each successful step

whereas

$$P_{1s_n} = P_{1s_1} \times P_{2s_2} \times P_{3s_3} \times P_{4s_4} \times \dots \times P_{ns_n} \quad (15)$$

Raynor explains the two equations as follows:

"the strength of expectancy or associative link between the immediate activity and the future success (i.e. P_{1s_2} , etc.) is represented by the product of the subjective probability of immediate success (P_{1s_1}) and the subjective probability of future success, given the opportunity to strive for it (P_{2s_2}). In other words, the combined difficulty of immediate success and future success, given the opportunity to strive for future success, determines the probability that immediate activity

will lead on to future success. More generally, the strength of expectancy that immediate activity will result in some future success (P_{1s_n}) is assumed a multiplicative function of the subjective probabilities of success in each step of the path (see equation #15). Consequently, component tendencies to achieve success (and to avoid failure) will be aroused in a contingent path to influence strength of motivation sustaining immediate activity, their particular strength being determined by P_{1s_n} and I_{s_n} for each anticipated success (s_n) and failure (f_n), respectively."¹

As stated before, this means that for an activity in a contingent path there will be motivational components associated with each step in that path. Furthermore, each component will be multiplied by the individual's dominant motive ($M_S - M_{AF}$), which can be factored out and used as a constant multiplier for each individual.

The effect of adding these step components, and this is the important implication to Raynor's elaboration, is that an individual's typical manner of relating to achievement situations (as determined by $M_S - M_{AF}$) will be enhanced or strengthened when an immediate activity has important implications for future success (perceived instrumentality - PI). Motivational tendencies are aroused not only by the immediate activity, but by each future activity in the path which success on the immediate activity might permit. If an individual's dominant motivation with regard to a task is a positive achievement motivation ($M_S > M_{AF}$), then the resultant achievement tendency will become even more positive, or success oriented. This is due to the motivational components associated with each possible future step in a path, components which all contain a positive (M_S) multiplier in them. If the individual's dominant motive is a negative, failure-avoidance motive ($M_{AF} > M_S$), then the resultant avoidance

¹ See Atkinson and Raynor (1974), pages 121-146.

tendency will become even more negative due to the fact that each new component will be multiplied by the negative force associated with one's dominant failure avoidance motive orientation. This effect is called the "accentuation effect" since the strength of one's existing resultant tendency is accentuated or strengthened as a result of increased perceived instrumentality.

The changes in the action tendencies caused by the addition of new motivational components should be reflected in important differences in procrastination behavior. As PI (perceived instrumentality) increases, those individuals in whom the motive to achieve success is dominant ($M_S > M_{AF}$) should tend to procrastinate less on the task. For those whose dominant motivation is failure avoidance ($M_{AF} > M_S$), procrastination behavior should increase as PI increases, as a result of this accentuation effect.

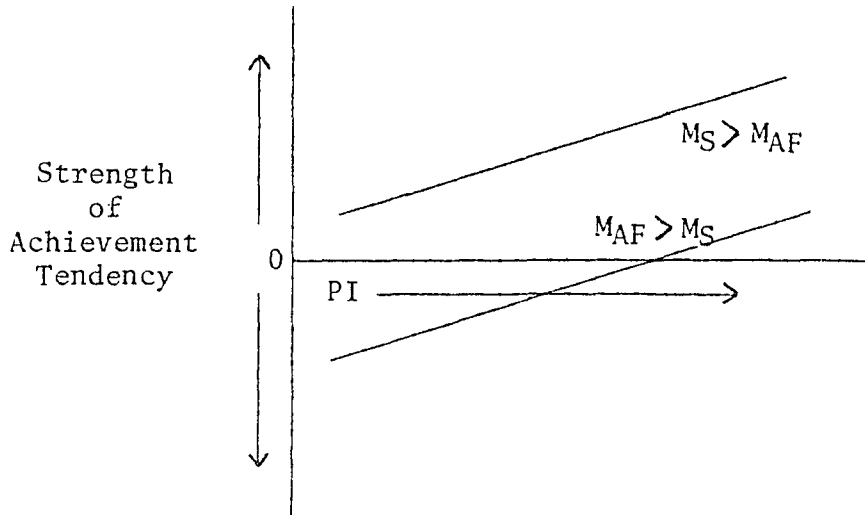
Now, contrast how this "accentuation effect", as suggested by Raynor, differs from the effect resulting from increased extrinsic rewards as PI is increased. It should be remembered that both forces can occur at the same time within the individual. Increased extrinsic rewards should result in an increase in the resultant achievement tendency regardless of one's dominant motivation ($M_S > M_{AF}$ or $M_{AF} > M_S$). You might call this a "general arousal effect" since all individuals' tendencies to engage in the achievement task will be aroused or strengthened. The effect is thus positive for both motive groups of individuals and would be expected to result in less procrastination regardless of individual differences in dominant motive.

Raynor's theory makes a specific prediction, contradictory to Atkinson's general arousal hypothesis. According to his elaboration

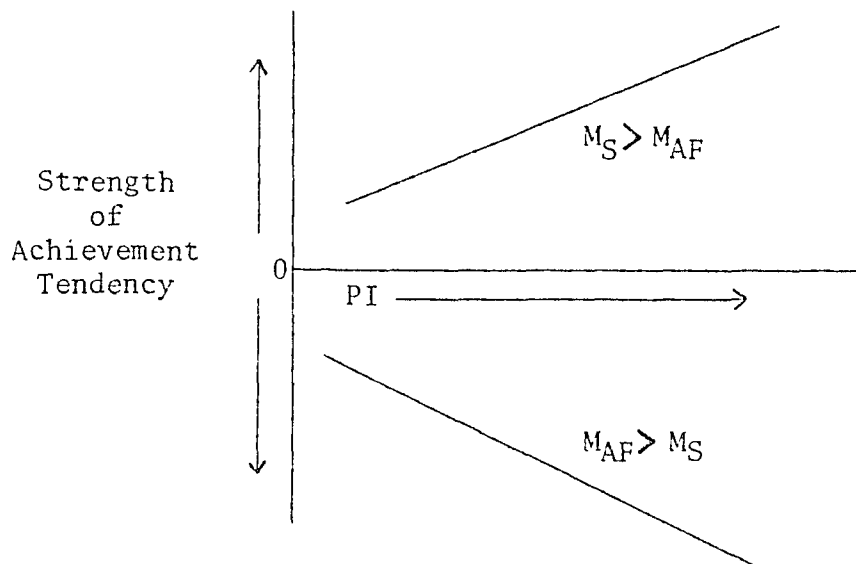
of Atkinson's theory, the effect of increasing PI is positive "only" for individuals higher in M_S than M_{AF} . For these individuals the tendency to engage in the task increases as PI increases, an effect similar to that expected from increasing extrinsic rewards. Both increased extrinsic reward conditions and the accentuation effect would be expected to result in decreased procrastination for the $M_S > M_{AF}$ group. For those in whom the motive to avoid failure exceeds motive to achieve success ($M_{AF} > M_S$), the expected result of the accentuation effect is contradictory to that expected from increased extrinsic rewards. For these individuals, Raynor's "accentuation effect" would result in a decreased, or weaker, resultant tendency, while the effect of increased extrinsic rewards would be a "general arousal effect", or an increased or stronger resultant tendency. Thus, there are competing forces operating at the same time within the individual. With respect to procrastination, the accentuation effect forces would tend to cause more procrastination, as contrasted with the general arousal effect forces, which would tend to result in less procrastination.

To picture the effect on resultant tendencies graphically, refer to Figure 9 on page 45. Here is shown the resultant tendency of two individuals, one in whom $M_S > M_{AF}$, the other in whom $M_{AF} > M_S$. Figure 9A shows the effect of increased extrinsic rewards associated with increased PI on the two individual's tendencies. Figure 9B shows the expected effect suggested by Raynor's elaboration of the theory.

Raynor and his associates have conducted numerous studies designed to show that increased PI will be associated with an enhancement of the individual's typical motivational orientation. His results suggest that his theory has considerable validity, although his elaboration fails to explain all of the findings. Raynor notes that extrinsic rewards may alter the accentuation effect associated with increased PI. He states



A. Effect of increased extrinsic rewards on achievement tendency associated with increases in PI.



B. Effect of the accentuation effect on achievement tendency associated with increases in PI, as suggested by Raynor's elaboration.

Figure 9: The effect of increased extrinsic rewards, and the accentuation effect suggested by Raynor, on the strength of a resultant achievement tendency.

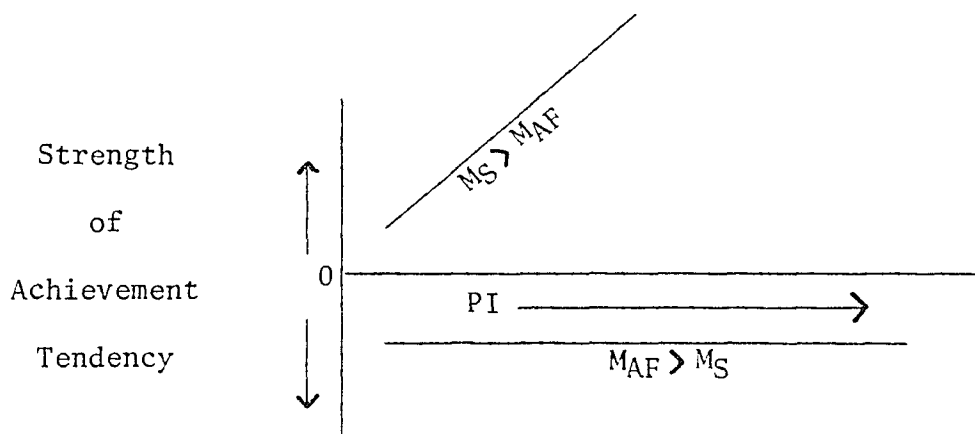
specifically that it is understood "that all predictions concerning (total) resultant achievement motivation sustaining immediate activity in a contingent path presume a minimum of extrinsic motivation unless otherwise specified".

Primarily, two types of studies have been conducted to test Raynor's theory. One involved experimentally inducing contingent and non-contingent paths in a laboratory setting. Typical of this type is the Raynor and Rubin (1971) study in which contingent and non-contingent paths of four steps were induced, using a complex arithmetic task. For the contingent path, it was necessary to succeed on each step or task to have the opportunity to try a subsequent step in the path. Thus, each step had a great deal of perceived instrumentality for later steps. No such success condition applied in the non-contingent path. Each step could be tried regardless of previous success or failure. As expected, they found that the success-oriented individuals ($M_S > M_{AF}$) performed significantly better, while failure threatened ($M_{AF} > M_S$) individuals performed significantly worse in the arithmetic task when it was the first step in the contingent path than when it was the first step in the non-contingent path. The difference between motive groups was negligible in the non-contingent path condition. Entin and Raynor (1973) found similar results using the shortest possible two-step contingent path. Both studies support the theory that the tendencies to achieve success or avoid failure (as reflected by measures of performance) are enhanced when PI is high but not when it is low. Entin and Raynor (1972) found similar results using persistence as the behavioral measure reflecting the action tendency.

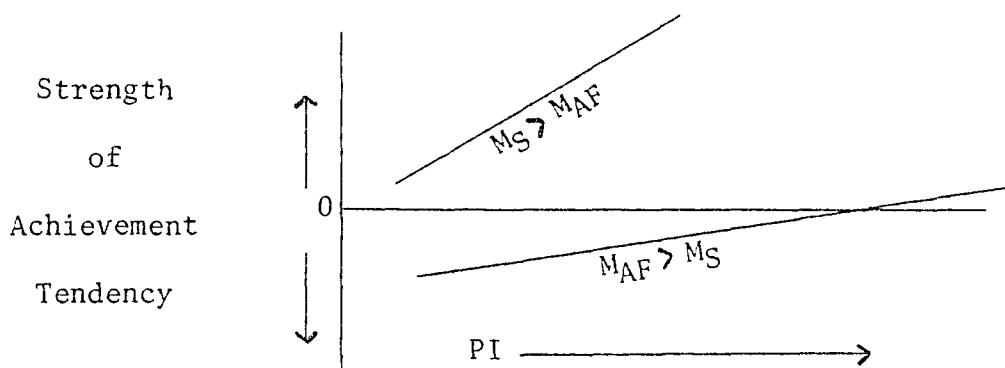
The three studies just cited have in common that they were all conducted in an experimental laboratory situation. This type of study involves tasks which have relatively little future importance in the total life space of an individual. Therefore, no extrinsic future rewards are contingent upon success on the tasks. The tasks have relevance only within the context of the laboratory situation.

Although the above studies have tended to support Raynor's hypotheses, not all studies have found the accentuation effect. Raynor (1968) reported that high school students, regardless of motive status, received higher grades when their overall high school grades were considered important for their future success, than when they were not considered important. This contrasts with Raynor's expected result, wherein individuals in whom M_{AF} exceeds M_S would have been expected to receive lower grades as PI increased. Raynor (1970) also found this "arousal effect" for both motive groups in an introductory psychology class when compared on overall semester grade averages. Those high in PI received higher grades than those low in PI across motive groups. In both of these studies, PI "does not" interact with motive designation to affect grade performance, contrary to the effect predicted by Raynor.

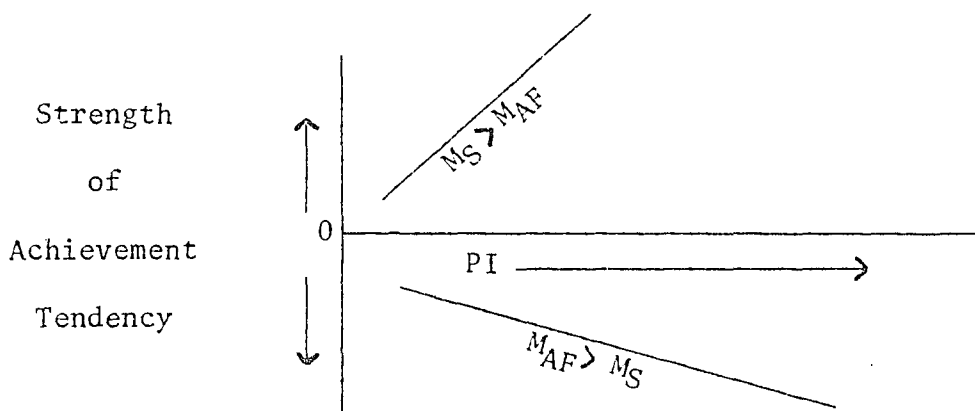
The inconsistencies in these studies lies primarily within the failure threatened group, i.e. $M_{AF} > M_S$. It may be that within this group, the force associated with the "accentuation effect" and the force associated with the effect of increased extrinsic rewards, "the arousal effect," either totally or partially cancel each other out as PI increases. Figure 10 illustrates what might happen when both forces are active when PI increases. Figure 10A is indicative of a case where, for $M_{AF} > M_S$ persons, extrinsic motivation and the accentuation effect exactly cancel each other out as PI increases, leaving a resultant tendency unchanged. Figure 10B shows a case where the extrinsic motivational force is stronger than the accentuation force, resulting in a positive increase in resultant tendency for those in whom $M_{AF} > M_S$. This increase is much smaller though, than that of those in whom $M_S > M_{AF}$. The third case, Figure 10C, shows the reverse, where the accentuation effect is dominate over the extrinsic



- A. Accentuation force and extrinsic motivation force cancel each other out for $M_{AF} > M_S$ persons.



- B. Extrinsic motivation force exceeds force of accentuation leaving rising resultant achievement tendency as PI increases.



- C. Force of accentuation exceeds extrinsic motivation force leaving declining resultant achievement tendency as PI increases.

Figure 10: The effects of various strengths of the accentuation effect force suggested by Raynor and the extrinsic motivational force when combined, on the strength of resultant achievement tendency.

motivation effect resulting in a decrease in resultant tendency (greater avoidance tendency) as PI increases. Note that even in this case, the accentuation effect is moderated in the $M_{AF} > M_S$ group because of the influence of the extrinsic motivation. Therefore, any regression line slope for strength of achievement tendency (as reflected in some performance measures), on PI will be expected to be greater in "absolute magnitude" in the $M_S > M_{AF}$ group than in the $M_{AF} > M_S$ group.

It is reasonable to hypothesize that in those studies where the accentuation effect is not found, the explanation may well lie in the cancellation of forces taking place as a result of the extrinsic motivational force and the force of accentuation acting in opposite directions in the $M_{AF} > M_S$ groups, that is, in a manner similar to that illustrated in Figure 10A. It seems realistic to expect that in most real-life situations a number of forces may change simultaneously as a task takes on greater future importance for an individual. It is expected that this will happen in the present study as well, although primarily on Task 3. Only the first exam itself, has both evaluative significance, which might arouse the motive to avoid failure, and "major" importance via contingent implications for future success; doing well on the exam being important if one wants to do well in the course. Therefore, as the perceived instrumentality of the course increases, the importance of doing well on the first exam increases via its link to the course grade. On the two other tasks, there is much less of a link because only two exam questions are derived from the two task assignments. On Task 3, as PI increases, the force component expected to be aroused by the accentuation effect, would cause those in whom $M_{AF} > M_S$ to procrastinate more and those in whom $M_S > M_{AF}$ to procrastinate less, according to Raynor's

theory. The force component associated with increased extrinsic motivation would act to tend both motive groups to procrastinate less. This reasoning forms the basis for the following hypotheses:

Hypothesis VII: a) Since both component motivational forces act in the same positive direction for those in whom motive to achieve success exceeds motive to avoid failure, it is hypothesized that on Task 3 for the $M_S > M_{AF}$ group, procrastination will decrease as perceived instrumentality increases. There should be a significant regression with negative slope for T_3 (procrastination time) on PI.

b) Since the two motivational forces act in the opposite direction for those in whom motive to avoid failure exceeds motive to achieve success, it is hypothesized that, on Task 3 for $M_{AF} > M_S$ group, the regression of procrastination (T_3), on PI will not be as strong as that same relationship for the other motive group ($M_S > M_{AF}$). Since it is impossible to determine the strength of each force component, it is impossible to even tell the sign of the slope of the regression of T_3 on PI in the $M_{AF} > M_S$ group; only that this slope of regression should be less in absolute magnitude than the slope of the regression line of T_3 on PI for the other motive group.

On Task 1, the article reading task, no evaluation is involved in the task itself and the motive to avoid failure is expected to be minimally aroused. On this task, as perceived instrumentality increases, a general arousal effect, although small, should be shown for both motive groups. This is due to the increase in importance of the exam items based on this task, via their link to the exam and thus, to the course as a whole. Therefore, since the tendency to engage in the task will be

increased for all motive groups as PI increases, there should be a decrease in procrastination time for Task 1 across both motive groups, with there being little difference between motive groups.

On Task 2, the intelligence test and mini-lecture, the failure avoidance motive is expected to be aroused by the test. But, since test performance has no effect on course grade (the two exam questions coming from the mini-lecture), the test is considered to be in a non-contingent path with respect to the course. Therefore, as PI for the course is increased there should be no accentuation effect operating differentially for the two motive groups, $M_S > M_{AF}$ or $M_{AF} > M_S$. Again, the general arousal effect should operate on both motive groups much as it did for Task 1. Task 2, on the whole, will become more important, via its two question link to the exam, as PI goes up for both groups. Based on the greater extrinsic motivation associated with course success, the tendency to do Task 2 should become stronger and procrastination time for the task should decrease as PI increases for both motive groups.

It should be clear that only the importance of going to do the task (actually hearing the lecture) is increased as PI increases. The intelligence test itself, does not increase in importance, since performance on the test has no instrumental link with future success in the course. Thus, any aroused motive to avoid failure elicited by the intelligence test should remain the same but will be more likely to be overcome as PI increases. From this discussion comes the following hypothesis:

Hypothesis VIII: a) Procrastination time on Task 1 and Task 2 should be affected almost equally as perceived instrumentality increases.

Thus, there should be no difference between correlations reflecting

the relationship between the rating of perceived instrumentality (PI) and procrastination on Tasks 1 and 2. The reason for this expectation is that there is no accentuation effect expected for those in whom $M_{AF} = M_S$ on either task to lessen the correlation resulting from the arousal effect of increased extrinsic motivation. This is because there is no evaluation involved on Task 1 and thus, no tendency to avoid failure. On Task 2, there is no accentuation effect since performance on the intelligence test task has no instrumental ties with academic success in the class, i.e., it lies in a non-contingent path with respect to the course grade.

[Note that this does not say that the absolute procrastination time for the two tasks will be equal. Procrastination time on T_1 should still be less than T_2 , since M_{AF} is expected to affect procrastination on Task 2 and not on Task 1 (See Hypotheses II and III). It states only that PI should affect both equally.]

b) Since little or no accentuation effect is expected to be operating for Tasks 1 and 2, there should be little differential effect on procrastination as PI increases between $M_{AF} = M_S$ and $M_S = M_{AF}$. Thus, it is predicted that the slopes of the regression lines for $M_{AF} = M_S$ and $M_S = M_{AF}$ will be equal within tasks, for both Task 1 and Task 2.

Based on Raynor's elaboration hypothesis, the effect of increased extrinsic motivation and knowledge about the nature of the tasks, the following hypotheses are made:

Hypothesis IX: a) There should be an overall greater tendency to engage in an academic achievement task in a course, and thus less procrastination on the task, as perceived instrumentality for the course increases. This is based on the general arousal effect resulting

from increased extrinsic motivational forces for both motive groups (M_S or M_{AF} dominant) as PI goes up, and the fact that the accentuation effect, when operating, adds an additional positive force component for the $M_S > M_{AF}$ group. These all serve to decrease procrastination. Only the accentuation effect for the $M_{AF} > M_S$ group should add a negative force. The effect of this force should be overridden when all individuals are considered, resulting in an overall decreased tendency to procrastinate. Therefore, there should be a negative correlation between PI and procrastination (t_p) for all tasks.

b) There will be a greater likelihood that achievement tasks will be engaged in at all as PI increases. This will apply primarily to Task 1 (T_1) and Task 2 (T_2). Stated differently, those considered high in PI are more likely to complete the tasks than those ranked low in PI.

Hypothesis X: It is expected that perceived instrumentality will be an important predictor of procrastination behavior. Therefore, it is predicted that PI will add significantly to the overall predictive efficiency (be included in the best predictive model) of the step-wise multiple regression equations predicting procrastination on the three primary tasks.

Locus of Control

A final personality variable that is expected to affect procrastination behavior is called "locus of control", a personality trait brought to the forefront of psychological research into personality by Julian Rotter. In his well-known monograph, which grew out of work on social reinforcement theory, Rotter (1966) popularized the notion that individuals differ in their generalized expectancy for internal versus external control of reinforcement. He meant simply that people differ in the degree to which they attribute the cause of the rewards and punishments they receive to their own behavior (internally caused) or to fate, chance, luck, or some other person (externally caused).

The internally controlled individual is pictured as believing that his own behavior, skills or internal dispositions control the reinforcements he receives from the world in which he lives. The externally oriented individual believes that there is much less of a link between reinforcements and his own behaviors, skills, and dispositions. He believes that reinforcements are controlled primarily by external sources. Depending on one's past reinforcement experiences, a consistent attitude toward either an internal or external locus of control will be developed.

Rotter developed the Internal-External (I-E) Control Scale to measure this personality disposition. He also theorized a functional relationship between locus of control and various attitudes, behaviors,

and other personality traits. Joe (1971) later summarized some of the findings relating the I-E control construct to such variables. He depicted externally controlled individuals, in comparison to internals, as being relatively "anxious, aggressive, dogmatic and less trustful and more suspicious of others, lacking in self-confidence and insight, having low needs for social approval, and having a greater tendency to use sensitizing modes of defense" (Joe, 1971, p. 623).

A particularly relevant extension of locus of control theory concerns its relationship to achievement tendencies and achievement motivation. Rotter (1966) maintains that those at the internal end of the scale would be expected to show more overt striving for achievement than those who felt they had little control over their environment. Internals would tend to make the cognitive link between achievement behaviors and success (and contingent rewards), realizing that they have control over the rewards they receive. Externals would be less likely to make that cognitive link since they see rewards as being somewhat more serendipitous. Since internals tend to perceive that achievement behaviors result in rewards, their achievement tendencies are more likely to have been reinforced and strengthened by the rewards they received. Externals, who are much less likely to perceive that achievement behaviors result in rewards, would not have seen that their achievement behaviors resulted in rewards. Thus, their achievement behaviors were not strengthened.

There are several studies (Crandall, et al., 1962; Franklin, 1963; Rotter & Mulry, 1965) in which locus of control was successfully related to different achievement variables. These findings suggest

that there is a relationship between locus of control and need for achievement. Atkinson (1958) and Crandall (1963) both suggest that people who are high on need for achievement in all probability have some belief in their own ability or skill to determine the outcome of their efforts. Both n Achievement and locus of control have at least a partial common etiology in that achievement success and reinforcement in early development may help to foster a generalized need for achievement, as well as, a belief in one's ability to obtain desired ends by using that ability. Wolke and Ducette (1971) though, discriminate an important difference between the two. Locus of control represents a generalized expectancy about control over reinforcements, whereas need for achievement corresponds to a psychogenic need to attain success in relation to some stated or implied standard of excellence. In explaining their theoretical overlap, Lefcourt (1966, p. 216) concludes that, "theoretically, one would expect internal-control persons to demonstrate the search for mastery that need achievement defines."

Although there appears to be a logical relationship between locus of control and achievement, the specific nature of that relationship has been an object of much research. Rotter (1966), himself, hypothesized that the relationship was probably not exactly linear, since a person high on achievement motivation might not be equally high on a belief in internal control. Furthermore, there may be many with low n Achievement who still believe that their behavior determines their rewards.

Still, much of the subsequent research was directed toward confirming an hypothesized linear relationship between locus of control

(using primarily Rotter's I-E Scale) and numerous achievement variables. These efforts have been marginally successful. Joe (1971) summarized some early findings which have shown internals, as compared to externals, to spend more time in intellectual activities (Chance, 1965), exhibit more intense interest in academic pursuits (Crandall, Katkovshi, & Crandall, 1965), and attain consistently higher course grades and achievement test scores (McGhee & Crandall, 1968). Mehrabian (1968) has found an external locus of control to be negatively related to his measures of achievement motivation.

It would appear then, that there is some degree of linear relationship between locus of control and n Achievement, as reflected in these achievement related variables. If the previous hypothesis relating procrastination to achievement motivation (see Hypothesis I) is true, then it might be expected that procrastination would also be related to locus of control, if for no better reason than co-linearity. In addition, one might theoretically deduce that individuals with an internal orientation would more quickly engage in achievement tasks, such as those in the present study, than those who tended not to relate rewards to such achievement activities.

An individual's orientation toward reinforcement control might be viewed simply as an additional force component affecting the strength of a tendency (T_s) to engage in an achievement task. The more one believes that his behavior controls his reinforcements (the greater degree of internality), the greater the value of this force component added to the total forces comprising an action tendency. Those attributing control to powerful others, fate, or chance would

have a smaller force component, possibly even a negative component, added to the total forces. If this force component depiction of the locus of control construct is accurate, then its effect on activity change should be obvious. According to the change of activity model and Equation 9 (p. 16), the effect would be a decrease in the value of \underline{t} and thus, less procrastination for those who have an internal orientation. The reverse, or greater procrastination, would be expected for those with a more external orientation.

Although this model is theoretically appealing, there is some evidence that the relationship between locus of control and achievement related variables may not be so simple. In spite of the evidence supporting a linear relationship between locus of control and some achievement variables, not all attempts to correlate locus of control with achievement have been successful. Indeed, several researchers (Eisenman & Platt, 1968; Hjelle, 1970; Procuik & Breen, 1973) have found very low or non-existent correlations between control orientation and achievement variables.

Numerous explanations have been offered to account for this failure to find the hypothesized relationship. Rotter (1966) stated that all persons high in \underline{n} Achievement need not be internally oriented, nor must all of those low in \underline{n} Achievement be external in locus of control. He proffered two possible limitations as well, to a linear relationship between the two. First, he noted that control orientation may not be a generalized personality trait and may not be applicable across all situations. In a highly structured situation such as in a university's academic atmosphere, other factors may have much more

impact than that of control orientation. A second factor lowering the relationship is called "defensive externality". There may be a large number of persons who are high in n Achievement who have adopted an external locus of control as a psychological defense against failure. These individuals still maintain achievement striving but defensively account for failures by expressed external attitudes.

Yet another alternative explanation for low linear correlations is that the relationship has other than linear properties. Karabenick (1972), for instance, in his efforts to predict success on certain achievement tasks, found a complex interaction between locus of control and perceived task difficulty, which included both cubic and quadratic trends.

Other explanations for the failure to find the hypothesized relationship somewhat related to Rotter's mention of a specificity factor, have been the attacks on the appropriateness of the I-E scale for predicting achievement. Mirels (1970), for example, found both a general internal-external factor and social-political control factor in his Varimax rotation factor analysis of the scale. These results fail to support Rotter's (1966) claim of the factorial purity of his instrument. Since one's belief about control of reinforcements is expected to be important in predicting achievement, then the fact that the scale measures more than simply control orientation may very well limit its relationship to achievement. This lack of factorial purity may well account for the mixed results in attempts to relate locus of control to achievement variables.

Other authors, also aware of the possible inappropriateness of

the I-E scales for predicting achievement, have developed alternative instruments in an attempt to find better predictors of related variables. Powell and Vega (1972) had moderate success relating their Adult Locus of Control Scale (ALOC) to numerous theoretically related achievement and personality variables. Procuik and Breen (1973) found no correlation, though, between their Academic I-E Scale and achievement, as measured through GPA. For several reasons, the most promising new instrument seems to be the new scales developed by Hannah Levinson (Levinson & Miller, 1976). Titled the Internal, Powerful Others, and Chance Locus of Control Scale, this instrument assesses locus of control along three separate dimensions simultaneously, instead of the single internal-external dimension of Rotter's I-E Scale. This instrument, which has been chosen for use in the present study, will be discussed in more detail shortly.

Since success at relating achievement variables "directly" to most locus of control measures has been mixed, an alternative relationship has been suggested. It has been posited that the construct might best be used as a moderator between some other construct, primarily n Achievement, and various achievement variables. Feather (1967) attempted to use locus of control as a moderator when predicting attractiveness of success and repulsiveness of failure for different levels of task difficulty from an individual's typical level of achievement orientation. Although unsuccessful in his efforts, Feather felt that "situational" locus of control may have been so strong that possible differences that may have resulted from "individual" differences in locus of control orientation were attenuated.

Feather's contribution has had important theoretical implications. He suggested that a C (control) factor be added to the simple incentive-

value formulas discussed by Atkinson's original achievement motivation theory. Thus, Atkinson's original formula for incentive, $I_S = 1 - P_S$, becomes $I_S = C(1 - P_S)$, and $I_f = -P_S$ becomes $I_f = -CP_S$. With these modifications, an individual's perceived degree of internal control (both situation and personality specific) can be considered. As situational locus of control, or one's control orientation (if the situation were ambiguous) becomes more internal, the incentive values associated with success would be magnified. As stated earlier, this results from the individual's increased ability to relate incentives to one's own behavior when one possesses a high degree of internality. As a result of the increased incentive values, M_S and M_{AF} would have more of an effect as multipliers and, thus, action tendencies would consequently be strengthened.

Feather states further that a basic assumption of the theory of achievement motivation is that one needs to evaluate his performance against some standard to get an indication of his ability. Therefore, performance must reflect upon the ability of the individual or no valid comparison can be made. An individual can say that performance reflects on one's ability only if he believes that he internally controls his behavior and the associated rewards. Without an internal control belief, there will be no link between motivation and subsequent behavior. "In short, perceived internal control is an important condition for eliciting M_S and M_{AF} " (Feather, 1967, p. 383). Although he emphasized the importance of an internal locus of control, Feather, like Rotter, also argued that under certain conditions, external control may be associated with achievement success. Thus, these researchers presaged later

research on defensive externality. The important contribution still remains in the idea that belief in one's control over rewards is an important notion if achievement motivation is to result in achievement behaviors. Other researchers have tested the theory that an internal control orientation is necessary for achievement motivation to have an effect. Wolk and Ducette (1973) also proposed that locus of control might be an important moderator between achievement motivation and its behavioral correlates. They found that only for internals were the dependent achievement variables (estimates of success, task preferences, and test performances) consistent with expected predictions based on scores on Mehrabian's scales of achievement motivation (Mehrabian Achievement Tendency Scale). They concluded that strong support for achievement motivation theory, and a substantial increase in the predictability of numerous achievement variables, can only be obtained if the variable of the locus of control is taken into account and used as a moderator.

In summary then, it can be shown that the study of the relationship between locus of control and achievement has evolved from an early interest in a direct linear relationship to a later interest in locus of control as a moderator for achievement motivation and various achievement related variables. Research evidence would indicate that both uses of locus of control may have some validity. Therefore, it will be considered appropriate to examine locus of control in both manners to see how it relates to procrastination on achievement tasks. It will be analyzed both for its direct linear effect on procrastination, as well as for its role as a moderator between achievement motivation and procrastination.

In using locus of control as a moderator, it was found that Levinson's three scales permitted more precise prediction than Rotter's one-dimensional internal-external scale. One of the important aspects of Levinson's Internal, Powerful Other and Chance Locus of Control Scale is that it divides an external orientation into two separate external sources of control - powerful others and chance or fate. This may have a very important implication for academic achievement in a college setting. It can be recalled that Rotter hypothesized that many persons may adopt an external control orientation as a defense against possible failure. He stated that this might be especially true in a highly stressful, competitive setting such as a university, where academic success has such important implications for the individual. Procuik and Breen (1975) argue that in this setting, there is a specific external source, that source being powerful others, to which responsibility for academic success or failure is defensively attributed. They state that many individuals (they call defensive externals) believe that these powerful others (professors) are actually responsible for whether or not they receive desired reinforcements (grades). Still, these persons tend to retain some of the characteristics and behavior of internals, since they regard reinforcements as being at least partially dependent on their efforts. The difference between them and "congruent externals" is that defensive externals retain the belief that there is still a potential for control, at least to the extent that one can influence the powerful other. Congruent externals, on the other hand, still maintain the belief that primarily fate, luck or chance controls their reinforcements. As a consequence, congruent

externals would be expected to be least effective in academic endeavors, thus achieving less academic success than internals or defensive externals.

The development of Levinson's instrument allowed Procuik and Breen (1975) to test the hypotheses about defensive externality. When they designated individuals according to the scale on which they scored the highest, they found results consistent with their expectations. It was found that internals had a higher GPA than defensive externals (those scoring highest on the Powerful Others Scale), and that defensive externals, in turn, had a higher GPA than congruent externals (those scoring highest on the Chance Scale). It was concluded that the failure to find, in many studies, a strong linear relationship between locus of control and achievement, might be at least partially attributed to a failure to distinguish between defensive externals (those scoring highest on the Powerful Others Scale) and congruent externals (those scoring highest on the Chance Scale), a distinction that is not possible using Rotter's instrument.

Another study by Procuik and Breen (1974) provides additional justification for the use of the Levinson scale. They found, when comparing locus of control with scores on the Survey of Study Habits and Attitudes developed by Brown and Holtzman, that a belief in internal control correlated highly with positive study habits and attitudes. A belief in Powerful Other control was negatively correlated with good study habits and attitudes, but this negative correlation was significantly smaller than the negative correlation between belief in Chance control and positive study habits and attitudes. The same pattern was

found between locus of control and GPA, with correlations of $+.24$ (Internal), $-.09$ (Powerful Others) and $-.24$ (Chance). Thus, the type of external control, powerful others or chance, to which one attributes outcome might differentially affect achievement behaviors, with the effect of having a powerful other control orientation being much less negative than the effect of having a chance control orientation.

Since Rotter's scale and other scales do not distinguish between the two separate sources of external control, Levinson's scale was used in the present study. As an extension of Procuik and Breen's theorizing, it seems logical to conclude that the type of externality one possesses may affect procrastination, as well as other achievement variables. The strongest link between reinforcements and behavior would be expected to be made by internals, since they tend to perceive that they control their own fate. The next strongest link would be expected to be made by defensive externals since they still retain some belief in the possibility of control over their outcomes. The weakest link between reinforcements and behavior would come from congruent externals.

Now, let us return to the change of activity model for a way of picturing the locus of control construct as having a direct effect on procrastination. If one's locus of control, as determined by the scale on which he scores the highest (Internal, Powerful Others, or Chance), is viewed as one of the force components comprising an action tendency, then the implications should be clear. The force component for internals would be strongest, so they would be expected to procrastinate less than any other group of individuals. Defensive externals would be expected to procrastinate more than internals since they would have

a weaker force component added to the action tendency. Congruent externals would be expected to procrastinate the most since they would have the weakest force component added to the action tendency. Based on this reasoning, the following hypotheses are derived:

Hypothesis XI: (a) It is hypothesized that those individuals with an Internal orientation (I) would procrastinate less than those with a Powerful Other orientation (PO), who, in turn, would procrastinate less than those with a Chance orientation (C). Thus, procrastination in the one-way ANOVA mean time for those scoring highest on the Internal scale (I) would be less than mean procrastination time for those scoring highest on the Powerful Others (PO), which would be less than mean procrastination time for those scoring highest on the Chance scale (C). (b) As a corollary, it is expected that those scoring highest on the I scale would be more likely to complete the tasks, primarily on Tasks 1 and 2, than those scoring highest on the PO scale, who, in turn, would be more likely to complete the tasks than those scoring highest on the C scale. This will be determined by a Chi Square analysis.

Hypothesis XII: Since LC is divided along three dimensions, a separate relationship may exist between procrastination time and the degree to which an individual attributes control to each of the three sources. It is expected that as internality increases, procrastination decreases (r for LCI- $t_p < 0$). As the belief in chance increases, procrastination should increase (r for LCC- $t_p > 0$). A tentative prediction is made about a correlation between the degree one attributes control to powerful others and procrastination,

in that as LCPO increases, procrastination (t_p) should decrease. Still, this correlation should be weaker than the LCI- t_p correlation, based on some of the results cited above.

Thus far, locus of control has been discussed with respect to its direct relationship to procrastination, with Procuik and Breen's (1974, 1975) findings suggesting certain hypotheses. LC can also be used, though, as a moderator in the prediction of procrastination from achievement motivation (MATS). Based on the contention of Feather (1967) that internal control is an important condition for eliciting M_S and M_{AF} , and Wolke and Ducette's (1973) supportive findings, it would be expected that individuals' dominant achievement orientation (M_S or M_{AF}) would be more readily elicited the greater the perceived control over the situation. Therefore, if the ordering of internal, defensive external, and congruent external with respect to level of perceived control is valid, then the following hypothesis should be true:

Hypothesis XIII: The relationship between achievement motivation and procrastination depends on LC type with that relationship being strongest when an Internal Locus of Control is dominant, weakest when a Chance Locus of Control is dominant, and intermediate when a Powerful Other Locus of Control is dominant. This results in a strong positive MATS- t_p correlation for those in whom LCI is dominant, a weaker positive MATS- t_p correlation when LCPO dominates, and little or no correlation when LCC dominates, for all three tasks. The following hypotheses pertain to the relationship between locus of control and resultant achievement motivation (MATS), and to the

relationship between LC and Achievement anxiety. These expectations are based on theory and previous results and act primarily as replications of past research.

Hypothesis XIV: Since results have been equivocal in comparing LC and achievement motivation in other studies, it is expected that there might be only a weak positive correlation between scores on the Internal Locus of Control scale and MATS scores since there should be a weak negative correlation between the Chance Locus of Control scale and MATS scores. The Powerful Others Locus of Control scale and MATS might be expected to correlate positively but less than LCI and MATS, since some past results have found a weak positive relationship between the two.

Hypothesis XV: Based on Rotter's (1966) theorizing and subsequent research results (Joe, 1971; Thurber, 1972; Watson, 1967), it is expected that as Internality increases, anxiety should decrease. A lack of control might be expected to be associated with a lack of confidence and feelings of anxiety. The opposite is expected as Chance Locus of Control (LCC) goes up, since anxiety is believed to be lessened if an individual can attribute failures to others (a basic premise of defensive externality theory), it is expected that there will be a negative correlation between Powerful Other Locus of Control (LCPO) and AAT.

Although no predictions are made about the relative importance of LC in determining procrastination, all three LC scales are included in the step-wise multiple regression analysis for each task.

METHOD

Subjects - The sample consisted of 199 students enrolled in an introductory psychology class at Louisiana State University. Every student in the class who completed at least the personality assessment phase of the experiment was included in the sample.

Assignment of the achievement tasks and accompanying procrastination assessment - On the first day of class, each student was given a sheet of paper containing relevant information concerning the assignments for the term. Included in their required assignments were two tasks which required them to go to different designated places on campus to complete them.

Task One: This task required the student to go to the main office of the Psychology Department and read a specific journal article placed on reserve by the instructor. They were required to sign for the article, an act necessitated (so they were told) by the fact that many students removed articles from the office and failed to return them. In fact, this was done so that there would be a precise record of when each student came to read the article. The article was one by Stanley Milgram involving a segment of his now famous research program on obedience. The students were told that it was an interesting article involving obedience of subjects to an experimenter and that it was typical of the type of research done in one field of psychology. They were also told that the task would take approximately 30 minutes to complete and that two questions, involving specific detailed information in the article, would appear on the first exam.

Task Two: The second task required that each student go to the office of the researcher (who was presented as the graduate assistant for the course) to take a short intelligence test and hear a mini-lecture on certain aspects of psychological testing. They were told that the intelligence test was new and somewhat unique and interesting, and that the mini-lecture was brief and interesting as well. Together, the test and lecture would take approximately 30 minutes to complete. The test actually used was the Otis Quick Scoring Test of Intelligence. An essential ingredient of this assignment is that they were told in class their intelligence would be evaluated, and that some results would be given to them at the time of testing. This was done to insure that they realized that they were being evaluated, and to possibly arouse evaluation anxiety in some individuals. Also, two fairly detailed test questions, based on the test and mini-lecture, were to appear on the first exam.

The students were given a schedule of hours when they could take the test. Every effort was made to make the sessions maximally available to the students. Office hours included from four to eight hours every day of the regular work week, at various time periods, including periods before and after every scheduled class period, and one evening during the week. In this way, there was nearly the same number of hours available to the student to come in for Task Two as there was to come into the Psychology Department office for Task One.

An attempt was made to make the two tasks as equivalent as possible. Both the researcher's office and the psychology office were centrally located on the campus; both tasks were presented as fairly

interesting for the student; each task took about 30 minutes; each had equal importance with respect to initial exam grades (2 questions or 2 points); and neither task was to be discussed during regular class periods until after the exam.

The tasks differ in one important respect. The test taking task required that the student be evaluated with respect to a very important dimension of their personality, their intelligence. No such evaluation is involved in the article reading task. Therefore, it is expected that the former might more readily elicit failure avoidance motivation than the latter. The time measure of procrastination for these two tasks is a count of the days (range 1 to 21) from the day the task assignments were made until the day they came to do each task.

Assessment of Personality Variables and PI - During one of the class periods early in the term, the students were administered the test battery described below. They were told that these attitude measures were being validated for research purposes and had no effect on their grade. They were told though, that a lecture would be given later in the term concerning attitude and personality measurement in psychology, and that these questionnaires would be very helpful in understanding the lecture. Students were assured that all data from the tests would be completely confidential, being seen by no one but the researcher and especially not by their professor. Moreover, all the questionnaires were to be marked with social security numbers only to insure complete confidentiality. Each student was given the opportunity to have test scores individually interpreted later in the term.

After this introduction to the test materials was made, the

students were told that if they felt strongly that they did not want to fill out the questionnaires, they could leave the room.

PI and Demographic Variables - The cover sheet of the test booklet provided spaces for students to mark their social security number, age, class rank (freshman, sophomore, etc.) and estimated GPA.

Also on the cover page were three questions under the title Student Plans Questionnaire, designed to assess the perceived instrumentality (PI) of doing well in the introductory psychology course. One question asked, "How important to you is getting a good grade in introductory psychology for having your career plans work out?" Five statements describing various degrees of importance were provided: 5 - very important, 4 - important, 3 - fairly important, 2 - not too important, and 1 - not at all important. The second question read, "To what extent do you believe getting a good grade in the introductory psychology course will help you do well in your chosen career?" Four statements were provided: 4 - be a great help, 3 - be of some help, 2 - be of little help, and 1 - practically irrelevant. The ratings on the first two questions were added to determine a PI score for the psychology course (range 2 - 9). The third question was used to make a comparison of the effects of PI for the course grades versus PI for college grades as a whole on procrastination behavior. This question read, "How important to you is getting good grades during your college years for having your career plans work out?" The same five ratings used for question one were used for question three. All three of the questions used in this study have been used in previous research (Raynor, 1970) (See Appendix A).

Assessment of achievement motives - The Mehrabian Achievement Tendency Scale was used to assess resultant achievement motivation (Mehrabian, 1968, 1969). The scale was designed specifically to measure the motive to achieve success (M_S) relative to the motive to avoid failure (M_{AF}), as proposed by Atkinson's theory of achievement motivation. Separate male and female scales, with an equal number of items and equal score range were used. The possible range for the test is -104 to +104, with negative scores indicating an individual in whom the motive to avoid failure exceeds the motive to achieve success. Positive scores indicate a motive to achieve success greater than a motive to avoid failure. Appendices B, C, and D show the scales, as presented to the students, in both male and female forms, and both forms marked for scoring instructions.

Assessment of test anxiety - Test anxiety was measured using the Achievement Anxiety Test (AAT) (Alpert & Haber, 1960). They read the standard instructions to themselves as the experimenter read them aloud and then were given 15 minutes to complete the test. Only the 10 items of the Debilitating Anxiety Scale (AAT-) were used to obtain an independent measure of motive to avoid failure (M_{AF}). The Facilitating Anxiety Scale items and filler items were excluded to shorten the overall length of the test booklet. This procedure has been used successfully by other researchers (Horner, 1974; Mahone, 1960) with little apparent damage to the validity of the scale. The student version of the scale and the version with scoring instructions appear in Appendices E and F.

Assessment of locus of control (LC) - Locus of control was assessed with the Levenson Internal, Powerful Other, and Chance Locus of

Control Scales (Levenson, 1972; 1974; 1976). These scales provide an independent measurement (range 0-48) of an individual's tendency to attribute control to three different sources; the self, powerful others or chance. The three scale dimensions have been found by Levenson to be relatively independent (Levenson, 1976). Subjects' scores on all three dimensions were used in the correlation matrix for all variables. Also, each individual was designated as an "Internal", "Defensive External" or "Congruent External" according to the scale on which he scored the highest (internal, powerful other, or chance respectively), so that Locus of Control could be used as a moderator for correlations of other variables. The scale as it appears to students and the scales with scoring instructions are presented in Appendices G and H.

Assessment of procrastination for studying for the first exam - Individual study behavior in the first part of the term, with respect to reading the assignments in the text and studying for the first exam, was assessed by using a short questionnaire administered immediately before the exam. (See Appendix I) The first of the four questions asked the individual to check one statement from a list of eleven that best described his behavior for reading the textbook assignments in the first part of the term. The second question assessed study behavior (of both class notes and text assignments) for the first exam. Then, the two checked statements, one from questions one and two, were added to reflect the individual's overall study behavior for the first part of the course. Based on this pattern of study behavior, each individual was given a procrastination rating, ranging from 0 to 10, the larger numbers reflecting a greater level of procrastination.

The procrastination rating for each possible behavior pattern was determined by independent raters before the items were used in the study. All possible combinations of items in questions one and two were formed and independently rated by more than 50 raters, according to the level of procrastination the raters thought was reflected by each pattern of study behavior. The raters, like the subjects in the study, were students in a psychology class. Items that were logically impossible (such as studying assignments before they were read) were excluded from the ratings. Each study pattern was then given a rating score, which was the mean rating of that pattern across all raters. In this way, each individual was given a procrastination rating for the first exam period, based on his own report of his study behavior.

It may help to clarify with an example. If the first statement from Section A of the Study Questionnaire (See Appendix I) is combined with the first statement from Section B, then the following study pattern results: "I began reading my assignments at the beginning of the term and kept up with them consistently throughout the term, and I began studying for the first exam on the day of the exam." Now if this behavior pattern received a mean rating of 3.2 from the independent raters, then any subject marking this pattern would receive a 3.2 procrastination score for studying for the first exam. This is the score designated as T_3 throughout this report.

Phenomenological Assessment of Procrastination - The above ratings reflect independent judgements, based on reported behaviors, of what certain behaviors mean with respect to procrastination. Since it was also felt that procrastination might reflect more than simply a time measure, two other questions were asked of each individual to try to

get some insight into the phenomenological experience of procrastination.

Half of the subjects answered a third question which asked them to rate (on a 0 to 10 scale) "the extent to which they felt they studied when they should have studied in this course". This question was asked because it was felt that the experience of procrastination for the individual might be based on more than simply the time from task assignment until completion or on the particular study pattern. It might also be determined by the individual's perception of his behavior in relation to his own internalized standards of study behavior, or when he feels he should be studying. If the individual does not feel he should have been working on his assignments, then he may not feel he was procrastinating. In this case, even patterns independently rated as high on reflected procrastination, might not be experienced by the individual as being high on procrastination.

The other half of the subjects answered a third question which asked them to rate (on a 0 to 10 scale) "the extent to which they procrastinated overall in this course". Answers to this question, when correlated with the T_3 procrastination measure indicate the extent the perception of procrastination is related to the time measure of procrastination. A high positive correlation would lend some validity to the process of using a time measure of procrastination, through questions one and two, as a means to measure the construct of procrastination.

Asking a different question to separate halves of the subject population serves an additional purpose. This process may lend some

insight into whether or not the experience of procrastination in a course is related to the notion of studying when an individual "thinks" he or she "should" be studying and not just when studying actually takes place. If answers of individuals to these two questions both correlate highly with T_3 , then it may be that they are indicative of the same concept. It must be remembered though that different samples are being used for the different questions, and thus different T_3 scores are involved. For this line of reasoning to be valid, distributions of T_3 must be comparable and an assumption made that if one construct correlates with a second construct and a third construct correlates with the second, then constructs one and three must also be correlated. This is, of course, a tenuous assumption at best, and can only actually be proven where the exact same scores are used for the intermediary construct and correlations are extremely high, exceeding .70. At best then, this process may show only a weak indication of the equality of concepts.

A fourth question asked of all subjects required them to rate their overall general tendency to procrastinate. This was done, again, to validate the use of the behavioral and behavioroid measures of procrastination as measures of the construct "procrastination". It was also used to see if there is a relationship between an individual's overall perception of himself as a procrastinator and actual time measures of procrastination.

RESULTS

Data Analysis

Four basic types of data analysis were utilized in the present study. They included correlational techniques on both discrete and continuous data, one-way and two-way analyses of variance, a simple regression procedure, and a step-wise multiple regression procedure.

A correlation matrix was derived using all independent and dependent variables. The following measures were included in the matrix: scores on the MATS and AAT tests; scores on each of the Locus of Control scales, Internal (LCI), Powerful Other (LCPO) and Chance (LCC); scores on perceived instrumentality questions, perceived instrumentality of the course (PIC) and perceived instrumentality of grades (PIG); scores on the first exam (SIE); scores on the Otis Test (IQ); on degree of Liking of the Course question (DLC); the time measure in days of the procrastination measures for Task 1 (T_1), the test taking task, and Task 2 (T_2), the article reading task; scores on the derived procrastination measure of study patterns for the first exam (T_3); and scores on the overall procrastination self-rating measure (T_5).

The questions concerning "procrastination in this course" (designated T_4Q_1) and "studying when should" (designated T_4Q_2) were excluded from the matrix since they would have effectively divided the subject population into halves for analysis purposes. Scores on T_4Q_1 and T_4Q_2 were correlated separately with the same dependent and independent variables used for the larger correlation matrix.

Several different analyses of variance were derived. Procrastination measures for these analyses were converted to normalized z-scores

to allow comparison. One two-way ANOVA used Task (T_1 , T_2 and T_3) and AAT scores (lower, middle and upper thirds) as independent variables and procrastination as the dependent variable. With this analysis it could be determined if different levels of anxiety affected procrastination overall, as well as affecting procrastination differently for the various types of academic tasks.

Another similar two-way ANOVA was derived using Task (T_1 and T_2 only) and MATS (lower, middle and upper thirds) as independent variables. This analysis permitted comparison of procrastination on the article reading and test taking tasks for those with different levels of resultant achievement motivation.

Eight different one-way ANOVAs were derived using locus of control type as the independent variable and procrastination as the dependent measure. Four separate ANOVAs, one for each of four separate procrastination measures (T_1 , T_2 , T_3 and T_5) were derived with LC type (LCI, LCPO and LCC) designated by raw scores. Specifically, subjects were designated into a group according to their highest raw score of the three LC scale scores. A second set of four one-way ANOVAs were derived where individuals were designated into LC types according to their highest LC scale z-score (NLCI, NLCPO and NLCC). The z-scores for any scale reflected an individual's relative position on that scale with respect to all other subjects' scores on that scale. Using z-score designations placed many subjects in different categories than the raw score designations. A hypothetical example may help to clarify. An individual might have LC raw scores and z-scores as follows: LCI = 22, NLCI = +.22; LCPO = 15, NLCPO = +.42; LCC = 12, NLCC = +1.41. Such

an individual would be designated in the LCI group (an Internal) by the raw score method and in the NLCC group (a Congruent External) by the z-score method. The raw score designation placed people according to the highest absolute scale score while the z-score method takes into consideration an individual's highest scale score relative to the entire population of scores. Overall, these ANOVAs will indicate if individuals with different LC orientations differ with respect to procrastination behavior.

Simple analysis of regression procedures were utilized to compare several of the variables. For each of the three primary tasks, T_1 , T_2 and T_3 , the regression of procrastination scores on PIC were derived for lower, middle and upper third scorers on the MATS. Thus, for each one of the tasks, three separate regression equations were derived, one for each level of MATS scores. This procedure gave an indication of whether or not different levels of achievement motivation have a differential effect on procrastination as PIC increases for each of the three primary tasks. The same simple regression procedure was used with the regression of procrastination scores on PIG for tertile split groups on MATS for each of the three primary tasks. As with the same procedure using PIC scores, this procedure resulted in nine separate regression equations, three for each of the tasks; T_1 , T_2 and T_3 .

Finally, step-wise multiple regression procedures were run to determine the best one, two, three, etc., step models for predicting each procrastination measure; T_1 , T_2 , T_3 , T_4Q_1 , T_4Q_2 , T_5 and T_6 from the total number of independent variables. T_6 is a procrastination measure derived by adding the z-scores for each individual on tasks

T₁, T₂ and T₃. This provides a contrived overall procrastination rating.

The following results of these analyses will be presented in the same order as the sections and hypotheses appeared in the introduction.

Motivation

The first hypothesis predicted that as resultant achievement motivation increased, procrastination would decrease. It was expected that increases in resultant achievement motivation would strengthen the action tendency and effectively decrease the time before the occurrence of activity, in this case performing the achievement tasks. Specifically, Hypothesis I predicted a negative correlation between resultant achievement motivation and procrastination time for all three primary tasks. Remember, greater procrastination is reflected in increased time measures for T_1 and T_2 and in increased ratings on T_3 . Contrary to expectations, resultant achievement motivation was not found to be correlated with procrastination. There were no significant negative correlations between MATS scores and procrastination measures on any of the three primary task measures; T_1 , T_2 , or T_3 (See Table 1). Thus, there was no evidence to indicate that procrastination behavior is affected by levels of achievement motivation.

It had also been predicted in Hypothesis II-a, that the correlation between resultant achievement motivation (MATS) and procrastination would be stronger for Task 2 (the test and lecture) than for Task 1 (the article-reading task). Examination of the two correlations ($r_{T_1} = .06$, $r_{T_2} = -.004$) shows no significant difference between the two correlations. Although a z transformation could have been used, no test of significance was necessary for this difference since $r = .06$ was already found to be non-significantly different from zero, and $r = -.004$ is essentially zero. This prediction had been based on the

TABLE I

CORRELATION MATRIX OF ALL MEASURED VARIABLES

MATS	AAT	PIC	PIG	DLC	LCI	LCPO	LCC	SFE	IQ	T ₁	T ₂	T ₃	T ₅	
	-.52 ^d	-.05	-.08	.05	.55 ^d	-.19 ^c	-.52 ^d	.18 ^c	.16 ^b	.06	-.004	.04	-.11	MATS
		.09	-.03	.07	-.22 ^d	.25 ^d	.29 ^d	-.46 ^d	-.10 ^d	-.11	-.02	.02	.13 ^a	AAT
			.44 ^d	.50 ^d	.20 ^c	.05	.07	-.12 ^a	-.15 ^b	-.23 ^c	-.11	-.17 ^c	.08	PIC
				.02	.19 ^c	.01	.06	-.05	-.01	-.10	-.17 ^b	-.20 ^c	-.19 ^c	PIG
					.17 ^c	-.004	.05	-.01	.01	-.02	.01	-.23 ^d	-.03	DLC
						-.02	-.07	-.01	.04	-.01	-.03	-.16 ^b	-.17 ^b	LCI
							.51 ^d	-.24 ^d	-.22 ^c	-.04	.05	-.04	-.08	LCPO
								-.28 ^d	-.23 ^c	.01	.06	.004	-.11 ^a	LCC
									.55 ^d	.08	-.10	-.16 ^b	-.04	SFE
										.17 ^b	.05	-.06	.05	IQ
											.47 ^d	.19 ^c	.21 ^c	T ₁
												.23 ^c	.26 ^d	T ₂
													.59 ^d	T ₃
														T ₅

Significance Levels:
a $p \leq .10$
b $p \leq .05$
c $p \leq .01$
d $p \leq .001$

Range of N for correlations is 170 to 179.

Symbols - MATS - Mehrabian Achievement Tendency Scales
AAT - Achievement Anxiety Test
PIC - Perceived Instrumentality of Course
PIG - Perceived Instrumentality of Grades
DLC - Degree of Liking of Course
LCI - Locus of Control - Internal
LCPO - Locus of Control - Powerful Other
LCC - Locus of Control - Chance

SFE - Score on First Exam
IQ - Score on I.Q. Test
T₁ - Procrastination measure on article reading task
T₂ - Procrastination measure on I.Q. testing task
T₃ - Procrastination measure on midterm exam
T₅ - Procrastination measure on overall procrastination question

expectation that motivation to avoid failure, M_{AF} which is reflected as a component of MATS scores, would have an influence on the test taking task, Task 2, and not on the article reading task, Task 1. Those higher in M_{AF} would procrastinate somewhat more on Task 2 than those not high on M_{AF} , while there should be no effect of M_{AF} shown on Task 1, a task which should arouse little or no tendency to avoid failure. Similar reasoning might lead one to expect a somewhat greater overall procrastination on Task 2 than Task 1. If the tasks were comparable in all respects except in the failure avoidance inducing tendencies, then the one which causes this tendency would cause some individuals to procrastinate more on that task than on the one not arousing failure avoidance tendencies. This expectation was presented as Hypothesis II-b. A Task by MATS ANOVA was used to test this hypothesis, but again, no significant differences were found ($F < 1$, $p > .05$) (See Table 2). Based on these findings then, it must be concluded that not only does resultant achievement motivation, as reflected in the MATS, have little overall effect on procrastination, but it also has little differential effect on procrastination on tasks that might be expected to arouse failure avoidance tendencies.

It is possible that the achievement motivation component of the MATS scores might not correlate with procrastination, yet could obscure a smaller correlation between the motive to avoid failure and procrastination. As a check on such a possibility, the Achievement Anxiety Test was administered and correlated with procrastination scores for the three primary procrastination measures; T_1 , T_2 , and T_3 . Hypothesis III maintained that there would be a significant positive AAT

TABLE 2

ANALYSIS OF VARIANCE OF PROCRASTINATION TIME AS A
FUNCTION OF MATS AND TASK

Source	df	ss	MS	F	P
MATS	2	3.34	1.67	1.2	NS
Ss/MATS => error a	186	258.07	1.39		
TASK	1	.012	.01	<1	NS
MATS x Task	2	1.41	.70	1.30	NS
Residual	153	80.13	.54		
Total	344				

procrastination correlation for Tasks 2 and 3, those involving evaluation and, thus arousing the tendency to avoid failure, but not for Task 1. Again, contrary to expectations, no significant correlations were found for Task 2 ($r_{T_2} = -.02$) or Task 3 ($r_{T_3} = .02$). In fact, the only relationship even nearing significance was a negative correlation between the AAT and procrastination for Task 1 ($r_{T_1} = -.11$, $p = .14$). Further evidence of a lack of effect of anxiety (or motive to avoid failure) on procrastination was demonstrated in an ANOVA with Task and AAT (tertile split groups) as independent variables and procrastination as the dependent variable. There was no significant AAT main effect ($F = 1.06$, $p > .05$) or significant AAT x Task interaction ($F = 1.16$, $p > .05$). These results indicate even more thoroughly that the motive to avoid failure, as reflected in AAT scores, as well as in the MATS scores, is little related to procrastination behavior, even on tasks that theoretically would be expected to arouse failure avoidance tendencies (See Table 3).

It was expected that there might be a difference between Tasks 1 and 2 in the number of persons who totally avoided (not just procrastinated on) doing the tasks. Since Task 2 was expected to arouse anxiety and the tendency to avoid failure, it was predicted (Hypothesis IV) that there would be more subjects avoiding Task 2 than Task 1, the article reading task. Once again, results failed to support predictions, as very little difference was found between the numbers of individuals who failed to engage in the two tasks. In fact, the trend was slightly in reverse of what was expected with 29 of 199 subjects avoiding Task 1, the article reading task, and 24 of 199 avoiding the test taking task,

TABLE 3

ANALYSIS OF VARIANCE OF PROCRASTINATION MEASURES AS A FUNCTION
OF AAT AND TASK

Source	df	ss	MS	F	P
AATS	2	3.23	1.61	1.06	NS
Ss/RAATS => error a	194	295.80	1.52		
TASK	2	.014	.007	<1	NS
AAT x Task	4	3.10	.8	1.16	NS
Residual => error b	335	232.71	.69		
Total	537				

Task 2. If complete avoidance of the task is viewed as the ultimate in procrastination, then these findings lend further support for the conclusion that the tendency to avoid failure has little effect on procrastination behavior, at least on the present type of achievement tasks.

Hypothesis V stated that there should be a negative correlation between resultant achievement motivation and anxiety. This relationship was expected to result from the theoretical congruence between anxiety and the motive to avoid failure, one of the two components reflected in the resultant achievement motivation scores on the MATS. Specifically, it was expected that AAT and MATS scores would correlate negatively. The correlation between AAT and MATS was indeed negative and significant ($r = -.32$, $p < .001$). Hypothesis V was, therefore supported indicating a certain amount of theoretical overlap between anxiety and the motive to avoid failure.

Hypothesis VI predicted that MATS scores would be a more powerful predictor of procrastination on the three primary tasks than AAT scores, as reflected in the step-wise multiple regression procedure. This procedure, it should be remembered, produces the best single predictor, then the best two predictors, then the best three predictors and so on until all independent variables are exhausted in the prediction of the dependent variables. As each variable is added, the procedure reveals the percentage of total variance in the dependent variable that can be accounted for by variance in the new independent variable. The best predictive model for any given dependent variable is defined as the one after which the addition of new independent

variables does not add significantly (at the $p = .05$ level) to the predictability of the dependent measure. With respect to the two variables MATS and AAT, results were again contrary to prediction, indicating that MATS was no better than AAT in predicting any of the three variables. In fact, neither MATS nor AAT appeared in the best prediction model for any of the three primary tasks or the combined procrastination measure T_6 (See Tables 4 and 5). These results support those presented above in indicating that resultant achievement motivation and achievement anxiety have little effect on procrastination on achievement tasks.

TABLE 4
STEP-WISE MULTIPLE REGRESSION ANALYSIS FOR NORMALIZED PROCRASTINATION MEASURES
(TN₁, TN₂ & TN₃) AS A FUNCTION OF ALL INDEPENDENT VARIABLES^a

	Source	df	ss	MS	F	P
TN ₁	Regression	1	7.86	7.86	8.50	.004
	Error	165	152.45	.92		
	Total	166	160.30			
	Intercept =	0.92	St. Error			
	β (PIC) =	-0.13	.05		8.50	.004
Regression Equation: TN ₁ = 0.92 - 0.13 (PIC)						

	Source	df	ss	MS	F	P
TN ₂	Regression	1	4.93	4.93	5.14	.02
	Error	171	163.87	0.96		
	Total	172	168.90			
	Intercept =	1.05	St. Error			
	β (PIG) =	-0.22	.10		5.14	.02
Regression Equation: TN ₂ = 1.05 - 0.22 (PIG)						

	Source	df	ss	MS	F	P
TN ₃	Regression	3	23.57	7.86	8.81	.0001
	Error	189	168.43	.89		
	Total	192	192.00			
	Intercept =	3.11	St. Error			
	β (PIG) =	-0.28	.09		9.22	.003
	β (DLC) =	-0.13	.03		11.36	.001
	β (SIE) =	-0.08	.007		6.25	.013
Regression Equation: TN ₃ = 3.11 - 0.28 (PIG) - 0.13 (DLC) - .08 (SIE)						

^a Model shown represents the best predictive model beyond which the addition of new variables does not add significantly to the model.

TABLE 5
STEP-WISE MULTIPLE REGRESSION ANALYSIS FOR NORMALIZED PROCRASTINATION MEASURES
(TN₅ & TN₆) AS A FUNCTION OF ALL INDEPENDENT VARIABLES ^a

Source		df	ss	MS	F	P
TN ₅ ^b	Regression	4	101.50	25.38	5.51	.0003
	Error	188	865.62	4.60		
	Total	192	967.13			
Intercept =		11.02	St. Error			
B (LCPO) =	- 0.06		.025		6.18	.014
B (LCC) =	0.07		.024		7.91	.005
B (PIG) =	- 0.69		.212		10.75	.001
B (AGE) =	- 0.11		.054		4.08	.045
Regression Equation: TN ₅ = 11.02 - .06(O) + .07(C) - .69(PIG) - .11(AGE)						

Source		df	ss	MS	F	P
TN ₆ ^c	Regression	1	44.53	44.53	9.87	.002
	Error	153	690.32	4.51		
	Total	154	734.85			
Intercept =		2.21	St. Error			
B (PIC) =	- 0.33		.106		9.87	.002
Regression Equation: TN ₆ = 2.21 - 0.33 (PIC)						

^a = Best model of all significant variables is shown.

^b = TN₅ = overall procrastination question.

^c = TN₆ = combined normalized scores TN₁, TN₂ and TN₃ for overall procrastination rating.

Perceived Instrumentality

Hypothesis VII-a predicts that for Task 3, there will be a significant regression of procrastination time (T_3) on perceived instrumentality (PI), with a negative slope, for those individuals in whom the motive to achieve success exceeds the motive to avoid failure ($M_S > M_{AF}$). The $M_S > M_{AF}$ group in this study included those subjects whose scores were in the upper third of the distribution of MATS scores. The $M_{AF} > M_S$ group included subjects whose scores fell in the lower third of the distribution of MATS scores. An analysis of regression was used to analyze the data in this case because this procedure indicates both the strength and nature of the relationship between variables and allows ready comparison with other regression statistics (See comparisons below).

Since the present study is exploratory in nature, two perceived instrumentality scores were determined. One was perceived instrumentality of the course in which the students were engaged (PIC). The second was perceived instrumentality of overall grades in college (PIG). Both sets of scores were included in the regression analyses.

With respect to procrastination time on Task 3, it was found that for the $M_S > M_{AF}$ group, neither the regression of T_3 on PIC ($F = 2.86$, $p = .097$) nor the regression of T_3 on PIG ($F = 2.53$, $p = .12$) were significant (See Tables 6 and 7 respectively). Examination of the slopes of the regression lines indicate trends in the predicted directions. The slope of the regression line of PIC on T_3 was negative but not significantly different from a zero slope ($t = -1.72$, $p = .091$). Furthermore,

TABLE 6

REGRESSION ANALYSIS OF PROCRASTINATION MEASURE TN_3 ON PIC FOR
LOWER, MIDDLE AND UPPER THIRD SCORERS ON MATS*

FOR LOWER THIRD SCORERS ON MATS ($M_{AF} > M_S$)							
Source	df	ss	MS	F	P	r ²	
PIC	1	2.57	2.57	3.10	.083	.05	
Error	64	53.05	.83				
Corrected Total	65	55.62					
$TN_3 = .89 - .14 \text{ PIC}$							
FOR MIDDLE THIRD SCORERS ON MATS							
Source	df	ss	MS	F	P	r ²	
PIC	1	.41	.42	.50	.48	.01	
Error	65	53.45	.82				
Corrected Total	66	53.86					
$TN_3 = .46 - .05 \text{ PIC}$							
FOR UPPER THIRD SCORERS ON MATS ($M_S > M_{AF}$)							
Source	df	ss	MS	F	P	r ²	
PIC	1	3.81	3.81	2.86	.097	.05	
Error	58	77.38	1.33				
Corrected Total	59	81.19					
$TN_3 = .89 - .14 \text{ PIC}$							

* Range of N for groups is 60 to 67.

TABLE 7
REGRESSION ANALYSIS OF PROCRASTINATION MEASURE TN₃ ON PIG FOR
LOWER, MIDDLE AND UPPER THIRD SCORERS ON MATS*

FOR LOWER THIRD SCORERS ON MATS (M _{AF} > M _S)						
Source	df	ss	MS	F	P	r ²
PIG	1	.55	.55	.64	.43	.01
Error	64	55.07	.86			
Corrected Total	65	55.62				
$TN_3 = .56 - .14 \text{ PIG}$						
FOR MIDDLE THIRD SCORERS ON MATS						
Source	df	ss	MS	F	P	r ²
PIG	1	4.93	4.97	6.55	.01	.09
Error	65	48.93	.74			
Corrected Total	66	53.86				
$TN_3 = 1.91 - .40 \text{ PIG}$						
FOR UPPER THIRD SCORERS ON MATS (M _S > M _{AF})						
Source	df	ss	MS	F	P	r ²
PIG	1	3.39	3.39	2.53	.12	.04
Error	58	77.80	1.34			
Corrected Total	59	81.19				
$TN_3 = 1.19 - .27 \text{ PIG}$						

* Range of N for groups is 60 to 67.

the correlation between PIC and T_3 for the $M_S > M_{AF}$ group, is non-significant ($\underline{r} = .22, \underline{p} > .05$). What these statistics mean is simply that there is a tendency for procrastination to decrease slightly as perceived instrumentality increases for this motive group on Task 3. The amount of change, as reflected in the slope of the regression line, is not very high though, indeed not significantly different from zero. This means simply that it would take considerable increases in PIC to affect a change in procrastination. Furthermore, the correlation between the variables indicates that the strength of the trend demonstrated by the regression line is not very great. The coefficient of determination ($\underline{r}^2 = .05$) indicates that only 5% of the variability of T_3 can be explained by the regression of T_3 on PIC.

Very similar results were found for the regression of procrastination (T_3) on perceived instrumentality of grades (PIG) (See Table 7). The slope of the regression line of T_3 on PIG for the $M_S > M_{AF}$ group on Task 3 was also negative and non-significantly different from zero ($\underline{t} = -1.60, \underline{p} = .116$). The correlation of T_3 and PIG was also non-significant ($\underline{r} = -.20, \underline{p} > .05$). Again, the same conclusion must be drawn. There is only a small tendency for individuals to decrease the amount they procrastinate as the perceived importance of their grades goes up.

Since both regressions, T_3 on PIC and T_3 on PIG, were close to significance, and both produced slopes in the expected negative direction, the following general conclusion may be drawn. These results indicate that as courses and grades take on greater importance for individuals who are high in resultant achievement motivation, there is

a tendency, albeit a weak one, to procrastinate less in the performance of a fairly important achievement task in the course, i.e., studying for the exam.

Hypothesis VII-b predicted that on Task 5 the regression of procrastination time on perceived instrumentality would not be as strong for those individuals in whom the motive to avoid failure exceeds the motive to achieve success ($M_{AF} > M_S$ and lower third scorers on the MATS) as it is for those in whom $M_S > M_{AF}$ (upper third scorers on the MATS). This hypothesis was based on the expected influence of the component motivational forces resulting from the "accentuation effect". To test this hypothesis a comparison of the two regression equations was made. For the regression of T_3 on PIC, identical regression lines were derived for the $M_S > M_{AF}$ and $M_{AF} > M_S$ groups. Both the intercepts and the slopes are exactly the same (See Table 6). Differences in slopes were expected with the slope for the $M_S > M_{AF}$ group being greater in absolute magnitude than that of the $M_{AF} > M_S$ group. This would have indicated a greater tendency to procrastinate in the $M_{AF} > M_S$ group than the $M_S > M_{AF}$ group as perceived instrumentality increases. It must be concluded that the level of resultant achievement motivation held by individuals does not differentially affect procrastination as perceived instrumentality of a course goes up. The trend for the $M_{AF} > M_S$ group is similar to that of the $M_S > M_{AF}$ group with there being a slight tendency for procrastination to decrease as PIC increases. For both the regressions do not quite reach significance ($F = 3.10$, $p = .083$; $F = 2.86$, $p = .097$ respectively).

A comparison of the regression equations of T_3 on PIG for the two different motive groups again shows very little difference between the

two. Neither regression is significant, with the regression of T_3 on PIG for the lower third scorers on the MATS ($F = .64$, $p = .43$) reflecting a nearly random relationship between procrastination scores and perceived instrumentality of grades. However, the regression of T_3 on PIG for the upper third scorers on the MATS was much closer to being significant ($F = 2.53$, $p = .12$). The slopes of the two regression lines ($B_{M_S > M_{AF}} = -.27$, $B_{M_{AF} > M_S} = -.14$) were compared and also found not to be significantly different ($F = .00$, $p = .958$). Since the $M_{AF} > M_S$ group has such a very low correlation between T_3 and PIG ($r = .10$, $p > .05$), even a significant difference of regression line slopes would have meant little. The large variability around the regression line indicates that the line itself is not a good reflection of the T_3 - PIG relationship.

The conclusion that must be drawn then is that there is very little difference between motive groups with respect to the extent of the relationship between perceived instrumentality of grades and procrastination. There is only a slight trend in the direction of a stronger relationship between PIC and T_3 for the $M_S > M_{AF}$ group than for the $M_{AF} > M_S$ group.

The overall results for both PIC and PIG regressions indicate little support for the existence of an accentuation effect for the $M_{AF} > M_S$ group. Any accentuation effect that might be operating is having little or no effect on the procrastination behavior of this group.

Hypothesis VII-b was based on the premise that the accentuation effect would be operating for $M_{AF} > M_S$ groups for Task 3. Hypotheses VIII-a and VIII-b, on the other hand, are based on the expectation that the accentuation effect would not be operating for the $M_{AF} > M_S$ motive

groups for either Task 1 or Task 2. Hypothesis VIII-a predicted that the correlations between procrastination and perceived instrumentality would be equal for Tasks 1 and 2. Again, both perceived instrumentality of course (PIC) and perceived instrumentality of grades (PIG) were used to test this hypothesis, while a \underline{z} transformation test is used to test the significance of the differences. There was no difference found between the T_1 - PIC correlations ($\underline{r} = -.23$) and the T_2 - PIC correlation ($\underline{r} = -.11$) using the \underline{z} test ($\underline{z} = -1.15$, $\underline{p} > .10$). Also, no difference ($\underline{z} = -.67$, $\underline{p} > .10$) was found between the T_1 - PIG correlation ($\underline{r} = -.10$) and T_2 - PIG correlation ($\underline{r} = -.17$). These results support the hypothesis and indicate that increases in perceived instrumentality are related to decreases in procrastination about the same for Task 1 and Task 2.

Hypothesis VIII-b makes the opposite prediction for Tasks 1 and 2 than were made for Task 3 in Hypothesis VII. Hypothesis VIII-b predicts no differences between $M_{AF} > M_S$ and $M_S > M_{AF}$ groups on Tasks 1 and 2 in the regression line slopes for procrastination time regressed on PI (See Tables 8 and 9). A comparison of the regression line slopes for T_1 on PIC showed no significant difference ($\underline{F} = .10$, $\underline{p} = .758$) between the $M_S > M_{AF}$ group ($\underline{\beta} = -.15$) and the $M_{AF} > M_S$ group ($\underline{\beta} = -.182$). No significant difference was found as well for T_2 on PIG ($\underline{F} = 1.15$, $\underline{p} = .286$ with the $M_S > M_{AF}$ slope ($\underline{\beta} = .14$) being only slightly higher than the $M_{AF} > M_S$ slope ($\underline{\beta} = -.05$).

Similar results were found using PIG as the perceived instrumentality measure. For Task 1, the slope of the line for the $M_S > M_{AF}$ group ($\underline{\beta} = -.21$) was slightly higher than the slope for the $M_{AF} > M_S$ group

TABLE 8

REGRESSION ANALYSIS OF PROCRASTINATION MEASURE TN_1 ON PIC FOR
LOWER, MIDDLE AND UPPER THIRD SCORERS ON MATS*

FOR LOWER THIRD SCORERS ON MATS							
Source	df	ss	MS	F	P	r ²	
PIC	1	4.26	4.26	3.93	.05	.06	
Error	60	65.03	1.08				
Corrected Total	61	69.29					
$TN_1 = 1.18 - .182 \text{ PIC}$							
FOR MIDDLE THIRD SCORERS ON MATS							
Source	df	ss	MS	F	P	r ²	
PIC	1	1.39	1.39	1.60	.21	.03	
Error	53	46.01	.87				
Corrected Total	54	47.40					
$TN_1 = .77 - .101 \text{ PIC}$							
FOR UPPER THIRD SCORERS ON MATS							
Source	df	ss	MS	F	P	r ²	
PIC	1	4.09	4.09	4.40	.04	.08	
Error	51	47.47	.93				
Corrected Total	52	51.57					
$TN_1 = .99 - .15 \text{ PIC}$							

* Range of N for the groups is 53 to 62.

TABLE 9
REGRESSION ANALYSIS OF PROCRASTINATION MEASURE TN_2 ON PIC FOR
LOWER, MIDDLE AND UPPER THIRD SCORERS ON MATS*

FOR LOWER THIRD SCORERS ON MATS						
Source	df	ss	MS	F	P	r ²
PIC	1	.27	.27	.25	.62	.004
Error	59	64.78	1.10			
Corrected Total	60	65.05				

$$TN_2 = .36 - .05 \text{ PIC}$$

FOR MIDDLE THIRD SCORERS ON MATS						
Source	df	ss	MS	F	P	r ²
PIC	1	.0008	.0008	.00	.98	.000
Error	59	53.62	.91			
Corrected Total	60	53.62				

$$TN_2 = .14 - .002 \text{ PIC}$$

FOR UPPER THIRD SCORERS ON MATS						
Source	df	ss	MS	F	P	r ²
PIC	1	3.56	3.56	3.81	.056	.07
Error	51	47.70	.94			
Corrected Total	52	51.27				

$$TN_2 = .75 - .14 \text{ PIC}$$

* Range of N for the groups is 53 to 61.

(\underline{B} = $-.19$), although this difference was not significant (\underline{F} = $.09$, \underline{p} = $.762$). For Task 2, similar results were found. The slope of the regression line of t_p on PI for the $M_S > M_{AF}$ group (\underline{B} = $-.30$) was not significantly higher (\underline{F} = 1.39 , \underline{p} = $.241$) than the slope for the $M_{AF} > M_S$ group (\underline{B} = $-.19$). These results all indicate that increases in perceived instrumentality affect both motive groups approximately equally. Again, there is a tendency for procrastination to decrease as perceived instrumentality of both types increases, but this tendency is not very strong and it is not much different for either motive group. It must be concluded that either there is little or no accentuation effect operating as perceived instrumentality goes up for these tasks, or that the accentuation effect does not have any influence on the particular behavior, procrastination, under investigation in this study. (See Tables 10 & 11).

Hypothesis IX predicted there would be an overall tendency for procrastination to decrease as perceived instrumentality increased for all three primary tasks. It was noted that most of the motivational forces expected to be affecting procrastination as PI increased would be positive forces that would increase the strength of the achievement tendency and thus, decrease the amount of procrastination. The only exception were the forces associated with the accentuation effect, which might tend to cause greater procrastination for the $M_{AF} > M_S$ group of subjects on Task 3. Hypothesis IX reflects the belief that these negative forces will be overridden by the accentuation effect influences on $M_S > M_{AF}$ subjects as well as the general arousal effect influences on all subjects, thus resulting in significant negative correlations between t_p and PI overall for all three tasks.

TABLE 10

REGRESSION ANALYSIS OF PROCRASTINATION MEASURE TN_1
ON PIG FOR LOWER, MIDDLE AND UPPER THIRD SCORERS ON MATS*

FOR LOWER THIRD SCORERS ON MATS							
Source	df	ss	MS	F	P	r ²	
PIG	1	0.91	0.91	0.80	.38	.01	
Error	60	68.38	1.14				
Corrected Total	61	69.29					
$TN_1 = .83 - .19 \text{ PIG}$							
FOR MIDDLE THIRD SCORERS ON MATS							
Source	df	ss	MS	F	P	r ²	
PIG	1	1.03	1.03	1.17	.28	.02	
Error	53	46.38	0.87				
Corrected Total	54	47.40					
$TN_1 = 1.03 - .21 \text{ PIG}$							
FOR UPPER THIRD SCORERS ON MATS							
Source	df	ss	MS	F	P	r ²	
PIG	1	0.20	0.20	0.20	.66	.003	
Error	51	51.37	1.01				
Corrected Total	52	51.57					
$TN_1 = .28 - .21 \text{ PIG}$							

* Range of N for groups is 53 to 62.

TABLE 11
REGRESSION ANALYSIS OF PROCRASTINATION MEASURE TN₂ ON PIG FOR
LOWER, MIDDLE AND UPPER THIRD SCORERS ON MATS *

FOR LOWER THIRD SCORERS ON MATS							
Source	df	ss	MS	F	P	r ²	
PIG	1	.98	.98	.90	.34	.02	
Error	59	64.07	1.09				
Corrected Total	60	65.04					
$TN_2 = .90 - .19 \text{ PIG}$							
FOR MIDDLE THIRD SCORERS ON MATS							
Source	df	ss	MS	F	P	r ²	
PIG	1	1.53	1.53	1.74	.19	.03	
Error	59	52.08	.88				
Corrected Total	60	53.62					
$TN_2 = 1.28 - .24 \text{ PIG}$							
FOR UPPER THIRD SCORERS ON MATS							
Source	df	ss	MS	F	P	r ²	
PIG	1	3.59	3.59	3.84	.056	.07	
Error	51	47.68	0.93				
Corrected Total	52	51.27					
$TN_2 = 1.10 - .30 \text{ PIG}$							

* Range of N for groups is 53 to 61.

This simpler, more direct linear trend was indeed found for most of the correlations (See Table 1). Two of three t_p - PIC correlations reached significance ($r_{T_1} = -.23$, $p \leq .01$; $r_{T_2} = -.11$, $p > .10$; $r_{T_3} = -.17$, $p \leq .01$). Also, two of the three t_p - PIG correlations were significant ($r_{T_1} = -.10$, $p > .10$; $r_{T_2} = -.17$, $p \leq .05$; $r_{T_3} = -.20$, $p \leq .01$). Even the non-significant correlations were in the expected direction with all correlations reflecting a decrease in procrastination associated with an increase in perceived instrumentality of both course and grades. These results thus support Hypothesis IX indicating that a direct linear relationship does exist. Apparently, the linear component associated with this relationship is much stronger than any accentuation effect that might exist as a function of individual differences in resultant achievement motivation levels.

A final test of the influence of perceived instrumentality on procrastination was the inclusion of both PIC and PIG scores in the step-wise multiple regression equations for the three primary tasks (See Table 4). Hypothesis X predicted that PI would add significantly to the overall predictive efficiency (i.e., be included in the best predictive model) of each of the procrastination measures for the three primary tasks. Results show that PIC was included in the best predictive model for Task 1, while PIG was included in the best predictive model for both Task 2 and Task 3. PIC was also included in the regression equation for the contrived procrastination measure T_6 (See Table 5), which is a combined measure of all three task procrastination scores. These results support the hypothesis and indicate that PI does have an effect on procrastination behavior on these academic achievement tasks.

There is a tendency for procrastination to decrease as courses and grades take on greater importance for a student.

Locus of Control

It had been expected (Hypothesis XI-a) that locus of control would affect procrastination behavior, with those scoring highest on the Internal scale (internals) procrastinating less than those scoring highest on the Powerful Others scale (defensive externals), who, in turn, would procrastinate less than those scoring highest on the Chance scale (congruent externals). This hypothesis was tested using both real locus of control scores and normalized locus of control scores to designate control type. Normalized locus of control scores were determined by finding the z-score for each scale score value with respect to all other individuals' scores in the sample of subjects. Locus of control type was then determined by designating individuals according to the scale on which they scored the highest, either highest raw score for the raw score designation or highest z-score for the normalized score designation. Then, the hypothesis was tested by using an ANOVA procedure to test for significant differences in procrastination between groups. In this manner, six one-way ANOVAs were generated with locus of control designation as the independent variable and procrastination as the dependent variable. There was one ANOVA for each of the three primary tasks using raw score designations and one for each of the tasks using normalized score designations. In the six ANOVAs (See Appendix J, Tables 1-6), there were no significant differences between locus of control types in procrastination scores thus indicating that locus of control had no effect on procrastination behavior. As a corollary to Hypothesis XI-a, Hypothesis XI-b predicts that internals would be more likely to go do Task 1 and Task 2 than defensive externals,

who, in turn, would be more likely to go do Task 1 and Task 2 than congruent externals. A chi-square procedure was utilized to test this hypothesis. Four separate χ^2 analyses were run, one for each task using raw score designations and one for each task using normalized score designations. None of these analyses were significant (See Appendix K, Tables 1-4). If, as before, failure to go do a task is considered the ultimate form of procrastination, then the above results further indicate that locus of control designation has no effect on procrastination behavior.

Hypothesis XII makes predictions about the degree of linear relationship between each separate locus of control scale and procrastination. It was predicted, for instance, that as the degree of internality increases (i.e., score on the Internal scale increases), procrastination would decrease. This relationship was found for only one of the three primary tasks (See Table 1). There was a significant negative correlation ($\underline{r} = -.16$, $\underline{p} \leq .05$) between scores on the Internal scale and procrastination in preparing for the midterm exam (T_3). There were non-significant correlations for the article reading task ($\underline{r} = -.01$, $\underline{p} > .05$) and the intelligence test taking task ($\underline{r} = -.03$, $\underline{p} > .05$). These results, taken as a whole, would seem to indicate that degree of internality may be a factor in procrastination behavior but only for achievement tasks of more importance, such as an exam, and not for tasks of lesser importance to course grade.

The second part of Hypothesis XII predicted that as scores on the Chance locus of control scale (congruent externality) increased, procrastination would increase. Correlations between the Chance scale

scores and procrastination did not reach significance for any of the primary tasks (See Table 1). The same held true for part three of this hypothesis regarding Powerful Other scale scores (defensive externality) and procrastination. Again, no significant relationship was found between degree of defensive externality and procrastination on any of the three tasks. Taken as a whole, the correlation results for the independent scales indicate that only degree of internality has any effect on procrastination behavior. As internality increases, procrastination tends to decrease, but only for the one task of major importance, i.e., studying for the exam. There seems to be little relationship between either form of externality (defensive or congruent externality) and procrastination. The expected increase in procrastination as chance scores increased and expected decrease in procrastination as Powerful Other scores increased were not found.

The expected differences between correlations were not found as well. It had been predicted that the LCI- t_p correlations would be greater than the LCC- t_p and LCOP- t_p correlations. However, the largest difference among these nine correlations, i.e. the difference between the LCC- T_3 and LCI- T_3 correlations, was found to be non-significant ($z = -1.56$, $p > .10$). Since all other comparisons involved correlations that were essentially zero, no z-score transformation test was run. These results again fail to support the hypothesis which states that locus of control orientation should be linearly related to procrastination.

Hypothesis XIII addresses the question of whether or not locus of control may be important as a moderator between achievement

motivation and procrastination on achievement tasks. It was predicted that the strongest correlation between the two would occur for internals, the weakest for congruent externals, and intermediate for defensive externals.

Results indicate that these patterns of correlations were not found (See Tables 12-17). There were no significant correlations between MATS and procrastination time (t_p) for internals on any of the three primary tasks, whether locus of control type was determined by raw scores or by normalized scores. There was only one significant correlation for those designated as defensive externals (scored highest on the Powerful Other scale). That correlation came on Task 1 ($r = .73$, $p \leq .05$) where LC type was determined by raw scores. Little confidence can be placed in this finding though, since it is based on a very small sample ($N=8$). For those designated congruent externals (scored highest on the Chance locus of control scale) there were, again, no significant MATS- t_p correlations, irregardless of how locus of control type was determined. It appears then, that locus of control doesn't act as a moderator variable between achievement motivation and procrastination time.

An interesting related finding is that locus of control does at first glance appear to be acting as a moderator variable for the relationship between achievement motivation (MATS) and first exam scores (SFE) and between achievement motivation and IQ scores, using both raw scores and normalized scores to designate locus of control type. For internals designated by the raw score method, the MATS-SFE correlation is $r = .19$, $p \geq .05$. For internals designated by normalized scores, the MATS-SFE correlation is $r = .24$, $p \geq .05$ (See Tables 12 and 13

TABLE 12

CORRELATION MATRIX OF ALL VARIABLES FOR INDIVIDUALS DESIGNATED AS INTERNALS BY THE RAW SCORE METHOD*

MATS	AAT	PIC	PIG	DLC	SFE	IQ	T ₁	T ₂	T ₃	T ₅	
	-.25 ^d	.01	-.05	.08	.19 ^b	.16 ^b	.02	-.04	.04	-.09	MATS
		.03	-.08	.03	-.42 ^d	-.37	-.10	-.01	.05	.11	AAT
			.42 ^d	.25 ^d	-.08	-.13	-.25 ^c	-.13	-.16 ^b	-.09	PIC
				.01	-.07	.03	-.04	-.14 ^a	-.17 ^b	-.16 ^b	PIG
					.03	.06	-.03	-.02	-.27 ^d	-.05	DLC
						.55 ^d	.11	-.07	-.15 ^b	-.03	SFE
							.15 ^a	.01	-.08	.04	IQ
								.42 ^d	.14 ^a	.14 ^a	T ₁
									.18 ^b	.18 ^b	T ₂
										.41 ^d	T ₃
											T ₅
Significance Levels:											
a	$p \leq .10$										
b	$p \leq .05$										
c	$p \leq .01$										
d	$p \leq .001$										

Symbols: MATS - Mehrabian Achievement Tendency Scales
 AAT - Achievement Anxiety Test
 PIC - Perceived Instrumentality of Course
 PIG - Perceived Instrumentality of Grades
 DLC - Degree of Liking of Course
 SFE - Score on First Exam
 IQ - Score on IQ Test

T₁ - Procrastination measure on article reading task
 T₂ - Procrastination measure on IQ testing task
 T₃ - Procrastination measure on midterm exam
 T₅ - Procrastination measure on overall procrastination question

* Range of N for correlations is 121 to 175.

TABLE 13

CORRELATION MATRIX OF ALL VARIABLES FOR INDIVIDUALS DESIGNATED AS INTERNALS BY THE STANDARD SCORE METHOD*

MATS	AAT	PIC	PIG	DLC	SFE	IQ	T ₁	T ₂	T ₃	T ₅	
	-.29 ^b	-.02	.11	-.03	.24 ^b	.19	-.09	-.07	.07	-.28 ^b	MATS
		.17	-.13	.01	-.30 ^c	-.23 ^a	-.15	-.11	-.05	.08	AAT
			.42 ^d	.20 ^a	-.21 ^a	-.29 ^b	-.25 ^b	-.14	-.01	.05	PIC
				.09	-.15	-.02	.10	.03	.00	-.11	PIG
					-.03	.00	.07	.12	-.25 ^b	-.18	DLC
						.54 ^d	.28 ^b	.01	-.17	-.13	SFE
							.35 ^c	.08	-.05	.03	IQ
								.34 ^c	.11	.21 ^a	T ₁
									-.04	.12	T ₂
										.45 ^d	T ₃
											T ₅
Significance Levels:											
a $\underline{p} \leq .10$											
b $\underline{p} \leq .05$											
c $\underline{p} \leq .01$											
d $\underline{p} \leq .001$											

Symbols: MATS - Mehrabian Achievement Tendency Scales
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 DLC - Degree of Liking of Course
 SFE - Score on First Exam
 IQ - Score on IQ Test

T₁ - Procrastination measure on article reading task
 T₂ - Procrastination measure on IQ testing task
 T₃ - Procrastination measure on midterm exam
 T₅ - Procrastination measure on overall procrastination question

* Range of N for correlations is 64 to 78.

TABLE 14

CORRELATION MATRIX OF ALL VARIABLES FOR INDIVIDUALS DESIGNATED AS DEFENSIVE EXTERNALS
BY THE RAW SCORE METHOD (HIGHEST LC RAW SCORE ON POWERFUL OTHER SCALE)*

MATS	AAT	PIC	PIG	DLC	SFE	IQ	T ₁	T ₂	T ₃	T ₅	
	-.63 ^a	-.88 ^c	-.64 ^a	-.55	.55	.15	.73 ^b	.40	.23	.81 ^b	MATS
		.71 ^b	.47	.09	-.86 ^b	-.31	-.20	-.43	-.29	-.53	AAT
			.89 ^c	.37	-.68 ^a	.23	-.44	-.19	-.25	-.51	PIC
				.33	-.61	.51	-.20	.11	.00	-.20	PIG
					-.28	-.23	-.64	-.27	.19	-.74 ^a	DLC
						.22	.12	.25	-.01	.46	SFE
							.65	.80 ^a	.31	.65	IQ
								.84 ^b	.44	.84 ^b	T ₁
									.75 ^a	.71	T ₂
										.23	T ₃
											T ₅
Significance Levels:											
	a	$p \leq .10$									
	b	$p \leq .05$									
	c	$p \leq .01$									
	d	$p \leq .001$									

Symbols: MATS - Mehrabian Achievement Tendency Scales
 AAT - Achievement Anxiety Test
 PIC - Perceived Instrumentality of Course
 PIG - Perceived Instrumentality of Grades
 DLC - Degree of Liking of Course
 SFE - Score on First Exam
 IQ - Score on IQ Test

T₁ - Procrastination measure on article reading task
 T₂ - Procrastination measure on IQ testing task
 T₃ - Procrastination measure on midterm exam
 T₅ - Procrastination measure on overall procrastination question

* Range of N for correlations is 6 to 8.

TABLE 15

CORRELATION MATRIX OF ALL VARIABLES FOR INDIVIDUALS DESIGNATED AS DEFENSIVE EXTERNALS BY THE STANDARD SCORE METHOD (HIGHEST LC STANDARD SCORE ON POWERFUL OTHER SCALE) *

MATS	AAT	PIC	PIG	DLC	SFE	IQ	T ₁	T ₂	T ₃	T ₅	
	.02	-.29 ^b	-.38 ^c	.16	.05	.12	.26 ^a	.26 ^a	.06	.03	MATS
		.15	.08	.13	-.59 ^d	-.52 ^d	-.17	.03	.03	-.02	AAT
			.49 ^d	.44 ^d	-.24 ^a	-.24 ^a	-.27 ^a	-.02	-.25 ^a	-.09	PIC
				.03	-.21	-.06	-.20	-.34 ^b	-.15	-.22	PIG
					-.07	.02	-.27 ^a	-.07	-.29 ^b	.03	DLC
						.55 ^d	.02	-.11	-.04	.01	SFE
							.07	-.14	-.01	.11	IQ
								.55 ^d	.45 ^c	.25 ^a	T ₁
									.59 ^d	.36 ^b	T ₂
										.39 ^c	T ₃
											T ₅
Significance Levels:											
	a	$p \leq .10$									
	b	$p \leq .05$									
	c	$p \leq .01$									
	d	$p \leq .001$									

Symbols: MATS - Mehrabian Achievement Tendency Scales
 AAT - Achievement Anxiety Test
 PIC - Perceived Instrumentality of Course
 PIG - Perceived Instrumentality of Grades
 DLC - Degree of Liking of Course
 SFE - Score on First Exam
 IQ - Score on IQ Test

T₁ - Procrastination measure on article reading task
 T₂ - Procrastination measure on IQ testing task
 T₃ - Procrastination measure on midterm exam
 T₅ - Procrastination measure on overall procrastination question

* Range of N for correlations is 48 to 55

TABLE 16

CORRELATION MATRIX OF ALL VARIABLES FOR INDIVIDUALS DESIGNATED AS CONGRUENT EXTERNALS BY THE RAW SCORE METHOD (HIGHEST LC RAW SCORE ON CHANCE SCALE)*

MATS	AAT	PIC	PIG	DLC	SFE	IQ	T ₁	T ₂	T ₃	T ₅	
	-.26	-.27	-.18	-.28	-.32	.15	-.12	.09	.19	-.10	MATS
		.58 ^b	.38	.59 ^b	-.44 ^a	-.67 ^b	-.09	.10	-.19	.12	AAT
			.36	.73 ^c	-.29	-.63 ^b	.12	.09	-.29	.13	PIC
				.15	.32	-.15	-.52 ^a	-.60 ^b	-.61 ^b	-.41	PIG
					-.36	-.49 ^a	.21	.36	.07	.16	DLC
						.63 ^b	-.14	-.48 ^a	-.27	-.11	SFE
							.12	.05	.06	.22	IQ
								.67 ^b	.62 ^b	.65 ^b	T ₁
									.48 ^a	.73 ^c	T ₂
										.33	T ₃
											T ₅
Significance Levels:											
	a	$\underline{p} \leq .10$									
	b	$\underline{p} \leq .05$									
	c	$\underline{p} \leq .01$									
	d	$\underline{p} \leq .001$									

Symbols: MATS - Mehrabian Achievement Tendency Scales
 AAT - Achievement Anxiety Test
 PIC - Perceived Instrumentality of Course
 PIG - Perceived Instrumentality of Grades
 DLC - Degree of Liking of Course
 SFE - Score on First Exam
 IQ - Score on IQ Test

T₁ - Procrastination measure on article reading task
 T₂ - Procrastination measure on IQ testing task
 T₃ - Procrastination measure on midterm exam
 T₅ - Procrastination measure on overall procrastination question

* Range of N for correlations is 10 to 16.

TABLE 17

CORRELATION MATRIX OF ALL VARIABLES FOR INDIVIDUALS DESIGNATED AS CONGRUENT EXTERNALS BY THE STANDARD SCORE METHOD (HIGHEST LC STANDARD SCORE ON CHANCE SCALE)*

MATS	AAT	PIC	PIG	DLC	SFE	IQ	T ₁	T ₂	T ₃	T ₅	
	-.32 ^c	-.14	-.19	-.05	.07	.11	.15	.04	.08	.06	MATS
		.14	.06	.18	-.50 ^d	-.51 ^d	-.06	-.05	.04	.24 ^a	AAT
			.39 ^d	.26 ^b	.01	.07	-.15	-.07	-.27 ^b	-.08	PIC
				-.06	.15	.05	-.19	-.22 ^a	-.13 ^d	-.26 ^b	PIG
					.01	-.01	.22 ^a	.02	-.15	.11	DLC
						.52 ^d	-.01	-.17	-.22 ^a	.00	SFE
							.08	.19	-.12	.05	IQ
								.53 ^d	.02	.21 ^a	T ₁
									.20	.35 ^c	T ₂
										.33 ^c	T ₃
											T ₅
Significance Levels:											
	a $\underline{p} \leq .10$										
	b $\underline{p} \leq .05$										
	c $\underline{p} \leq .01$										
	d $\underline{p} \leq .001$										

Symbols: MATS - Mehrabian Achievement Tendency Scales
 AAT - Achievement Anxiety Test
 PIC - Perceived Instrumentality of Course
 PIG - Perceived Instrumentality of Grades
 DLC - Degree of Liking of Course
 SFE - Score on First Exam
 IQ - Score on IQ Test

T₁ - Procrastination measure on article reading task
 T₂ - Procrastination measure on IQ testing task
 T₃ - Procrastination measure on midterm exam
 T₅ - Procrastination measure on overall procrastination question

* Range of N for correlations is 55 to 66.

respectively). For internals designated by the raw score method, there is also a significant MATS-IQ correlation ($\underline{r} = .16, \underline{p} \leq .05$). For internals designated by normalized scores, the MATS-IQ correlation is slightly higher ($\underline{r} = .19, \underline{p} > .10$) but does not reach significance due to a smaller sample size. While 3 of 4 correlations for internals reach significance, none of the MATS-SFE correlations or MATS-IQ correlations for the other locus of control designation types reach significance (See Tables 14-17), although several are quite a bit higher than the significant correlations for the internals. The correlation values are actually quite consistent in magnitude across locus of control designations.

If one looked at this data in terms of significance levels alone, it would appear that locus of control is indeed acting as a moderator variable for the relationship between achievement motivation and the other two variables. Closer examination of the actual correlation scores indicates that this apparent relationship is actually an artifact of sample size for the various correlations. It can thus be concluded that not only is locus of control in the present study not acting as a moderator between achievement motivation and procrastination, it is also not acting as a moderator variable between achievement motivation and other theoretically important achievement variables.

Strong support was found for the hypothesized relationship between achievement motivation and locus of control (Hypothesis XIV). It had been predicted, based on theory and previous results, that there would be a positive correlation between achievement motivation (MATS) and scores on the Internal Locus of Control scale (LCI). A negative correlation was predicted between MATS and Chance scale scores (LCC), and

between MATS and Powerful Other scale scores (LCPO). The MATS-LCPO correlation was expected to be less than the MATS-LCC correlation in absolute magnitude. As predicted, MATS scores were positively correlated with scores on the Internal scale ($\underline{r} = .35, \underline{p} \leq .001$) and negatively correlated with scores on the Chance scale ($\underline{r} = -.32, \underline{p} \leq .001$). As expected, the correlation between scores on the Powerful Other scale and the MATS ($\underline{r} = -.19, \underline{p} \leq .01$) was negative and less in absolute magnitude than the MATS and Chance scale correlation. The difference between the MATS-LCI correlation and MATS-LCC correlation was significant ($\underline{z} = 6.97, p < .0001$), as was the difference between the MATS-LCI and MATS-LCPO correlations ($\underline{z} = 5.57, p < .0001$). The difference between MATS-LCC and MATS-LCPO correlations, although in the expected direction, did not reach significance ($\underline{z} = 1.40, p > .05$). These findings support previous conclusions that higher degrees of internal control orientation tend to be associated with higher degrees of achievement motivation and that greater levels of chance orientation tend to be associated with lower levels of achievement motivation. Also, the fact that the LCPO-MATS correlation was lower than the LCC-MATS is consistent with previous conclusions based on the theory about defensive externality.

The final hypothesis (Hypothesis XV) in the locus of control section predicts that achievement anxiety will be negatively related to degree of internality and positively related to degree of congruent externality. The anxiety-defensive externality relationship was expected to be negative and in an intermediate range between the other two. Support for this hypothesis was found in the negative correlation between AAT and Internal scale scores ($\underline{r} = -.22, \underline{p} < .001$) and the positive correlation

between AAT and the Chance scale scores ($\underline{r} = .29, \underline{p} < .001$). The AAT-Powerful Other scale scores correlation was in an intermediate range ($\underline{r} = .25, \underline{p} < .001$), but was essentially equivalent to the AAT-Chance scale relationship. The difference between the AAT-LCI and AAT-LCC correlations was significant ($\underline{z} = 5.23, \underline{p} < .0001$) as was the difference between the AAT-LCI and AAT-LCPO correlations ($\underline{z} = 4.79, \underline{p} < .0001$). The difference between AAT-LCI and AAT-LCPO correlations, although in the predicted direction was not significant ($\underline{z} = .44, \underline{p} > .05$). Apparently, increased anxiety is associated with increased levels of external orientation, regardless of the type of external orientation.

Although no predictions were made about the locus of control scales' predictive ability, all scales were included in the step-wise multiple regression analysis for each of the primary tasks. On no task did any of the locus of control scales add significantly to the predictive ability of the model. This indicates that even though significant correlations were found between locus of control scale scores and procrastination on some of the tasks, none of the scales were as effective as other variables in predicting procrastination on the three primary tasks.

Phenomenological Experience of Procrastination

Although no predictions are given, an attempt was made to determine how much subjects' actual behavior with respect to studying for the first exam (T_3) was related to their self ratings of procrastination, i.e., their phenomenological experience of procrastination. It was mentioned previously that behavioral and time measures of procrastination may not totally reflect perceptions of procrastination. Some persons may "intentionally" wait until just before test day before studying for exams due to any number of reasons. These persons may not feel that they procrastinated. In a sense, then, procrastination may reflect only the extent to which people fail to study when they feel that they should be studying. There may be some correlation between this phenomenological experience of procrastination and the actual time measures, although certainly not a perfect one.

In the present study, the extent that the behavioral measure relates to the phenomenological experience of procrastination was assessed by means of comparing procrastination ratings (T_3) to scores on three questions asked on a handout accompanying the midterm exam. Half of the subjects were asked the extent to which they procrastinated in their course (T_4QT_1), while the other half were asked the extent to which they studied when they thought they should have been studying (T_4QT_2). The third and final question asked individuals to rate themselves on their overall procrastination tendency (T_5). Correlations between these questions and T_3 , as well as correlations with the variables, can be found in Table 18 and Table 1 respectively.

TABLE 18

CORRELATION MATRIX OF T₄QT₁ AND T₄QT₂ WITH ALL VARIABLES*

	MATS	AAT	PIC	PIG	DLC	LCI	LCPO	LCC	SFE	IQ	T ₁	T ₂	T ₃	T ₅
T ₄ QT ₁	.13	.01	-.04	-.28 ^c	-.14	-.14	-.02	.00	-.26 ^b	-.17	-.17	.16	.52 ^d	.41 ^d
T ₄ QT ₂	.02	-.15	.21 ^b	.14	.40 ^d	.07	-.01	-.16	.37 ^d	.15	-.22 ^b	-.20 ^b	-.48 ^d	-.37 ^d
Significance Levels:														
a $\underline{p} \leq .10$														
b $\underline{p} \leq .05$														
c $\underline{p} \leq .01$														
d $\underline{p} \leq .001$														

* T₄QT₁ = Extent of procrastination in the course.

T₄QT₂ = Extent of studying when should have been studying.

Range of N for correlations is 74 to 104.

It was found that the phenomenological measure of procrastination (T_4QT_1) correlated highly with the procrastination rating for studying for the first exam, T_3 ($r = .52$, $p \leq .0001$). This result indicates that individuals who delay in performing assigned achievement tasks do tend to perceive themselves as procrastinating. Still, this comparatively high correlation reflects only an overlapping variability of scores of only 25%. Obviously, there is more reflected in the term procrastination, than the mere behavioral components reflected in the T_3 measure. As noted before, there may be some who intentionally wait until the last minute to study and do not perceive themselves as procrastinating. Others may actually start studying quite early in the term, yet still feel they have procrastinated. Maybe they truly feel that they have not done enough work; their standards are so high they cannot possibly meet them. Their failure to meet this standard is reflected in a deprecating self assessment. Still others may use procrastination as a self defense mechanism to justify possible failure on an exam. Their belief is that they are intelligent and capable but just waited too long to study. Failure under this justification defense does not reflect as negatively on one's self concept. Testing the viability of these explanations may be the core of future research projects in the area of procrastination.

There is some indication that the term procrastination is somewhat comparable to the construct "studying when one feels that they should be studying". It was impossible to directly compare the two concepts since presenting them simultaneously would have drawn attention to the comparison, and would have resulted in a tendency to mark

the two scales the same. Some indication could be gleaned, though, by comparing separate samples of each to the same third measure. Thus, the studying when should question (T_4QT_2) which was asked of the other half of the subjects, was also correlated with the procrastination ratings on T_3 for that half of the sample. The high negative correlation ($r = -.48$, $p \leq .0001$), between T_4QT_2 and T_3 measures indicates that as the time measure goes up, there is a tendency for individuals to perceive that they are not studying when they think they should be studying. Since both T_4 measures correlate with T_3 about the same and in the expected direction, and since separate T_3 distributions can be expected to be normal and comparable for each half of the subjects, then these results would seem to give at least an indirect indication of the relationship between the two questions. This suggests that there may be some conceptual overlap between the two constructs measured in the questions. Still, with no direct comparison being made, no high level of confidence can be placed in this conclusion.

The comparison of the self rating of overall procrastination (T_5) to the actual behavioral rating (T_3) also showed a significant relationship ($r = .39$, $p \leq .001$). This correlation, although fairly high, is less than the correlation between the specific procrastination question, T_4QT_1 , and T_3 . This is what might be expected since T_4QT_1 and T_3 are certainly more comparable in the fact that they refer to the same specific behavior, studying in the course. The $T_3 - T_5$ correlation may reflect though that those who tend to procrastinate in general, tend to procrastinate on this type of achievement task as well. These results indicate weak support for the existence of a general tendency

to procrastinate, and may reflect a consistent personality disposition. It must be pointed out though, that such a conclusion is based on a relationship ($\underline{r} = .39$) that can account for only about 16% of the variability in the two measures. If such a personality disposition does exist, it may be a fairly weak one.

It was found that the personality measures studied herein had little to do with the phenomenological experience of procrastination in the course (T_4QT_1). There were no significant correlations between perceived procrastination and any of the personality measures; MATS, AAT, or the LC scales (See Table 18). Nor were there any significant correlations between the studying when should question (T_4QT_2) and the personality measures (See Table 18). Overall, one would have to conclude that there is little relationship between the personality variables studied here and either the perception of procrastination in the course or the actual behavioral measure of procrastination in the course.

There was a fairly weak correlation found between perception of overall procrastination, T_5 , and degree of internality, LCI ($\underline{r} = -.17$, $\underline{p} \leq .05$; See Table 1). This result indicates that as degree of internality increases, the tendency to perceive one's self as a procrastinator overall decreases. This might be expected since procrastinating would tend to make an individual lose control over his outcomes. Internally oriented persons feel that they are in control of their outcomes. To perceive themselves as being procrastinators would be logically inconsistent for those internally oriented persons.

Another relationship that was studied was the relationship between

perceived instrumentality and the experience of procrastination. There was a significant negative correlation ($\underline{r} = -.27$, $\underline{p} \leq .01$) between T_4QT_1 and perceived instrumentality of grades (PIG), indicating that as one's grades become more important, one is less likely to perceive one's self as procrastinating in a course (See Table 18). This finding is likely to be an artifact of a third variable, which is the actual procrastination behavior. There was a tendency to actually procrastinate less as PIG increased ($\underline{r}_{PIG-T_3} = -.20$, $\underline{p} \leq .01$). Thus, the perception of procrastination is most likely to be a function of actual behavior, and less likely to be a function of perceived instrumentality of grades.

Overall procrastination ratings (T_5) were also found to be related to PIG ($\underline{r} = -.19$, $\underline{p} \leq .01$). Thus, those that perceive grades as important are less likely to see themselves as procrastinators. Again, this may be a function of actual behavior since overall procrastination ratings were correlated as well with T_3 ($\underline{r} = .39$, $\underline{p} \leq .001$). As grades become more important, people procrastinate less, and then they perceive themselves to be procrastinators to a lesser extent.

Finally, the phenomenological measures of procrastination (T_4QT_1 , T_4QT_2 and T_5) were all studied as variables to be predicted in the step-wise multiple regression equations using all other variables. The self rating of procrastination in the course was best predicted by the two measures "degree of liking of the course" and "score on the first exam" (See Table 19). Apparently, the best way to predict people's procrastination behavior in a course, at least as they perceive it, is to determine how much they liked the course. The

TABLE 19

STEPWISE MULTIPLE REGRESSION ANALYSIS FOR NORMALIZED PROCRASTINATION RATINGS ($TN_4 - Q_{t1}$ & 2)^a AS A FUNCTION OF ALL INDEPENDENT VARIABLES

Source	df	ss	MS	F	P
TN_4Q_{T1} Regression	2	156.56	78.28	22.34	.0001
Error	101	353.97	3.50		
Total	103	510.53			
Intercept	- 3.18	St. Error			
β (DLC)	0.56	0.11		24.71	.0001
β (SIE)	0.09	0.02		21.22	.0001
Regression Equation: $TN_4Q_1 = -3.18 + .56 (DLC) + .09 (SIE)$ ^b					
Source	df	ss	MS	F	P
TN_4Q_{T2} Regression	2	63.93	31.96	7.76	.0008
Error	86	354.19	4.12		
Total	88	418.11			
Intercept	12.55	St. Error			
β (PIG)	- 0.91	0.31		8.74	.004
β (SIE)	- 0.06	0.02		7.74	.007
Regression Equation: $TN_4Q_2 = 12.55 - .91 (PIG) - .06 (SIE)$					

^a TN_4Q_{T1} - Procrastination in the course rating

TN_4Q_{T2} - Studying when should rating

^b SFE - Score on first exam.

prediction of this perception is improved somewhat by waiting to see how well they do in the course.

The extent people perceive they study when they should (T_4QT_2) can best be predicted by their PIG scores (See Table 19). Again, a slightly better prediction can be made by attaining first exam scores and including them in the prediction model.

For the overall procrastination rating (T_5) several variables are included in the best prediction model (See Table 5). They include the Powerful Other and Chance locus of control scales, perceived instrumentality of grades and age.

Several general conclusions can be drawn from the phenomenological measures of procrastination. There is a relationship between procrastination as a phenomenological experience and actual behaviors which might be expected to reflect procrastination. This relationship is not nearly perfect though, and suggests that other perceptual processes may have a lot to do with whether or not people perceive themselves as procrastinating. These processes should be studied before any kind of complete understanding of procrastination behavior can ever be attained.

Also, in the prediction of perceived procrastination, different measures seem to be important, depending on the type of procrastination measure taken. For general procrastination rating, locus of control measures and perceived instrumentality appear quite important, while degree of liking of the course, perceived instrumentality of grades and score on first exam are relevant for the specific measures. Indeed, it appears difficult to pinpoint specific characteristics or situations that relate to procrastination self ratings.

DISCUSSION

One obvious major conclusion that must be drawn from the present study is that the personality measures overall are little related to procrastination behavior, at least with respect to the types of scholastic achievement tasks utilized in this study. Measures of resultant achievement motivation, achievement anxiety, and locus of control all accounted for little or none of the variance in the procrastination measures. Although a discussion of personality in general as a predictor of human behavior is very important, it may help to first discuss the findings related to the individual personality measures.

It had been expected that there would be a significant relationship between achievement motivation and procrastination on the three achievement tasks, especially Task 3. However, there were no significant correlations between MATS and procrastination scores on any of the three tasks. Nor were there any significant differences in procrastination time between high, medium, and low groups on MATS found in the MATS by task ANOVA. Finally, MATS scores were not found in any of the step-wise multiple regression best fit models. Thus, no evidence was found to support the theoretical relationship between achievement motivation and procrastination.

Several different possible explanations might exist for this failure to find the expected relationship. These explanations can be categorized into several types of issues: issues related to the measurement of the independent variable, resultant achievement motivation; those related to the conceptualization and measurement of procrastination; and those related to the question of whether or not achievement

motivation is actually functioning in the present situation, i.e. is achievement motivation affecting procrastination, or could it even be expected to affect procrastination behavior in the present context. Each of these issues will be explored separately and conclusions drawn about each possibility.

One possible explanation for the lack of a relationship between resultant achievement motivation and procrastination is that the MATS scale does not reliably measure achievement motivation. This seems unlikely since Mehrabian's test has been validated against numerous theoretically related achievement variables in the past. Mehrabian (1969), for instance, found the MATS to correlate with two other achievement scales and a shy-adventuresome scale, while Weiner and Potepan (1970) found the MATS to correlate as expected with the affective reactions of superior and failing college students to exams. Furthermore, within the present study, evidence exists for the validity of the scale. MATS scores did correlate, as might be expected, with numerous other achievement related measures, including scores on the first exam, IQ, the Achievement Anxiety Test scores, as well as all three locus of control scales. These relationships all "make sense" theoretically and, in some cases, have been used as evidence for construct validity in the past. It makes sense, for instance, that those with high achievement motivation would actually achieve higher grades on the exams, a relationship that was indeed found in the present study. Therefore, there seems to be little evidence to support the explanation that MATS does not measure achievement motivation.

A second possible explanation is that this sample produced a

restricted range on the MATS test. This possibility can also be ruled out since both the range (-60 to +64) and standard deviation (SD= 20.8) of MATS scores were quite high. Furthermore, a restricted range, had it existed, would also have been expected to affect the relationship of MATS to other achievement related variables. The significant correlations between MATS and IQ, score on the first exam, and other variables indicates that such relationships were not affected by a restricted range on the MATS.

The second general issue involves the measurement and conceptualization of procrastination. Related to the restricted MATS range possibility is the possibility that there might be a restricted range on the procrastination measures. This too, appears unlikely since the range on both Task 1 and Task 2 was 1 to 21 days with standard deviations of 5.6 and 5.1 respectively. These figures suggest that considerable latitude existed in these measures. On Task 3, where each combination of text reading and studying for exam designations could range from 0 to 10, the actual range for the items was .7 to 8.8. The standard deviation of 1.6 was also fairly high, suggesting again, considerable spread in the data. As was the case with the MATS scores, restricted range on the procrastination measures seems an unlikely explanation for the lack of a relationship between achievement motivation and the present measures of procrastination.

Another factor that might be of importance in understanding the lack of a MATS-procrastination relationship is whether or not the tasks are even achievement related tasks. If not, then it could hardly be expected that procrastination on these tasks would be affected by

achievement motivation. This possibility seems intuitively to be quite remote. By definition, scholastic achievement is measured by success in one's courses, this success being determined by how well an individual does on exams and other assigned and graded schoolwork. Since the present tasks and especially Task 3, are integrally related to grades, and thus to success in the course, then they must be achievement related tasks. Whether or not they arouse achievement motivation, or are affected by achievement motivation, is a different question, which will be addressed shortly.

One additional measurement problem may have attenuated the correlation between MATS and procrastination, but only for the procrastination measure on Task 3. It is possible that the manner in which the Task 3 measures were derived and standardized could have affected this correlation. On Task 3, a certain amount of extraneous variability existed in the procrastination ratings. The mean of the ratings for each item was used to reflect the level of procrastination reflected by each study pattern. Every mean though, had its built-in variability since not every rater rated each item identically. There was only a moderately high inter-rater reliability, as reflected by the standard deviations of ratings for the items. These standard deviations ranged from about 1.4 to 2.2 for the 60 or so different items. This amount of variability in the dependent measure may very well have affected its relationship to achievement motivation. This explanation for the low correlation, is somewhat weakened, though, since procrastination on Task 3 was found to correlate as expected with some other variables, i.e. both perceived instrumentality ratings, degree of liking of the

course, and score on first exam. Therefore, it must be concluded that although this measurement variability may have contributed to the non-significant correlation between MATS and procrastination, it certainly cannot be considered the only, or even the major, contributor to this result.

Another factor that may have had an influence on the relationship between achievement motivation and procrastination on Tasks 1 and 2 was the possible presence of random biasing effects. For example, although efforts were made to insure as much equivalency as possible for the two tasks, still other randomly varying factors may have influenced how subjects perceived the tasks and thus when they went to do the tasks. Some subjects, for instance, may have heard that the Task 1 article they were required to read took longer than the expected 30 minutes for slow readers. They may have put off doing the task for this reason. Others may have heard that the lecture they were supposed to hear (Task 2) was very boring and, therefore, decided to avoid it as long as possible. These and other such factors may have attenuated the relationship between achievement motivation and procrastination by making the attendance at the tasks contingent on factors other than those hypothesized in the study, including achievement motivation.

For a final explanation of why achievement motivation was not found to be related to procrastination, one must turn to Atkinson's theory of achievement motivation (See pp. 21-27). In the theory, Atkinson maintains that the task intrinsic strength of a tendency to succeed at, or engage in, a task (T_s) is dependent on the probability of succeeding at the task (P_s), the incentive value associated with

succeeding (I_S), and an individual's level of achievement motivation (M_S).

He presents the relationship as follows: $T_S = M_S \times P_S \times I_S$

He also notes that $I_S = 1 - P_S$, i.e. that the incentive value of success is inversely proportionate to the probability of succeeding. Given this relationship, it was shown (See Figure 4, p. 22) how the strength of the tendency to succeed is affected by various levels of probability of success and various levels of achievement motivation. Herein may lie an important reason for why achievement motivation was not found to be related to procrastination in this study.

Atkinson's model indicates that for tasks which have either a very high or very low probability of success, T_S tends to be quite small. Furthermore, individual levels of achievement motivation have little effect on T_S under these circumstances. It is possible, even probable for Tasks 1 and 2, that individuals perceived there to be little chance of failure, a very high P_S , for the tasks. Indeed, for Tasks 1 and 2, there appeared to be little failure involved with respect to the course since only two questions on the exam were involved. For Task 2, the IQ test was expected to cause some concern about success or failure, i.e. test anxiety. It seems quite possible that most of the subjects perceived their chances of doing well on the IQ test to be quite high and, therefore, little test anxiety, or achievement motivation, was aroused. If so, the manipulation simply failed to work on this subject population. For both of these tasks then, achievement motivation may have had little effect on T_S , since the probability of succeeding was quite high.

It is impossible to tell how the probability of success on the first exam was perceived by the subjects since this factor was not included in the present study. It may be that most students perceive Introductory Psychology as an easy course and the probability of

succeeding on exams in that course to be quite high. This might be especially true in the beginning of the term before they have had their first exam. In this case, they have no course specific data on which to base such a perception. If this is the case, then the tendency to succeed (T_s) would be small and little affected by different levels of achievement motivation.

The implications of the small tendency to succeed components for the activity model should be obvious. There would be a very small force component related to achievement motivation added to the overall tendency to engage in the tasks. Thus, the time between initial assignment of the tasks and actual participation in the tasks would be little affected by varying levels of achievement motivation. There would be little or no relationship between achievement motivation and procrastination. This is, of course, what was found in the present study.

What then are the implications of these findings for achievement motivation theory and the hypotheses concerning procrastination? It must be concluded that general achievement motivation does not indiscriminately affect procrastination on achievement related tasks. It may yet be found that achievement motivation does affect procrastination in certain situations, i.e. for tasks where the probability of success can be measured and found to be near 50%. This remains to be proven, though and certainly warrants further investigation. The overall question of situational specificity of a relationship between achievement motivation and procrastination is worth studying. This question parallels the trait-situation issue presently being discussed

by personality theorists (Buss, 1977; Endler, 1973; Mischel, 1977). The issue will be discussed shortly with respect to the effect of personality variables in general on procrastination. It may help to turn first to the relationship between the other personality variables and procrastination in the present study.

Little evidence was found for any significant relationship between the other personality variables used in this study and procrastination. For example, achievement anxiety, which may reflect motivation to avoid failure, was not found to correlate with procrastination on any of the three primary achievement tasks. Achievement anxiety had been expected to correlate with procrastination on Tasks 2 and 3 since both tasks were expected to arouse some anxiety over evaluation and, to some small extent, the tendency to avoid failure. A similar type of reasoning may be applied to explain this lack of relationship that was used to explain achievement motivation's failure to correlate with procrastination. Individuals may have perceived the probability of success on the tasks to be quite high. If so, the effect of any particular level of achievement anxiety, or motive to avoid failure (M_{AF}), on the tendency to avoid failure (T_{AF}), would be minimal (See Figure 5, p. 24), just as would the effect of any particular level of achievement motivation on the tendency to succeed T_s . If this did indeed happen in the present study, then the theorized relationship between achievement anxiety, or failure avoidance, and procrastination may still have some validity. It may be more dependent though on the nature of the tasks being studied.

Again, the integrity of the activity model cannot be questioned.

It may simply mean that the motivation to avoid the tasks was not sufficiently aroused by the tasks to have an effect on the measured time variable, i.e. procrastination. The model may still be quite applicable, it simply means that greater specificity of tasks, and possibly other situational factors, must be incorporated into any hypotheses about relationships.

Locus of control was yet another personality variable expected to affect procrastination but which was found to have little relationship to procrastination in the present study. In only one instance were any of the locus of control scales found to be significantly related to procrastination behavior; that being the relationship between the internality scale and the self reports of studying for exam, i.e. procrastination on Task 3. In that case, as degree of internality increased, there was a decrease in procrastination in studying for the exam. Apparently, as one's belief in his own self control increases, there is a slight tendency for that person to procrastinate less on some achievement tasks. It should be noted though, that this relationship involves a self report or self evaluation of procrastination. Therefore, this correlation may reflect, to some extent, the relationship between internality and how much one perceives he procrastinates, and not necessarily how much he actually does procrastinate. As mentioned earlier, there may be operating within the individual, a desire to maintain consistency between his internal orientation and procrastination level ratings. Still, this is only conjecture. Any distortion is likely to be minimal though, since the study behaviors being checked and used to comprise T_3 were quite explicit and detailed. Furthermore, it is just as likely that there is, as was hypothesized, a tendency to

procrastinate slightly less as degree of internality increases. It is important to note also, that whether the correlation resulted from actual behavior or perceptual distortion, it was, although significant, still fairly weak. The importance of this finding is further attenuated by the fact that internality scores did not add significantly to predictive abilities in the step-wise multiple regression analysis, over and above other more important situational variables. Finally, none of the ANOVAs relating locus of control designation type to procrastination were found to be significant either. It must be concluded that locus of control overall does not have much of a direct effect on procrastination behavior for the type of achievement tasks in this study.

Some possible explanations for the failure to find a locus of control-procrastination relationship are identical to those used to explain the other negative results. The built-in variability on the Task 5 ratings may have affected the relationship. The randomly operating biases mentioned for Tasks 1 and 2 may also have had an influence. No doubt these influences had some effect. Still, one major possible alternative explanation should not be overlooked.

It is very possible that locus of control, as well as the other personality variables studied in this paper, simply have little effect on procrastination. Possibly other variables related to the situation have a much greater impact in determining when a person decides to go do a task such as reading an article. It may even be that situational factors interact greatly with personality factors in determining when a person does some behavior. This interactionist view is one to which many present day theorists subscribe (Buss, 1977; Endler, 1973; Hunt,

1965; Mischel, 1977). In fact, few personality theorists would deny that situations affect behavior to some extent, and few strict behaviorists would deny that personality affects behavior as well. As Endler (1973, p. 288) puts it, "no one would be sufficiently foolhardy to deny the existence of continuity and stability. But there is substantial evidence to indicate significant longitudinal personality changes over time, and cross-situational differences at any particular time". The question for many theorists has thus been the extent to which each, personality and situation, affects behavior.

If that is an important question in this study, then part of the answer must be that at least one of the two, personality, has very little effect on procrastination behavior. This would come as no surprise to many theorists. Mischel (1969, p. 1014), for instance, points out that based on past literature, "one should no longer be surprised when consistency correlations for social behavior patterns turn out to be quite low". He further mentions that a great deal of behavioral specificity has been found regularly on character traits such as rigidity, social conformity, aggression, on attitudes to authority, and on virtually any other non-intellectual personality dimension. It therefore, may not be too surprising that highly significant correlations were not found between procrastination and such personality variables as locus of control, achievement motivation, and achievement anxiety. It simply may be that the situational factors, or the various conditions under which persons operate, contribute much more to the procrastination than any personality variables.

The results of the present study seem to bear this out since several non-personality variables were found to correlate significantly

with procrastination. Both of the perceived instrumentality ratings and the degree of liking of the course ratings were found to be correlated with one or more of the procrastination measures. Perceived instrumentality of grades (PIG) was significantly correlated with procrastination on both Task 2 and Task 3. Perceived instrumentality of the course (PIC) correlated with procrastination on Task 1 and Task 3. Thus, as the importance of the course or overall grades increases, the tendency to procrastinate decreases. That is, subjects were less likely to delay studying for their exam or undertaking a task when the course or grades were important to them.

One other situational variable had a major effect on procrastination on Task 3. The degree that the subject liked the course (DLC) was negatively correlated with self reports of studying for the exam. This means simply that the more one likes the course, the less likely that person is to put off studying for exams in that course. There would seem to be some validity to the saying that we do what we like to do and put off doing what we don't like to do. Certainly, the extent that we like what we're doing is a contributing factor for determining when we engage in that activity.

Further support for the importance of perceived instrumentality of grades and course and the subjects' liking for the course was found in the step-wise multiple regression analyses. For Task 1, PIC was a significant predictor, while PIG was the only significant predictor for procrastination on Task 2. Both PIG and DLC added significantly to the best prediction model for procrastination on Task 3. Thus, each of these situational variables were all found to be significant predictors

for at least one type of measured procrastination behavior in the present study.

Overall, then, the results of this study suggest that procrastination behavior is more a function of certain situational and task specific variables than stable personality dispositions. How important an individual thinks it is to do well on specific achievement tasks, with respect to success in school, and how much that person likes the tasks, are determinants of how much procrastination occurs on these achievement tasks. These situational factors seem to contribute more to the determination of procrastination than personality variables, at least the ones measured in this study.

The situational variables studied here could still only account for a small amount of the variability in procrastination on the tasks. Undoubtedly, there are numerous other situational variables that are important determiners of procrastination. Such things as the amount of other important coursework a student has to do, and an individual's belief about what is the most efficient patterns of study, are but two of many potentially important variables, which if measured, might help to account for considerably more of the variability in the procrastination measures.

One way to picture the effect of these situational variables is to view them as forces extrinsic to, or in addition to, the intrinsic motivational forces inherent in the task (See Figure 7, p. 26). The important implication, as noted in the introduction (See p. 26) is that the strength of the action tendency to engage in a specific task is affected, in this case increased, by different types of motivational forces that

are extrinsic to the task. This stronger tendency to engage in the task should result in a quicker initiation of the task activity.

If these situational variables are thus viewed as extrinsic forces acting on an individual to determine some given behavior, B, then Atkinson's change of activity model provides a useful way of viewing the effect of the forces on procrastination behavior. These forces, as well as any forces resulting from more stable personality traits which might be influencing motivation, can be viewed as adding significant force components to the change of activity equations (See Equation 9, p. 16). If the force components have a positive value, such as might result from an increase in perceived importance or an increase in liking of a course, then they would be added to any other existing positive forces comprising F_B in equation 9. This would effectively reduce \underline{t} , the time it takes before activity B is initiated, by $\Delta\underline{t}$. $\Delta\underline{t}$ is a function of the strength of the force components and, thus, the importance of the particular situational variables in question. Situational components that tend to keep an individual from engaging in a task can also be included in the equation as the forces comprising I_B . Thus, the stronger these situational forces become, the greater the increase in \underline{t} . It may help to picture all of the different situational variables that tend to increase the likelihood of an activity as subordinate forces which are added together to comprise F_B . Thus, one component, increased importance of a course, might be pictured as F_{B1} ; increased liking of a course would be F_{B2} ; an encouraging spouse, F_{B3} ; etc. The same could be done for inhibiting forces I_{B1} , I_{B2} , etc. which would comprise I_B in Equation 9.

Atkinson's model of activity change is heuristic in that it

allows one to picture how the various force components act on an individual to determine when behavior will occur. Those that facilitate engaging in an activity are added to comprise F_B , and result in a decrease in time, \underline{t} , before initiation of activity. Those that inhibit an activity are added to I_B and result in an increase in \underline{t} . Although no attempt is made in the present study to quantify these force components, they may be considered proportional in strength to the weights the various components hold in the regression equations predicting procrastination behavior. For example, in the prediction model for procrastination on Task 3 (See Table 4, p. 90), perceived instrumentality of grades (PIG) has more weight than degree of liking of the course (DLC), which in turn, has more weight than the score on the first exam (SFE). Perceived instrumentality of grades would therefore, be expected to add a larger force component to F_B in the activity model, while degree of liking of the course would add a smaller force component. It is, no doubt, impossible to ever determine and measure all of the personality and situational factors that would comprise F_B and I_B in the activity model equation.

The activity model, although providing a useful way of picturing the effects of these factors, does little towards determining which situational and individual factors are important, or just how important each variable might be. This is to be determined by empirical research. The present study is an example of such research and indicates that situational variables may be more important than the hypothesized personality variables in determining procrastination behavior.

The preceding discussion has addressed the question about how much each of two types of variables, personality factors and situational

factors, determine one's level of procrastination on a task. A growing number of theorists (Endler, 1973; Mischel, 1975, 1977) believe that this should not be the question that is asked. Endler (1973) calls this a 'pseudo issue'. He states that the more sensible question is "How do individual differences and situations interact in evoking behavior?" (Endler, 1973, p. 289). This is the interactionist point of view that is becoming more widely accepted with personality theorists. Mischel (1977) notes that both environment and traits are important. He thinks that the practice of analyzing and classifying environments may be worthwhile but should not follow the course historically taken by trait theorists, i.e. simply labeling situations much like the trait theorists label personality types. He feels that the "task of naming situations cannot substitute for the job of analyzing how conditions and environments interact with the people in them (Mischel, 1977, p. 250).

Possibly, the more important question to be asked concerning procrastination behavior then, is just how do personality traits and situational factors interact to determine levels of procrastination? To answer such questions, Mischel (1977) and Endler (1973) advocate the use of ANOVAs which utilize both personality and situational variables and the use of the moderator variable concept in analyzing correlational data. Both such strategies were utilized in the present study but with few positive results being found. Achievement motivation (MATS) and Achievement Anxiety (AAT) both appeared as independent variables with task in procrastination time ANOVAs, but no significant differences were found (See Table 2, p. 85, and Table 3, p. 87). It had been expected that both achievement motivation and achievement anxiety would affect

procrastination time differently depending on the nature of the tasks involved. For the tasks used in this study, at least, this is not the case. There were no significant interactions in either ANOVA.

Achievement motivation and locus of control were also studied with respect to their moderating effect between procrastination and other variables of interest. It had been expected that achievement motivation would moderate the relationship between perceived instrumentality and procrastination on Task 3 due to the accentuation effect proposed by Raynor. It was hypothesized that lower third scorers on MATS ($M_{AF} > M_S$) would be less affected by increases in perceived instrumentality than would be upper third scorers on the MATS ($M_S > M_{AF}$). That is, the $M_{AF} > M_S$ group would likely change levels of procrastination less as PI increased than did the $M_S > M_{AF}$ group on Task 3. This relationship was not found. Although increases in perceived instrumentality of grades and the course tended to result in decreases in procrastination, there were no differences in this relationship based on levels of achievement motivation, for Task 3 or for either of the other two tasks. These findings do not pose a serious threat to Raynor's accentuation theory though; it simply means that there is no evidence that it is applicable to procrastination behavior for the present tasks. As mentioned earlier, the high perceived probability of success on these tasks may have prevented the arousal of any motivational forces due to achievement motivation. If that is the case, different levels of achievement motivation would make little difference in determining how perceived instrumentality affects procrastination.

Locus of control was also tested for its effect as a moderator

between achievement motivation and procrastination. It had been predicted that achievement motivation would have a stronger negative correlation with procrastination for internals than for defensive externals (highest on Powerful Other scale). Defensive externals would in turn, have a stronger negative achievement motivation-procrastination correlation than congruent externals (highest on the Chance scale). This expectation was based on previous results which found locus of control to be an important moderator between achievement motivation and other achievement variables (Wolk & Ducette, 1973), as well as on Feather's (1967) contention that perceived control is an important requirement if achievement motivation is to have an effect on academic achievement. This hypothesis and Feather's contention received no support with respect to achievement motivation-procrastination correlations. There were no differences between these correlations for those designated as internals, defensive externals, or congruent externals by either the raw score or standard score designation method. Locus of control was found, though, to be a moderator variable for the relationship between achievement motivation and two other achievement variables, IQ and Score on the First Exam (SFE). Only for those designated as internals were the MATS-IQ and MATS-SFE correlations found to be significant. Those designated as defensive externals and congruent externals had no such significant correlations. Thus, it can be concluded that Feather's theory may have some validity, but it simply does not apply to the relatively unique behavior we call procrastination, at least with respect to the type of achievement tasks used in the present study.

In general, it would appear that interactions between traits and

situations and the use of moderator variables in studying trait-situation correlations are of little value in trying to explain procrastination behavior on achievement tasks. It may well be that procrastination is very much situationally determined; that how long it takes to do an achievement task is mostly dependent on the nature of the task. As Mischel (1977) points out though, the individual still must perceive the task. Therefore, all personality traits and cognitive processes related to that perception will affect how the task is perceived and processed. Therefore, it seems premature to eliminate trait-situation interactions from the search for the causes of procrastination.

A final issue dealt with in the present study was the phenomenological experience of procrastination. One question the present study addressed was the extent to which a behavioral measure of procrastination corresponds to the phenomenological experience of procrastination. The behavioral measure was the self report of when the individual studied for the midterm exam, T_3 . The phenomenological assessment consisted of a self rating of "procrastination in the course" for half of the subjects. In order to get some insight into what the experience of procrastination might involve, the other half of the subjects answered a question concerning the extent they "studied when they should have been studying". One's self assessment of overall procrastination tendencies T_5 was also compared to T_3 . Apparently, the experience of procrastination is somewhat related to the actual behavioral measure of procrastination as assessed with the self report technique. Those who wait until shortly before an exam to read the material and study, do indeed tend to think that they procrastinate. Conceptually then,

a certain portion of what is perceived to be procrastination (T_4QT_1) involves the actual time period or latency between task assignment and the undertaking of the task. This relationship between the behavioral self report measure of procrastination (T_3) and perceived procrastination ratings (T_4QT_1) is not perfect though. The correlation between the two measures ($r = .52$) indicates that approximately 25% of the variability in T_4QT_1 can be accounted for by changes in T_3 . The remainder of the variability in T_4QT_1 must be explained by other sources.

No doubt, some of this variability can be explained by measurement error in T_3 and T_4QT_1 . An additional amount of this variability, though, is probably better explained by differing perceptions of subjects about what constitutes procrastination. For many subjects, a strict time measure of procrastination may not be a valid reflection of the construct "procrastination". It may well be that procrastination involves the extent that people study when they think they should be studying. If a person thinks it is best to start studying two or three days before an exam, then that person may not perceive that procrastination has occurred unless studying does not commence until one day before the exam. Others may feel that they procrastinated even though they began studying quite early in the term. Some indication that this may be the case is provided by the correlation between T_3 and the "studied when I thought I should have been studying" question T_4QT_2 . That correlation ($r = -.48$) indicates that if subjects studied late in the course (high on T_3), then there was a tendency to perceive that they did not study when they thought they should have been studying (low on T_4QT_2). Again, this was not a perfect correlation though,

indicating that some subjects did not experience a direct relationship between actual delays in studying and the perception of studying when they thought they should be studying. It must be concluded that the experience of procrastination is not solely determined by a behavioral indicant of procrastination reflecting levels of time latency between assignment of task and task performance. Part of what may determine the experience of procrastination seems to be related to whether or not people experience some discrepancy between when they studied and when they should have studied. The fact that both T_4QT_1 and T_4QT_2 correlated about equally with T_3 , may also suggest a certain amount of equivalency of the two constructs. Since the correlations are for different samples of T_3 responses, not a lot of confidence can be placed in this conclusion.

Another conclusion about the perception of procrastination relates to whether or not it exists as a consistent personality disposition across situations. Not only did all of the task measures of procrastination correlate significantly with each other, they all correlated with the self rating of overall procrastination as well. Although not exceedingly high (range .19 to .43), the consistency of these correlations indicates that people do tend to be somewhat consistent in their procrastination tendencies across different types of achievement tasks. Furthermore, those who do tend to procrastinate on these tasks, tend also to be the ones who consider themselves to be procrastinators. These results suggest that there may be a somewhat consistent disposition to procrastinate in some people.

Finally, it may be concluded that one's self perception of overall

procrastination is related to both Powerful Other and Chance locus of control scales, as reflected in the step-wise multiple regression best fit model. There is a tendency for the perception of overall procrastination to increase as Chance scale scores increase and decrease as Powerful Other scale scores increase. Overall, procrastination was found to be correlated negatively with Internal scale scores and perceived instrumentality of grades.

What has been learned about the phenomenological experience of procrastination can be summarized quite succinctly. First, the experience of procrastination appears to somewhat correlate with the behavioral self report measure reflecting a time measure of procrastination. Second, since this correlation is not nearly perfect, it seems that the experience of procrastination involves perceptual components, one of which may relate to the extent one perceives that he is studying when he should be studying. Third, there appears to be a behavioral disposition with respect to procrastination that is consistent across different types of achievement tasks. Finally, the perception of one's overall level of procrastination is correlated with several of the personality measures and can best be predicted by a model which includes Powerful Other and Chance locus of control scores.

Future Work

The present study suggests several areas of expansion for the study of procrastination behavior. Of particular interest would be further work into the various situational variables that might affect procrastination on particular tasks. A search for greater situational specificity should be accompanied by further efforts to find out how the various conditions and tasks interact with stable personality

traits to determine behavior. Negative results in one study should not in themselves discourage research into the effects of personality on procrastination.

One possible useful technique would be to try to determine a profile of procrastinators using one of the accepted personality inventories, such as the CPI or 16PF. Overall procrastination could be determined by self and other's ratings and a relationship derived empirically between general procrastination tendencies and personality variables.

One potentially interesting avenue of study might involve how people use procrastination, or the self-perception of procrastination, as a defense mechanism to protect one's self esteem. It might be found, for instance, that some persons procrastinate intentionally so that when they fail they can use procrastination as a justification to save face.

One productive area is the further study of behavioral techniques used to control procrastination. An example of the work already conducted in that area is Ziesat, Rosenthal, and White (1978) study, which indicates that behavior modification techniques may be readily applied to the treatment of problem procrastination behavior.

The area of procrastination behavior is one which has been little studied, yet is an important area which may offer a significant challenge to the dedicated researcher.

APPENDIX A: QUESTIONNAIRE BATTERY AND STUDENTS PLANS QUESTIONNAIRE

The questionnaires which follow were designed to measure your attitudes, opinions, and behaviors concerning certain aspects of your life, academic and otherwise. Please answer each item as accurately as possible. Keep in mind that there are no "right" or "wrong" or "best" answers. These are merely your honest attitudes or opinions. These questionnaires will "in no way" reflect on your grade in this class. They are for research only.

Please remember also that all answers are given in strict confidence. They will be seen only by the researcher. No other individual, not even your professor, will have access to individual questionnaires. To further insure your anonymity, please put only your social security number, not your name, on the test booklet.

If for any reason you still feel you cannot complete the measures, you can stop now or at any time during the testing. Otherwise, please answer all items or the entire battery will not be usable.

Please feel free to ask any question you might have pertaining to the questionnaires or instructions.

Social Security # _____ Class Rank (Freshman, etc.) _____

Estimated Grade Point Average (College) _____ Age _____

Student Plans Questionnaire

1. How important to you is getting a good grade in Introductory Psychology for having your career plans work out? (Circle the number that best applies.)
 - 5 - very important
 - 4 - important
 - 3 - fairly important
 - 2 - not too important
 - 1 - not at all important

2. To what extent do you believe getting a good grade in Introductory Psychology will help you do well in your chosen career?
 - 4 - be a great help
 - 3 - be of some help
 - 2 - be of little help
 - 1 - practically irrelevant

3. How important to you is getting good grades during your college years for having your career plans work out?
 - 5 - very important
 - 4 - important
 - 3 - fairly important
 - 2 - not too important
 - 1 - not at all important

APPENDIX B: MEHRABIAN ACHIEVING TENDENCY SCALE FOR MALES AS IT IS ADMINISTERED TO THE STUDENT

Mehrabian Attitude Scale for Males

Instructions: The following questionnaire of personal attitudes consists of a number of items worded as: "I'd rather do (A) than (B)," such as "I'd rather go swimming than bowling." You are to indicate the extent of your agreement with each item using the scale below. Please note that if you give strong agreement to the statement, "I'd rather do (A) than (B)," this indicates that you prefer (A) much more than (B). If you give strong disagreement to that same statement, this indicates that you prefer (B) much more than (A).

Indicate, for each item, the extent of your agreement or disagreement with that item by entering the appropriate numeral (+4 to -4) in the space provided by each item.

- +4 = very strong agreement
- +3 = strong agreement
- +2 = moderate agreement
- +1 = slight agreement
- 0 = neither agreement nor disagreement
- 1 = slight disagreement
- 2 = moderate disagreement
- 3 = strong disagreement
- 4 = very strong disagreement

1. I worry more about getting a bad grade than I think about getting a good grade. ()
2. I would rather work on a task where I alone am responsible for the final product than one in which many people contribute to the final product. ()
3. I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do. ()
4. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult. ()
5. If I am not good at something I would rather keep struggling to master it than move on to something I may be good at. ()
6. I would rather have a job in which my role is clearly defined by others and my rewards could be higher than average, than a job in which my role is to be defined by me and my rewards are average.()
7. I would prefer a well-written informative book to a good movie. ()
8. I would prefer a job which is important, difficult, and involves a 50 per cent chance of failure to a job which is somewhat important but not difficult. ()

9. I would rather learn fun games that most people know than learn unusual skill games which only a few people would know. ()
10. It is very important for me to do my owrk as well as I can even if it means not getting along well with my co-workers. ()
11. For me, the pain of getting turned down after a job interview is greater than the pleasure of getting hired. ()
12. If I am going to play cards I would rather play a fun game than a difficult thought game. ()
13. I prefer competitive situations in which I have superior ability to those in which everyone involved is about equal in ability.()
14. I think more of the future than of the present and past. ()
15. I am more unhappy about doing something badly than I am happy about doing something well. ()
16. In my spare time I would rather learn a game to develop skill than for recreation. ()
17. I would rather run my own business and face a 50 per cent chance of bankruptcy than work for another firm. ()
18. I would rather take a job in which the starting salary is \$10,000 and could stay that way for some time than a job in which the starting salary is \$5,000 and there is a guarantee that within five years I will be earning more than \$10,000. ()
19. I would rather play in a team game than compete with just one other person. ()
20. The thing that is most important for me about learning to play a musical instrument is being able to play it very well, rather than learning it to have a better time with my friends. ()
21. I prefer multiple-choice questions on exams to essay questions.()
22. I would rather work on commission which is somewhat risky but where I would have the possibility of making more than working on a fixed salary. ()
23. I think that I hate losing more than I love winning. ()
24. I would rather wait one or two years and have my parents buy me one great gift than have them buy me several average gifts over the same period of time. ()
25. If I were able to return to one of two incompleted tasks, I would rather return to the difficult than the easy one. ()
26. I think more about my past accomplishments than about my future goals. ()

APPENDIX C: MEHRABIAN ACHIEVING TENDENCY SCALE FOR FEMALES AS IT IS
ADMINISTERED TO THE STUDENT

Mehrabian Attitude Scale for Females

Instructions: The following questionnaire of personal attitudes consists of a number of items worded as: "I'd rather do (A) than (B)," such as, "I'd rather go swimming than go bowling." You are to indicate the extent of your agreement with each item using the scale below. Please note that if you give strong agreement to the statement, "I'd rather do (A) than (B)," this indicates that you prefer (A) much more than (B). If you give strong disagreement to that same statement, this indicates that you prefer (B) much more than (A).

Indicate, for each item, the extent of your agreement or disagreement with that item by entering the appropriate numeral (+4 to -4) in the space provided by each item.

+4 = very strong agreement
+3 = strong agreement
+2 = moderate agreement
+1 = slight agreement
0 = neither agreement nor disagreement
-1 = slight disagreement
-2 = moderate disagreement
-3 = strong disagreement
-4 = very strong disagreement

1. I think more about getting a good grade than I worry about getting a bad grade. ()
2. I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do. ()
3. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult. ()
4. If I am not good at something I would rather keep struggling to master it than move on to something I may be good at. ()
5. I would rather have a job in which my role is clearly defined by others and my rewards could be higher than average, than a job in which my role is to be defined by me and my rewards are average.()
6. My strongest feelings are aroused more by fear of failure than by hope of success. ()
7. I would prefer a well-written informative book to a good movie. ()
8. I would prefer a job which is important, difficult, and involves a 50 per cent chance of failure to a job which is somewhat important but not difficult. ()

9. I would rather learn fun games that most people know than learn unusual skill games which only a few people would know. ()
10. It is very important for me to do my work as well as I can even if it means not getting along well with my co-workers. ()
11. For me, the pain of getting turned down after a job interview is greater than the pleasure of getting hired. ()
12. If I am going to play cards I would rather play a fun game than a difficult game. ()
13. I prefer competitive situations in which I have superior ability to those in which everyone involved is about equal in ability.()
14. I think more of the future than of the present and past. ()
15. I am more unhappy about doing something badly than I am happy about doing something well. ()
16. I worry more about whether people will praise my work than I do about whether they will criticize it. ()
17. If I had to spend money myself I would rather have an exceptional meal out than spend less and prepare an exceptional meal at home.()
18. I would rather do a paper on my own than take a test. ()
19. I would rather share in the decision-making process of a group than take total responsibility for directing the group's activities.()
20. I would rather try to make new and interesting meals that may turn our badly than make more familiar meals that frequently turn out well. ()
21. I would rather do something I enjoy than do something that I think is worthwhile but not much fun. ()
22. I would rather try to get two or three things done quickly than spend all my time working on one project. ()
23. If I am ill and must stay home, I use the time to relax and recuperate rather than try to read or work. ()
24. If I were rooming with a number of girls and we decided to have a party, I would rather organize the party myself than have one of the others organize it. ()
25. I would rather cook for a couple of gourmet eaters than for a couple who simply have huge appetites. ()
26. I would rather that our women's group be allowed to help organize city projects than be allowed to work on the projects after they have been organized. ()

APPENDIX D: MEHRABIAN ACHIEVING TENDENCY SCALES FOR MALES AND FEMALES:
SCORING INSTRUCTIONS

The (+) and (-) signs following each item indicate the direction of scoring. To compute a total score, first change the sign of the subject's responses on the negative (-) items, then obtain an algebraic sum of all 26 scores. A sample of the scoring details has been provided following this list of items. Of course, in actual use of the tests, the signs for the direction of scoring would be omitted and answer spaces provided for subjects.

Instructions to subjects: The following questionnaire of personal attitudes consists of a number of items worded as: "I'd rather do (A) than (B)," such as, "I'd rather go swimming than go bowling." You are to indicate the extent of your agreement with each item using the scale below. Please note that if you give strong agreement to the statement, "I'd rather do (A) than (B)," this indicates that you prefer (A) much more than (B). If you give strong disagreement to that same statement, this indicates that you prefer (B) much more than (A).

Indicate, for each item, the extent of your agreement or disagreement with that item by entering the appropriate numeral (+4 to -4) in the space provided by each item.

- +4 = very strong agreement
- +3 = strong agreement
- +2 = moderate agreement
- +1 = slight agreement
- 0 = neither agreement or disagreement
- 1 = slight disagreement
- 2 = moderate disagreement
- 3 = strong disagreement
- 4 = very strong disagreement

MALE SCALE

1. I worry more about getting a bad grade than I think about getting a good grade. (-)
2. I would rather work on a task where I alone am responsible for the final product than one in which many people contribute to the final product. (+)
3. I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do. (+)
4. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult. (-)
5. If I am not good at something I would rather keep struggling to master it than move on to something I may be good at. (+)

6. I would rather have a job in which my role is clearly defined by others and my rewards could be higher than average, than a job in which my role is to be defined by me and my rewards are average. (-)
7. I would prefer a well-written informative book to a good movie. (+)
8. I would prefer a job which is important, difficult, and involves a 50 per cent chance of failure to a job which is somewhat important but not difficult. (+)
9. I would rather learn fun games that most people know than learn unusual skill games which only a few people would know. (-)
10. It is very important for me to do my work as well as I can even if it means not getting along well with my co-workers. (+)
11. For me, the pain of getting turned down after a job interview is greater than the pleasure of getting hired. (-)
12. If I am going to play cards I would rather play a fun game than a difficult thought game. (-)
13. I prefer competitive situations in which I have superior ability to those in which everyone involved is about equal in ability. (-)
14. I think more of the future than of the present and past. (+)
15. I am more unhappy about doing something badly than I am happy about doing something well. (-)
16. In my spare time I would rather learn a game to develop skill than for recreation. (+)
17. I would rather run my own business and face a 50 per cent chance of bankruptcy than work for another firm. (+)
18. I would rather take a job in which the starting salary is \$10,000 and could stay that way for some time than a job in which the starting salary is \$5,000 and there is a guarantee that within five years I will be earning more than \$10,000. (-)
19. I would rather play in a team game than compete with just one other person. (-)
20. The thing that is most important for me about learning to play a musical instrument is being able to play it very well, rather than learning it to have a better time with my friends. (+)
21. I prefer multiple-choice questions on exams to essay questions. (-)
22. I would rather work on commission which is somewhat risky but where I would have the possibility of making more than working on a fixed salary. (+)

23. I think that I hate losing more than I love winning. (-)
24. I would rather wait one or two years and have my parents buy me one great gift than have them buy me several average gifts over the same period of time. (+)
25. If I were able to return to one of two incompletd tasks, I would rather return to the difficult than the easy one. (+)
26. I think more about my past accomplishments than about my future goals. (-)

FEMALE SCALE

1. I think more about getting a good grade than I worry about getting a bad grade. (+)
2. I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do. (+)
3. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult. (-)
4. If I am not good at something I would rather keep struggling to master it than move on to something I may be good at. (+)
5. I would rather have a job in which my role is clearly defined by others and my rewards could be higher than average, than a job in which my role is to be defined by me and my rewards are average. (-)
6. My strongest feelings are aroused more by fear of failure than by hope of success. (-)
7. I would prefer a well-written informative book to a good movie. (+)
8. I would prefer a job which is important, difficult, and involves a 50 per cent chance of failure to a job which is somewhat important but not difficult. (+)
9. I would rather learn fun games that most people know than learn unusual skill games which only a few people would know. (-)
10. It is very important for me to do my work as well as I can even if it means not getting along well with my co-workers. (+)
11. For me, the pain of getting turned down after a job interview is greater than the pleasure of getting hired. (-)
12. If I am going to play cards I would rather play a fun game than a difficult game. (-)

13. I prefer competitive situations in which I have superior ability to those in which everyone involved is about equal in ability. (-)
14. I think more of the future than of the present and past. (+)
15. I am more unhappy about doing something badly than I am happy about doing something well. (-)
16. I worry more about whether people will praise my work than I do about whether they will criticize it. (+)
17. If I had to spend the money myself I would rather have an exceptional meal out than spend less and prepare an exceptional meal at home. (-)
18. I would rather do a paper on my own than take a test. (+)
19. I would rather share in the decision-making process of a group than take total responsibility for directing the group's activities. (-)
20. I would rather try to make new and interesting meals that may turn out badly than make more familiar meals that frequently turn out well. (+)
21. I would rather do something I enjoy than do something that I think is worthwhile but not much fun. (-)
22. I would rather try to get two or three things done quickly than spend all my time working on one project. (-)
23. If I am ill and must stay home, I use the time to relax and recuperate rather than try to read or work. (-)
24. If I were rooming with a number of girls and we decided to have a party, I would rather organize the party myself than have one of the others organize it. (+)
25. I would rather cook for a couple of gourmet eaters than for a couple who simply have huge appetites. (+)
26. I would rather that our women's group be allowed to help organize city projects than be allowed to work on the projects after they have been organized. (+)

4. The more important the examination, the less well I seem to do.

Always Never
 1 2 3 4 5

5. During exams or tests, I block on questions to which I know the answers, even though I might remember them as soon as the exam is over.

This always happens to me. I never block on questions to which I know the answers.
 1 2 3 4 5

6. I find that my mind goes blank at the beginning of an exam, and it takes me a few minutes before I can function.

I almost always blank out at first. I never blank out at first.
 1 2 3 4 5

7. I am so tired from worrying about an exam, that I find I almost don't care how well I do by the time I start the test.

I never feel this way. I almost always feel this way.
 1 2 3 4 5

8. Time pressure on an exam causes me to do worse than the rest of the group under similar conditions.

Time pressure always seems to make me do worse on an exam than others. Time pressure never seems to make me do worse on an exam than others.
 1 2 3 4 5

9. I find myself reading exam questions without understanding them, and I must go back over them so that they will make sense.

Never Almost always
 1 2 3 4 5

10. When I don't do well on a difficult item at the beginning of an exam, it tends to upset me so that I block on even easy questions later on.

This never happens to me. This almost always happens to me.
 1 2 3 4 5

APPENDIX F: ALPERT'S AND HABER'S ACHIEVEMENT ANXIETY TEST (AAT-):
 DEBILITATING ANXIETY SCALE:
 SCORING INSTRUCTIONS AND ITEM SCORING DESIGNATIONS

Each statement on the AAT- is scored on a five point scale according to the amount of agreement. For those statements designated by a plus (+) sign below, a high score (towards the 5 end of the scale) indicates a high degree of anxiety. These scale scores are totaled as they appear. For those statements designated by a negative or minus (-) sign below, a high score indicates a low degree of anxiety. These scale scores are reversed (5 becomes 1, 4 becomes 2, 3 = 3) before they are totaled. Therefore, the range of the test is 10 - 50 with a high score indicating a high degree of debilitating anxiety and a low score, a low degree of debilitating anxiety.

1. Nervousness while taking an exam or test hinders me from doing well. (-)

Always Never
 1 2 3 4 5

2. In a course where I have been doing poorly, my fear of a bad grade cuts down my efficiency. (+)

Never Always
 1 2 3 4 5

3. When I am poorly prepared for an exam or test, I get upset, and do less well than even my restricted knowledge should allow. (+)

This never happens to me. This practically always happens to me.
 1 2 3 4 5

4. The more important the examination, the less well I seem to do. (-)

Always Never
 1 2 3 4 5

5. During exams or tests, I block on questions to which I know the answers, even though I might remember them as soon as the exam is over. (-)

This always happens to me. I never block on questions to which I know the answers.
 1 2 3 4 5

6. I find that my mind goes blank at the beginning of an exam, and it takes me a few minutes before I can function. (-)

I almost always blank out at first. I never blank out at first.

1 2 3 4 5

7. I am so tired from worrying about an exam, that I find I almost don't care how well I do by the time I start the test.(+)

I never feel this way. I almost always feel this way.

1 2 3 4 5

8. Time pressure on an exam causes me to do worse than the rest of the group under similar conditions.(-)

Time pressure always seems to make me do worse on an exam than others. Time pressure never seems to make me do worse on an exam than others.

9. I find myself reading exam questions without understanding them, and I must go back over them so that they will make sense.(+)

Never Almost always

1 2 3 4 5

10. When I don't do well on a difficult item at the beginning of an exam, it tends to upset me so that I block on even easy questions later on. (+)

This never happens to me. This almost always happens to me.

1 2 3 4 5

APPENDIX G: LEVINSON'S INTERNAL, POWERFUL OTHERS, AND CHANCE
LOCUS OF CONTROL SCALE
AS PRESENTED TO THE STUDENTS

LEVINSON'S ATTITUDE SCALE

The following questionnaire of personal attitudes consists of a number of items stated in an affirmative manner. You are to indicate the extent of your agreement with each item using a 0 to 6 scale. Please note that you are to use only the whole numbers 0, 1, 2, 3, 4, 5, and 6 to designate your degree of agreement with the statement as it is worded.

Indicate for each item the extent of your agreement with that item by entering the appropriate numeral (0 to 6) in the space provided. Numeral 0 indicates absolutely no amount of agreement with the item as stated; numeral 6 indicates the most agreement; numerals 1 through 5 indicate increasing intermediate levels of agreement.

1. Whether or not I get to be a leader depends mostly on my ability. ()
2. To a great extent my life is controlled by accidental happenings. ()
3. I feel like what happens in my life is mostly determined by powerful people. ()
4. Whether or not I get into a car accident depends mostly on how good a driver I am. ()
5. When I make plans, I am almost certain to make them work. ()
6. Often there is no chance of protecting my personal interest from bad luck happenings. ()
7. When I get what I want, it's usually because I'm lucky. ()
8. Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power. ()
9. How many friends I have depends on how nice a person I am. ()
10. I have often found that what is going to happen will happen. ()
11. My life is chiefly controlled by powerful others. ()
12. Whether or not I get into a car accident is mostly a matter of luck. ()

13. People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups. ()
14. It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.()
15. Getting what I want requires pleasing those people above me.()
16. Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time. ()
17. If important people were to decide they didn't like me, I probably wouldn't make many friends. ()
18. I can pretty much determine what will happen in my life. ()
19. I am usually able to protect my personal interests. ()
20. Whether or not I get into a car accident depends mostly on the other driver. ()
21. When I get what I want, it's usually because I worked hard for it. ()
22. In order to have my plans work, I make sure that they fit in with the desires of people who have power over me. ()
23. My life is determined by my own actions. ()
24. It's chiefly a matter of fate whether or not I have a few friends or many friends. ()

APPENDIX H: LEVINSON'S INTERNAL, POWERFUL OTHERS, AND CHANCE LOCUS OF CONTROL SCALE ITEMS, BROKEN DOWN ACCORDING TO SCALES ON WHICH THEY APPEAR.

Scoring Technique: Each item is marked by the student according to the extent he agrees with the item. The items are rated on a 0-6 Likert-type scale with 0 designating the least agreement and 6 the most agreement. The individual thus receives a score (ranging from 0-48) on all three scales, each of which has been determined to be conceptually pure and independent (Levinson & Miller, 1976; Levinson, 1974, 1973).

INTERNAL, POWERFUL OTHERS, AND CHANCE LOCUS OF CONTROL SCALE ITEMS

Internal scale

1. Whether or not I get to be a leader depends mostly on my ability.
4. Whether or not I get into a car accident depends mostly on how good a driver I am.
5. When I make plans, I am almost certain to make them work.
9. How many friends I have depends on how nice a person I am.
18. I can pretty much determine what will happen in my life.
19. I am usually able to protect my personal interests.
21. When I get what I want, it's usually because I worked hard for it.
23. My life is determined by my own actions.

Powerful others scale

3. I feel like what happens in my life is mostly determined by powerful people.
8. Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power.
11. My life is chiefly controlled by powerful others.
13. People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.
15. Getting what I want requires pleasing those people above me.
17. If important people were to decide they didn't like me, I probably wouldn't make many friends.

20. Whether or not I get into a car accident depends mostly on the other driver.
22. In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.

Chance scale

2. To a great extent my life is controlled by accidental happenings.
6. Often there is no chance of protecting my personal interest from bad luck happenings.
7. When I get what I want, it's usually because I'm lucky.
10. I have often found that what is going to happen will happen.
12. Whether or not I get into a car accident is mostly a matter of luck.
14. It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.
16. Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.
24. It's chiefly a matter of fate whether or not I have a few friends or many friends.

APPENDIX I: STUDY QUESTIONNAIRE: ALL SUBJECTS ANSWER THE FIRST PAGE WHILE HALF OF THE SUBJECTS ANSWER THE SECOND PAGE AND THE OTHER HALF THE THIRD PAGE.

Study Questionnaire

Social Security # _____

The following statements refer to your study behavior during the first six weeks of this term with respect only to this course in Introductory Psychology. In Section A, please put a check mark beside the statement that best describes your behavior with respect to the reading of the assignments from the textbook. In Section B, put a check mark beside the statement that best describes your behavior with respect to studying the assigned readings and classroom notes for the first exam. You must put a check mark in front of one and only one statement in Section A and one and only one statement in Section B to successfully complete this questionnaire. Please read carefully all of the statements in Section A before making your choice for that Section. Do the same for Section B.

Please answer these questions as accurately as possible. Remember, your answers in no way affect your grade, nor will your instructor see these questions. They are to be used for research purposes only.

Section A. The reading of the assignments in the text.

- I began reading my assignments at the beginning of the term and kept up with them consistently throughout the term.
- I began reading my assignments at the beginning of the term, quit reading after a while, then caught up and completed all before the first exam.
- I began reading my assignments at the beginning of the term, quit reading, and then never did complete all of the assignments.
- I did not read my assignments at the beginning of the term, but then gradually caught up and read all before the exam.
- I did not read my assignments at the beginning of the term, but read gradually until I completed "almost all" before the exam.
- I did not read my assignments at all in the beginning of the term, and then read about half of them or less, overall.
- I started reading my assignments between 1 and 2 weeks before the exam and completed all before the exam.
- I started reading my assignments 7 days or less before the exam and completed all before the exam.
- I started reading my assignments between 1 and 2 weeks before the exam but did not complete all of them before the exam.
- I started reading my assignments 7 days or less before the exam, but did not complete all of them before the exam.
- I read none, or almost none, of my assignments during the term.

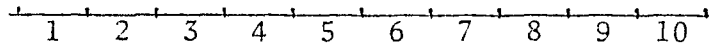
Section B: Studying for the exam (refers to the reviewing of whatever assignments you had completed and/or your lecture notes.)

I began studying for the first exam . . .

- _____ on the day of the exam.
 _____ 1 day before the exam.
 _____ 2 days before the exam.
 _____ 3 or 4 days before the exam.
 _____ 5 to 7 days before the exam.
 _____ 8 days to 2 weeks before the exam.

The next question refers to your procrastination behavior for this course with respect to both the reading of assignments and studying for the exam. (To procrastinate means to put off; postpone; delay) You are to rate yourself with respect to overall procrastination behavior for this course. Put a check mark on the line above one of the numbers at a point that best reflects your level of procrastination.

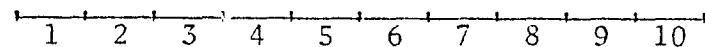
I did not procrastinate at all in this course, this term.



I procrastinated an extreme amount in this course, this term.

The final question refers to your procrastination behavior overall or in general - the extent to which you tend to procrastinate in most endeavors. You are to rate yourself as a procrastinator in general. Put a check mark on the line above one of the numbers at a point that best reflects your overall procrastination tendency.

I almost never procrastinate.



I almost always procrastinate.

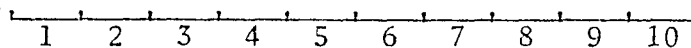
Section B: Studying for the exam (refers to the reviewing of whatever assignments you had completed and/or your lecture notes.)

I began studying for the first exam . . .

- _____ on the day of the exam.
 _____ 1 day before the exam.
 _____ 2 days before the exam.
 _____ 3 or 4 days before the exam.
 _____ 5 to 7 days before the exam.
 _____ 8 days to 2 weeks before the exam.

The next question refers to the extent to which you studied when you thought you should have been studying in this course with respect to both text assignments and studying for the first exam. Put a check mark on the line above one of the numbers at a point that best reflects the extent to which you studied when you thought you should have studied in this course.

With respect to this course, I did not study at all when I thought I should have been studying.

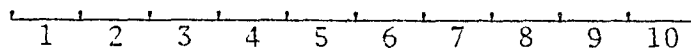


With respect to this course, I studied almost always when I thought I should have been studying.

The final question refers to your procrastination behavior overall or in general - the extent to which you tend to procrastinate in most endeavors. (To procrastinate means to put off; postpone; delay) You are to rate yourself as a procrastinator in general.

Put a check mark on the line above one of the numbers at a point that best reflects your overall procrastination tendency.

I almost never procrastinate.



I almost always procrastinate.

Appendix J

Analyses of Variance of Procrastination
as a Function of Locus of
Control as Designated by Both
Raw Score and Normalized Score Methods

Table 1
 Analysis of Variance of Procrastination Time
 as a Function of LC Type on Task 1

Source	df	ss	MS	F	P
LC Type	2	13.99	7.00	.22	NS
Error	167	5350.86	32.04		
Corrected Total	169	5364.85			

Table 2
 Analysis of Variance of Procrastination Time
 as a Function of LC Type on Task 2

Source	df	ss	MS	F	P
LC Type	2	34.33	17.16	.67	NS
Error	172	4407.81	25.63		
Corrected Total	174	4442.14			

Table 3
 Analysis of Variance of Procrastination Time
 as a Function of LC Type on Task 3

Source	df	ss	MS	F	P
LC Type	2	.09	.05	.02	NS
Error	190	494.86	2.60		
Corrected Total	192	494.95			

Table 4

Analysis of Variance of Procrastination Time
as a Function of LC Type Normalized on Task 1

Source	df	ss	MS	F	P
LC Type N	2	13.77	6.88	.21	NS
Error	167	5351.08	32.04		
Corrected Total	169	5364.85			

Table 5

Analysis of Variance of Procrastination Time
as a Function of LC Type Normalized on Task 2

Source	df	ss	MS	F	P
LC Type N	2	67.41	33.71	1.33	NS
Error	172	4374.72	25.45		
Corrected Total	174	4442.14			

Table 6

Analysis of Variance of Procrastination Time
as a Function of LC Type Normalized on Task 5

Source	df	ss	MS	F	P
LC Type N	2	3.39	1.69	.65	NS
Error	190	491.57	2.59		
Corrected Total	192	494.95			

Appendix K

Chi Square Analyses Comparing
Locus of Control Type (Both Raw Score and Normalized Score
Designations) With Attendance at
Task 1 and Task 2

Table 1

Chi Square Analysis for Task 1:

Locus of Control Type Versus Performance of Task

Locus of Control Designation	Performance of Task 1		Total N
	No	Yes	
LCI	27	148	175
LCPO	0	8	8
LCC	2	16	16
Total N	29	170	199

The Chi Square test could not be utilized on this data due to violation of the rule requiring a minimum of 5 subjects in each cell. Main generalization from this data is that the vast majority of subjects performed Task 1. There appears to be no difference in attendance based on locus of control designation.

Table 2

Chi Square Analysis for Task 2:

Locus of Control Type Versus Performance of Task

Locus of Control Designation	Performance of Task 2		Total N
	No	Yes	
LCI	19	156	175
LCPO	2	6	8
LCC	3	13	16
Total N	24	175	199

The Chi Square test could not be utilized on this data due to violation of the rule requiring a minimum of 5 subjects in each cell. Main generalization from this data is that the vast majority of subjects performed Task 2. There appears to be no difference in attendance based on locus of control designation.

Table 3

Chi Square Analysis for Task 1:

Normalized Locus of Control Type Versus Performance of Task

Locus of Control Designation	Performance of Task 1		Total N
	No	Yes	
NLCI	14	64	78
NLCPO	7	48	55
NLCC	8	58	66
Total N	29	170	199

$$\chi^2 = 1.183 \quad df = 2 \quad \chi^2_{\alpha=.05, df=2} = 5.99$$

. . . No significant difference between cell values and expected cell values. Locus of Control designation does not significantly affect attendance at Task 1.

Table 4

Chi Square Analysis for Task 2:

Normalized Locus of Control Type Versus Performance of Task

Locus of Control Designation	Performance of Task 2		Total N
	No	Yes	
NLCI	10	68	78
NLCPO	7	48	55
NLCC	7	59	66
Total N	24	175	199

$$\chi^2 = 0.19 \quad df = 2 \quad \chi^2_{\alpha=.05, df=2} = 5.99$$

. . . No significant difference between cell values and expected cell values. Locus of Control designation does not significantly affect attendance at Task 2.

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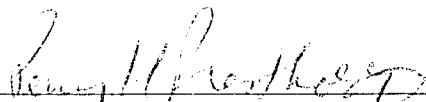
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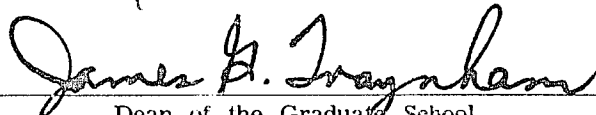
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Major Field: Psychology

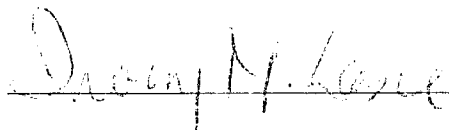
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Correlates of Procrastination Behavior for Achievement
Tasks

Approved:

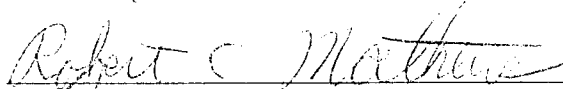

Major Professor and Chairman

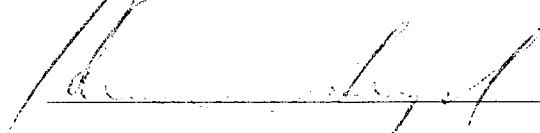

Dean of the Graduate School

EXAMINING COMMITTEE:









Date of Examination:

February 21, 1979
