

1985

An experiment comparing the effects of two techniques that elicit the relaxation response on stress reduction and cognitive functioning in first year law students at Southern Illinois University at Carbondale

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**AN EXPERIMENT COMPARING THE EFFECTS OF TWO TECHNIQUES THAT
ELICIT THE RELAXATION RESPONSE ON STRESS REDUCTION AND
COGNITIVE FUNCTIONING IN FIRST YEAR LAW STUDENTS AT SOUTHERN
ILLINOIS UNIVERSITY AT CARBONDALE**

The College of William and Mary in Virginia

Ed.D. 1985

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THAT ELICIT THE RELAXATION RESPONSE
ON STRESS REDUCTION AND COGNITIVE FUNCTIONING
IN FIRST YEAR LAW STUDENTS
AT SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE

A Dissertation
Presented to
The Faculty of the School of Education
The College of William and Mary in Virginia

In Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education


by
Yvonne Robena Siddall
April 1985


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Chapter I. Introduction

a. Statement of the Problem: Historical and Current

Attempts to control stress among students and increase learning have been going on since the Chinese dynasties sponsored competitive exams in the 6th century. In modern times attempts to help students first began to center around the underachievers. Various study skills programs were developed to help those students who had the intellectual ability but lacked the skills or confidence to make effective use of it. Until recently, little attention was focused on the average student, even less on the overachiever. For the student interested in a professional career being an above average student has been a necessity with the emphasis not just on passing but passing with a competitive edge. Entrance into professional schools is limited and these students are vulnerable to the stresses which accompany the competition for admittance. Once enrolled, competition does not always cease. Certainly the grueling curriculum of graduate programs is, in itself, stressful (Hurley 1983).

As part of the process of becoming a professional, graduate schools seek to give students a specified, time-honored body of knowledge, unique to itself and complex enough to prohibit all but the select few admitted to its halls to practice its art and skills. This is by design and tradition difficult. The field of knowledge is large and the time given to acquiring it limited.

In the past professional schools have left dealing with the stress of the academic curriculum up to the particular devices of each individual student. That approach is rapidly changing. Programs like the one at the State University of New York at Buffalo are springing up all over the country to help students deal with the anxiety that might be affecting academic and personal functioning (Nigro 1981). While this program and many others is geared to the needs of a wide variety of students both undergraduate and graduate, others are being implemented within the professional schools themselves. Medical schools are in the forefront of this effort. These schools are seeing the need for stress management. The Eastern Virginia Medical School in Norfolk, Virginia, has begun offering seminars, retreats and workshops to aid both students and faculty in coping with the stress inherent in acquiring much knowledge over a relatively short period of time (Parks et.al. 1979 , Seif et.al. 1980). Other medical schools such as the one associated with Southern Illinois University at Carbondale are making conscious efforts to help students with individualized programs (Robinson 1983).

Perhaps this movement has occurred in medical schools first because physicians are more aware of the repercussions of stress on the mental and physical functioning of the body than others. Cannon identified the need for doctors to recognize

the impact of stress in 1928 (Mason 1975). There has certainly been more frequent mention of stress among medical students in the medical education literature over the last 20 years (Heins et.al. 1983). Perhaps it is also because medical school classes are relatively small in comparison to some other professional schools such as law schools. Even here, the need is beginning to be recognized. A 1957 study comparing law and medical students found law students scored higher on a scale of general anxiety. A follow-up study 25 years later showed a similar finding (Heins et.al. 1983). Clearly something needs to be done. How to organize and implement a program for 100 plus students is a large task, however. Which methods to use, how to implement them on a large scale within a time period that does not cause the study of the professional topic to suffer are all problems to be overcome.

Research into efforts to reduce the stress of students indicates several areas for further investigation. Stress in excessive amounts is a hinderance to learning. There is little disagreement on that (Knox 1977, Warburton, 1979, 1979, Johnson & Sarason 1979, Drum 1980, Johnson & Hartwein 1980, Kaiser & Polczunski 1982). Reducing the stress of the learning environment is difficult to achieve, however, for what may be perceived to be stressful to one may not be stressful to another, may indeed be helpful. Therefore, changing the way

students perceive stress and react to it has been one area of endeavor (Drum 1980). Various methods have been utilized to accomplish this, among them: desensitization, biofeedback, meditation, progressive relaxation techniques, and hypnosis. The present study will deal with three of these methods, meditation, progressive relaxation, and self-hypnosis.

As for the second desire of students to increase learning, investigations have been made into pairing learning styles of students with compatible teaching techniques, positive imaging of successful learning, and suggestions given during hypnotic trance. This study will concern itself with the latter technique.

b. Need for the Study

Stress reduction is receiving a great deal of emphasis today throughout our society. Academics have never adhered to the "ivory tower" concept that stress is absent from academe where all is supposedly peaceful contemplation. Swogger says that the process of education itself is stressful for it is a process of questioning, challenge, conflict and change (Swogger 1981). Now researchers are beginning to document the problems of stress among college students (Fessel 1962, Johnson & Sarason 1979, Parks et.al. 1979, Self et.al. 1980, Altmaier & Woodward 1981, Deffenbacher and Michaels 1981, Nigro 1981). The sheer numbers of students and the variety of disciplines make this task a formidable one. It is difficult to do research with this group because of the many different courses of study that

students pursue and their differences in resources, both personal and social. The variables are so great that meaningful conclusions are almost impossible. Moreover, the variety of techniques used to reduce stress compounds the problem. Dr. Alvin Shapiro (1978) noted, "Much basic and clinical research is needed to delineate the mechanisms whereby techniques such as biofeedback, relaxation, assertive training etc. lead to reductions in blood pressure, and to determine the duration of these effects outside the laboratory..."

(italics mine). He could just as well have been speaking about other indicators of stress such as insomnia, behavior changes, or poor work performance and grades. Knox(1977) has stated that high levels of stress and anxiety reduce awareness, learning, adaptability, flexibility and growth.

Stress in graduate students is particularly great given the vast amount of information and the limited time available to acquire it. Warburton("Processing of Information" 1979) says that "... stress responses will increase in direct proportion to the amount of information to be processed per unit time with the largest responses being produced by extreme information overload."

This simple intensity model does not account for all stresses.

Distribution of events that contribute to stress as well as their frequency must also be taken into account. These variables can be dealt with and analyzed only when a group of students are all undergoing the same program of study and where the body of information and the time for acquiring it are the same for each person.

Among the various professional education programs only law and medicine require students to take the same courses, and even in these only during the first year. Harvey Weinstein of Stanford Medical School has said in reference to law school, "In any profession, the learning process may result in significant amounts of stress on the student, sometimes with catastrophic results. In no profession is this more true than that of the law."

Karl Llewellyn is quoted by Weinstein as saying, "The hardest job of the first year is to lop off your common sense, to knock your ethics into temporary anesthesia; your view of social policy, your sense of justice--to knock these out of you along with woozy thinking."

Weinstein outlines two principles that have developed over the years for teaching the law.

1. The Case Method developed by Langdel at Harvard in the 19th century where legal principles are learned through the examination of leading precedents.

2. More famous is the second principle--learning by the Socratic Method. This method is designed to teach large numbers of students in a cost-effective manner and yet still permit the teacher to interact very intensively with individual students. This method was made famous in "The Paper Chase" television series.

While the Socratic Method is modified in some law schools, it continues as a major tradition in others and in all the pressure to talk and think like a lawyer everywhere persists (Weinstein 1982).

This process has the effect of a "Deformation Professionnelle" says James B. Taylor. Taylor quotes Dr. Wilber Moore who defines "Deformation Professionnelle" as "the possible distortions of character that derive from participation in the world of work." Taylor continues, that it is generally accepted that law school's impact on lawyers or its "deformation professionnelle" rests upon the following:

1. There are certain procedures of legal education that produce an uncommonly high degree of stress in students.
2. This high degree of stress results in students adopting typical and shared kinds of attitudes, behaviors, values and traits as ways to reduce anxiety.
3. These attitudes, behaviors, values and traits are personally or socially undesirable and may be

inimical to the practice of law.

4. Such pernicious attitudes, behaviors, values etc., are in part adopted due to faculty transmission by precept or example.

Taylor goes on to say that it is also generally agreed that emotional stress is high in law school and especially high in the first year. This last he says is not entirely supported by "objective findings."

He says that most discussions of law school cite the "Socratic Method" as the major cause of student stress. This is not the only culprit, others are the disappointed expectation that the law will provide a source of certainty, predictability and order; students inability to adjust to the emphasis on analytical reasoning; the separation of legal training from the reality of everyday practice; the highly competitive and adversarial nature of law school, and the firm ranking determined quickly and more-or-less irretrievably by the first year grade point average. First year grades generally determine the status and rewards of the law student for it is these which decide who makes the law review, gets summer employment and research assistant positions.

Beyond those factors already mentioned, the work requirements of first year law can seem almost overwhelming. Not only is there a great volume of work, it must be digested in a

new way. Learning to "think like a lawyer" poses a cognitive dilemma for many law students because their previous education has not prepared them for inductive analysis. Students do not always understand this special demand. Patton has said, " The student who earned higher grades seemed to grasp quite early that there was a process or form involved as well as content to be learned and that, as a potential lawyer, he was being asked therefore how to define a situation in such a way that it is taken seriously by others and is capable of defense."

Class ranking can have a tremendous impact. Those who do not make law review are defined as "second-class citizens". This ranking is seen as frozen and irrevocable and all that remains is adjusting to it. Learning to tolerate second class citizenship is a dilemma. Some students come to downgrade effort or merit or both. For some emphasis in the second and third years shift from the importance of law school to the practice of law as summer internships are allocated higher priorities. For the student who almost, but not quite, made law review the dilemma may be even more stressful. There is less justification for downgrading effort and merit or to identify more with doing rather than thinking.

By the second year many of the first year problems have been resolved. Survival is no longer a problem and class status

no longer ambiguous. The socratic method, while still stressful is now manageable. There is a certain self-confidence that comes from sheer survival.

There is no clear proof that the stress of law school is greater than the stress of other professional education. There is no clear proof that personality changes in law students really exist and certainly no proof that they arise as a result of stress. Even so evidence does support the view that legal training is stressful. It might even be concluded that the effects of law school stress play a useful part in preparing the law student for a career that is occasionally anxiety arousing and which may contain distasteful elements. The socratic method may prepare the lawyer for the cool battle of wills that is required by the adversarial system in the same way that the jousts in the age of chivalry prepared knights for the carnage of battle or the dissecting room forces the beginning medical student to suppress and conquer his emotional reactions to bodily violation. It may even be argued that separation of students by early and irrevocable assignment to a law review "elite" may simply reflect the larger social system. If these processes stunt individuality and personal growth, as they undeniably do, says Taylor, then railing against them will not change the social realities that gave them root. (Taylor 1975).

Stevens has pointed out the paucity of research on the effects that law school has on law students. In his 1973 article in the Virginia Law Review he says there is a lack of basic data on the actual impact that law school has on students (Stevens 1973).

Experiments under actual academic conditions that seek to compare techniques, as Shapiro recommended have been tried only on a small scale and generally in regard to test anxiety with undergraduate psychology classes. A study involving students at a graduate level comparing two techniques of stress reduction, one using motivational statements and one not, has not yet been attempted. Such a study would add to our knowledge of stress and begin to help in sorting out how it can be most effectively utilized in learning situations. In addition, it would add to the small body of knowledge we have regarding the use of hypnosis as a vehicle for the increased intellectual efficiency of students. McCord et.al. (1981) have noted that very little research has been done in this area.

Gilbert and Barber(1972) have remarked that among the studies done using hypnosis to increase cognitive performance only a small number used more than one cognitive task and only two that they reviewed used tasks of increasing difficulty. This study will use subjects engaged in very complex tasks of comprehension and retention under conditions of high stress. Among the questions that Gilbert and Barber felt needed to be

answered were: "Does a hypnotic induction procedure given together with motivational suggestions produce heightened performance on one or more types of cognitive tasks?" and "Do Ss who differ in level of suggestibility show different degrees of enhanced performance on one or more types of cognitive tasks when given motivational suggestions alone, hypnotic induction alone or hypnotic induction together with motivational suggestions."

This study will attempt to answer the first and last of these concerns.

The benefits from this work will be an increase in knowledge of how stress affects law school students, which of the two experimental treatments, if either, work in reducing stress, and whether decreased stress results in better academic performance. To reduce all stress would probably not be helpful, since a certain amount produces the motivational factors that make students study and prepare for each day's classes (Drum 1980, Kaiser & Polczynski 1982). Many law school classes are confrontational by their very nature and stress is a natural part of the classroom work. Students are called upon at random and asked to explain a point of law. Each student must be prepared for every class every day since no one knows who will be called upon (Margolick 1983). These oral examinations are given in front of peers, and students often end up feeling

inadequate and exposed (Hopson 1983). Given this method of learning by confrontation and exposition, stress is an inherent part of the academic efforts in class. As long as this method of instruction is used in law schools, eliminating stress is not possible. Reducing it may be possible. If stress reduction is successful, then the participants will see direct physical benefits based upon the work of Benson (1974, 75, 76), Brod (1964), Fessel (1962), Johnson (1979), Selye (1979), Wallace et.al. (1971), and Warburton (1979, 1979), all of whom documented the effects of stress on the body.

c. Definition of Terms

1. Stress. Stress will be used in the context of an engineering concept of forces or stimuli which require an adjustment by the organism. These forces may be external such as environmental stimuli (extremes of temperature, nutrition, etc.) or internal or intrapsychic (perceptions or the individual, emotions, adreno-cortical activity etc.) (Mason 1975, Benson 1976). It is not used as the organism's response to stimuli.
2. Interruption Theory. This theory says that stress occurs when some organized action or thought process is interrupted (Mandler 1979), Warburton "Processing Information 1975). This interruption then requires the organism to make some adjustment.
3. Hypnosis. Hypnosis is the technique(s) whereby an operator with the consent of the subject, attempts to induce a trance state through the use of conventional procedures such as eye

fixation or other immobilization suggestions, suggestions of relaxation or sleep, and a fairly monotonous flow of talk(Hilgard 1973).

4. Trance. A state of altered consciousness usually accompanied by marked relaxation but which does not include unconsciousness, deep sleep or surgical anesthesia, and which features a continuation of certain aspects of wakeful, integrative, coordinated and adaptive behavior of the individual personality. The individual in trance is highly suggestible so that certain phenomena such as the absence of pain to normally painful stimuli, hallucinations, age regressions, post-hypnotic amnesia and performance of hypnotic acts to a pre-established signal can be observed(Weitzenhoffer 1961, Hilgard 1973).

5. Relaxation Response. The body's analog to the fight-or-flight response. A naturally occurring hypo-metabolic state characterized by a decrease in respiration rate and oxygen consumption, and an increase in alpha brain wave activity (Wallace et.al, 1971, Benson 1975, 1976, Davis 1980).

6. Socratic Method. A method of teaching developed by Socrates which features a one-on-one exchange between teacher and pupil so as to draw out answers from the pupil. As it has been developed by Langdell and others this process is designed not to supply answers as much as to raise questions and enable the student

to analyze problems from more than one perspective.

7. Case Study Method. A method by which legal issues are examined by the process of reviewing appellate court decisions. It is a process which illustrates how bodies of legal rules are built up in an incremental way and how they evolve through the process of litigation (Johnston 1970).

8. "Deformation Professionnelle": Distortions of character whose origin is in participation in the world of work is called "Deformation Professionnelle" (Taylor 1975).

d. Sample and Data Gathering Procedures.

The sample consists of 29 law students from the first year class of Southern Illinois University at Carbondale. Ages range from 22-42 years of age with approximately 70% being male and 30% being female. Most are middle or upper middle class students of high academic achievement.

Data was collected by means of a general questionnaire, the Tennessee Self Concept Scale, the Harvard Group Scale of Hypnotic Susceptibility, the General Well Being Schedule and academic measures such as undergraduate grade point average, the Law School Admissions Test Score (LSAT), and first and second semester grade point average.

e. Limitations.

The limitations of this study are that it will not be generalizable to the entire population of law school students. Different law schools use different methods of instruction. The Southern Illinois University at Carbondale Law School uses

the case study method with a modified Socratic method in most classes. That is, students are called upon at random and asked to explain a point of law and substantiate it. While this is very stressful, professors for the most part, do not seek to exacerbate this process by belittling, attacking personally, or otherwise humiliating the student.

f. General Hypotheses

1. Law School students will be able to lower their anxiety levels using the Benson relaxation technique or the self-hypnosis technique from the beginning of the second term to the end of the term.

2. Those students in the relaxation and self-hypnosis groups will show improved academic performance as compared to a no-treatment control group.

3. The self-hypnosis group with its paired motivational suggestions will show improvement in academic performance over both the relaxation and control groups.

e. Theoretical Rationale

The models of Cannon, Benson and others in regard to stress as an engineering concept will be used along with the Interruption Theory to explain that part of cognitive stress which is not explained by physical or emotional stimuli.

In terms of relaxation the theoretical and clinical work of Hess, who discovered the hypnogenic effects of diencephalon stimulation in cats and subsequent observations of this

phenomena in humans by Benson and Wallace will be relied upon for support. Edmonston has pointed out the congruence of the work of Hess with that of later researchers like Benson so that each reinforces the others findings that animals do exhibit both a fight-or-flight response and a relaxation response.

The concepts of Hilgard will be utilized with regard to hypnosis, as an appropriate moderation from the extremes of Barber who nearly denies the existence of hypnosis as anything unique or measurable, and the humanists who tend to deny the need to measure or quantify anything and rely entirely upon the subjective experience reported by their clients.

Chapter II. Review of the Literature

a. Law School Education

The President of Harvard, Derek C. Bok, and formerly Dean of its Law School issued a sweeping indictment of law schools in the U.S. in his annual report to the University's Board of Overseers. Bok said American law schools have done "surprizing little" to improve the American system of justice by training students, "more for conflict than for the gentler arts of reconciliation and accomodation." He went on to say that law schools had helped make law school education, "the most expensive and inefficient in the world."

There are about 128,000 students enrolled in law schools today. In the last 50 years law schools have been assailed repeatedly for the "narrowness of their focus and the tedium of their teaching methods." Mr Bok's criticism is not new and noteworthy only perhaps because Harvard originated and to many, helps to perpetuate the very model of legal education now under attack.

Traditionally law students have been taught by analyzing appellate court decisions in order to learn both legal principles and reasoning. Supporters of this approach say that in addition to teaching students how to read cases and understand legal precedent, "it makes them more intellectually rigorous, more skeptical of dogma and better able to see all sides of an issue...."

Most top law school's programs emphasize less the learning of legal rules and more the inquiry into why the rules exist, less the development of answers to particular problems and more the development of the style of problem-solving that marks a first-rate lawyer. Most schools still use the case-study method of instruction and some, Harvard included, still use the Socratic method of classroom instruction refined for law schools into an Inquisition. In this style, the professor calls on students at random, requiring them to answer essentially unanswerable questions and then proceeds to demolish the answers given. It is a degrading and humiliating process. This routine shakes the self-confidence of even the most intelligent (Margolick 1983).

Kenneth Gray illustrates how the system of tearing down a first year student's old way of learning and forcing him or her to use a new system of thinking and learning is supported and perpetuated by quoting from Professor of Law Coiseaux, who is disdainful of pre-law education where students,

"...learned the techniques for answering true and false or multiple choice questions and how to memorize lines, paragraphs or even chapters. Occasionally he would be required to write a paper. Just before the deadline he compiled some materials which he hoped the instructor had not read lately and submitted the same..

Such techniques were necessary in order to enable our student to take full benefit of the non-intellectual activities which were supported and emphasized by the university...."

He went on to say that, "Most law teachers agree, he still cannot read or write" and that, "...there is, or should be, an intellectual crisis in our students development."

This crisis is brought about when the student discovers that, "The instructor is not going to tell him by organized lecture what he should know; in fact, some of his instructors are so dastardly that they only ask questions. He feels at times during his first year that he is being cheated because he came to learn the 'law'. This hurts; he is a specialist in memorization and there is nothing to memorize. He may think the object is to find and underline the best sounding principle and to collect these principles for his mental catalogue. He is reluctant to question the printed word and more reluctant to question the instructor. He is shocked when he hears, in answer to a discussion problem, that the instructor does not know the answer. Then he realizes that when principles in two succeeding cases are inconsistent either the second is an exception or one

represents the majority and the other the minority rule. With this he is well satisfied until the instructor says with emphasis that he is not interested in which is the majority rule.

Thus the student proceeds: many trials and much sweat. This may be inhumane and needlessly brutal but he will survive and be a better man for it."

Even before Christopher Columbus Langdell taught his first class and developed his and the current system used by most law schools today, Daniel Webster wrote of the Pre-Langellian legal education:

"There are propositions in Coke so abstract, and distinctions so nice, and doctrines embracing so many distinctions and qualifications that it requires an effort not only of a mature mind but of a mind both strong and mature, to understand him. Why disgust and discourage a young man by telling him he must break into his profession through such a wall as this?"

Gray goes on to comment on the results of expecting law school students to learn a new way of reasoning without telling them that that is what in fact is expected of them. He says, "The threat to their comfortable notions, by what seems to be an incomprehensible reasoning process, causes intolerable intellectual dissonance that is

too frequently resolved in the form of apathy, resistance, sophism, cynicism and professional mediocrity or worse." The law teaching profession would be better served he feels if it tried to explain the how and why of the different reasoning process and just what the implications of "thinking like a lawyer" are. (Gray 1978-79).

Many law schools, especially those that are not part of the "elite" or "famous few" such as Harvard, Stanford, Chicago, etc. are already mitigating their use of the Socratic Method of classroom instruction. The Lesar School of Law at Southern Illinois University at Carbondale is one of the newer and more moderate schools of law in America. Established in 1973, the Lesar School alumni has had an enviable 92% pass rate on the Bar Exam by its graduates in February and July of 1983. The statewide pass rates for those times were 82% and 88%. Similar percentages are also hold true for previous years. (SIU Newsletter Winter 1983).

Since it is a new school it is less hindered by tradition than older and more established law schools. Not every faculty member in this school or any other agrees on how to best go about achieving a high standard of quality in teaching the law. Some feel the Langellian system was good enough for them and is good enough for their students. Others disagree and make a conscious effort to help students see the point in studying a particular set of cases.

As an example there are two professors at the Lesar School who each teach about half the first year students a course in property. In one, the professor calls on a student at random and for approximately 30 minutes that student is required to stand while the professor questions him or her regarding the facts of a particular case, the opinions of the student on the decision(s) reached, alternative positions the sides could have taken and what would have been the decision if the circumstances had been different or slightly changed. This class is definitely stressful but when crucial points are reached the professor will say, "read carefully now" or when the student is wrong, the professor will say, "not exactly" or "that's close? Others are encouraged to raise their hands and add comments but the student originally called on is still expected to answer until the professor is finished with him or her. The professor in this class does not try to make sense out of the conflicting points of law for these students. It is by design an effort to make the classroom situation as much like a courtroom as possible where judges or adversaries can and do bring up extraneous or side issues and students are expected to learn early to cope with this.

In the other section there is a set or group of class members who are called on serially and randomly to answer

short questions. Members are not required to stand and several students are called on or the entire class is asked. The professor solicits questions to ascertain if more information is needed. This professor presents the subject in a lecture format with a series of points being made that explain and expound upon a topic. There is much review of the basic underlying theme(s) of the particular subject under discussion. Still the questions are penetrating and they are never leading. That is, a student cannot guess by the way the professor asks a question what the answer is. This is true of virtually all the classes. Guessing is not profitable for you must not only answer but be able to defend your answer. When answers are wrong this professor is more explicit in saying so. "Wrong!" will be the response and another student will be called on.

For one, re-creation of the courtroom atmosphere with its ambiguities and side issues is a major object. For the other, logical and coherent presentation of the themes which underlie a series of cases is the object. Both of these professors clearly enjoy what they do. They obviously are striving for excellence and both are very concerned with the welfare of their students. Yet their approaches to conducting class are very different. It is apparent that students in both classes and in many others, find being called upon very stressful. Even students who are the most facile at answering questions

put to the class as a whole, find themselves stumbling and stammering before their turn is over when asked to present a case. Students often appeared nervous when called on, having difficulty breathing evenly and regularly and speaking with a dry mouth and throat. They sometimes struggled with the simplest answer when others around them obviously knew the correct response and could give it easily when asked by the professor.

In several classes professors will go on asking questions and raising points of law for several minutes or for the entire hour and never give an indication of which answer is correct or best, under which circumstances or even what the connection is between one set of questions or cases and another. The class is left confused and confounded and frustrated. This is stressful for the entire class, not just the particular students called on that class period. (See previous quote by Prof. Loiseaux)

In some classes, at sometimes, professors will accept answers such as "I am not prepared" or "I have not briefed this case." This seems to depend more on the mood of the professor than anything else. It is not a reliably effective response to get one "off the hook". Occasionally, in classes where seats are not assigned students will not answer when their name is called in order to avoid presenting a case or answering a question. Some students reported that they made a conscious decision early in the first term to contribute as little as possible in class

so as to minimize participation in this stressful and sometimes humiliating process (Author's observations 1984). Gray says that student resentment in the form of passive resistance is a disturbing fact of life and always has been but that what is distinctive about the current situation is the intensity of its widespread expression in recent years. The result of this widespread resentment and anti-intellectual sentiment says Gray is that fewer intellectual demands are being made on students in some law school classrooms than in years past. Some instructors have not been able to resist the overwhelming consensus among law students that there has to be a better way to teach the law. Gray continues, "... a substantial cause of present intellectual and emotional disfunction among law students may lie in our failure to understand fully or clearly enunciate the inner dynamics of the case method itself, based, as it has traditionally been, on the inductive form of reasoning." (Gray '78-79)

Echoing Gray, Andrew Watson has said, "The most glaring deficiency of clinical programs has been the failure to introduce the interpretive process into the learning experience." (Watson 1975).

In spite of the rigor of this learning process, students generally survive it. The drop out rate for this class was 14% this year. In past years freshman drop out rates have been 10.8% in 1982-83 and 11.3% in 1981-82 (Registrar SIU-C Law School

1984). Still, it leaves its imprint. Discussions with alumni revealed residual anger and frustration with the process of teaching and learning the law years after graduation. War stories are rampant around the law school of personal bouts with professors or of instances where students were unfairly treated.

One professor who teaches first year students told the author that she tells students, "If you are looking for justice, go over to philosophy. You won't find it here." There is open acknowledgement that life is not always fair or just but it must still be dealt with. It cannot be avoided and the sooner students figure this out and accept it, the better.

These anecdotal remarks regarding law school at SIU-C are substantiated by surveys undertaken by Stevens et.al. in the 1960's and early 1970's. A 1972 survey at Yale found that half of the students interviewed felt law school to be stressful. Four fifths of those said that the law school teaching methods created classroom anxiety for themselves or others, and 2/5ths of the ones admitting to stress reported a high level of personal anxiety, describing the classroom atmosphere as "hostile and combative." (Stevens 1975)

It seems to be the emotional adjustment that takes the greater toll on students rather than simply the academic rigor, difficult as that is. One study of 896 freshman law students found that their drop-out rate "was totally unrelated to their

academic promise." In one of the four schools represented in this survey by Paul Miller the drop outs were actually more academically able than the ones who remained in law school(Hurley 1983).

b. Summation of Law School Literature

While good empirical data is lacking to substantiate the many claims that law school is a very stressful environment, the literature is not lacking in descriptions of a priori commentary regarding this subject. The statements of Harvard's Derek Bok about the inefficiency of law school and its teaching of combative behavior is corroborated by Kenneth Gray who quotes Prof. Loiseaux proudly proclaiming, "there is, or should be an intellectual crisis in our students development." Prof. Loiseaux goes on to say, "This may be inhumane and needlessly brutal but he(the law student) will survive and be a better man for it."

The Lesar School of Law at Southern Illinois University at Carbondale is a relatively new institution with fewer traditions and inhibitions about diverging from the Langellain system of studying the law via the Socratic and Case-Study Methods. Even so methods of teaching die slowly and while student presentations do not take on the characteristics of an Inquisition at this school the process of teaching by the Case-study method is present throughout the first year cir-

riculum. This method is by its nature obtuse, convoluted, contradictory and therefore frustrating and difficult to grapple with. Professors who accept every answer without comment or who raise question after question and never offer a solution leave students feeling bewildered and at a loss for where the emphasis or best course of action should be. It is this dilemma, of seeking answers where there are none and yet having to have an answer that produces the intellectual and emotional dissonance which results in much of the stress of law school.

II. Review of the Literature

e. Theories of Stress and Relaxation

The theoretical aspects of stress in individuals have been touched upon by many researchers. In any discussion of stress research the contributions of Cannon and Selye (Mason Mar. 1975, June 1975) cannot be overlooked. Walter Cannon's conceptions of stress, although generally overlooked today, have continued to be "rediscovered" by other subsequent researchers (Benson 1976, Kaiser and Polcznski 1982). Cannon's early use of the term "stress" was in connection with psychological or emotional stress. In 1928 he addressed the Massachusetts Medical Society and told his listeners,

"The doctor is properly concerned with the workings of the body and their disturbances, and he should have therefore, a natural interest in the effects of emotional stress and in the modes of relieving it."

He went on to comment that,

" The field has not been well cultivated. Much work still needs to be done in it."

Some years later in 1935 he published a little known essay called "Stresses and Strains of Homeostasis" in which he developed an engineering concept of stress and strain in a physiological context. By this time he obviously saw stress as involving both emotional and physical stimuli. He used examples such as cold, lack of oxygen, low blood sugar and

loss of blood as "stressors." (Mason Mar, and June 1975)
 Cannon's definition of stress was simply put as an object's natural tendency to resist change in homeostatis (Kaiser and Polczynski 1982).

Hans Selye took a different approach. He began in the 1930's by using stress in the conventional sense of stimuli, evocative agents or outside forces that acted on the organism. Then in 1950, he published a book called simply, Stress. It was a monumental work. In it he proposed that the term "stress" be used in a new sense. Selye proposed that stress be viewed as the response within the organism to evocative agents which he proposed to call "stressors". By 1956, he had concluded that, "stress is fundamentally a physiological response" and should be defined as,

"the sum of all nonspecific changes caused by function or damage."

His definition has changed little since then. In 1974 he broadened the phraseology regarding the scope of evocative agents by saying,

"Stress is the nonspecific response of the body to any demand made upon it."

This broad, all-encompassing scope of stress was both a help and a hinderence. Those in the psychiatric and psychosomatic field were particularly taken with his inclusion of "nervous stimuli" among the "stressor" agents. It helped in building up a new era of psychoendocrinology which had lain

dormant since the conclusion of Cannon's experiments in 1929. Still, Selye's work received criticism. He had made such sweeping generalizations that his work was looked upon with skepticism as not having been proven if not exactly refuted (Mason Mar. 1975).

This dilemma of whether to view stress in the traditional way as a force acting on an organism from the outside, or as Selye would have it, the organism's response to an outside agent, is still going on today. Beginning around 1960 experimental data began to emerge from the field of psychoendocrinology that raised compelling questions about the validity of Selye's contention on the nonspecificity of stress responses and thus cast doubt on his whole theory (Mason June 1975). Selye believed that many noxious agents caused what he called a "general adaptation syndrome." It had three phases, "alarm reaction," "resistance," and "exhaustion." (Selye 1979). No specific evocative agent was necessary. It could be evoked by any number of agents or "stressors." Recent studies have shown that when special precautions are taken to minimize psychological reactions in the study of physical stimuli such as heat, fasting and moderate exercise, the pituitary-adrenal cortical system is not stimulated in a nonspecific fashion. In fasting monkeys for example, little or no corticosteroid change occurs if fruit flavored but non-nutritive cellulose fiber is given in place

of their similiarly flavored and shaped regular food pellets. In heat studies with both humans and animals, it appears the heat per se does not change or actually suppresses adrenal cortical hormone levels when precautions are taken to avoid novelty or extremely sudden or severe temperature changes. Studies in both humans and animals indicate that psychological stress or emotional arousal, activated when noxious, unpleasant or novel conditions are presented, may be the "first mediators" for which Selye searched and was unable to find as the indicators of stress. It seems that instead of a hormonal response being elicited by a great diversity of stimuli, it is, that a hormonal response is elicited by a single stimulus or stimulus class, that of emotional arousal (Mason June 1975). Lazarus called this emotional arousal the perception of threat and it is this perception of threat that seems to be the immediate antecedent of the various biochemical stress reactions. It is this emphasis on perception of threat as a final common pathway for the stress response that makes stress more than just a physiological concept but a psychological and behavioral one as well (Bowers and Kelly 1979).

Another way of explaining stress and one perhaps better suited to a study of cognitive functioning, is the Interruption Theory. This theory, whose predecessors were the conflict theories, states that the stress response or autonomic activity results whenever some organized action or thought process is

interrupted. Interruption can occur in the perceptual, cognitive, behavioral or problem-solving domains. The consequence is always the same. It is important says Mandler, that this interruption not be seen negatively. He means it to be simply a lack of structural completion, not necessarily leading to frustration or other related terms(Mandler 1979). In the case of law students whose studying is interrupted, it often does lead to frustration and anger. Any discussion with them or their spouses will quickly reveal how frustrating an interruption in their study time is. The pressure to keep up, to be prepared, is so great that any interruption of thought processes and concentration is viewed very negatively.

The amount of autonomic activity that occurs in the interruption process depends upon the degree of organization of the process that was interrupted and the severity of the interruption. The more organized the process, the more autonomic activity results when interruption occurs. Similar results occur with the severity of the interruption.

Stress has effects that are similar to noise in reducing attention capacity and narrowing it down to central tasks. What is perceived as "central" is maximally attended to and everything else is perceived as "peripheral" and will suffer loss of attention. This increased autonomic arousal of the central task may will improve performance as the Yerkes-Dodson

law states (Mandler 1979). This law explains how performance relates to events which precipitate stress. It postulates that for any task there is a level of arousal that is optimal for performance and which varies inversely with task difficulty. Arousal levels that are less than or greater than the optimum level will produce inferior performance (Warburton "Processing Information" 1979). Warburton ("Physiological Aspects" 1979) cites Kahneman who has proposed that resources and arousal are related and that how much resources an individual can allocate to information processing is based on the level of arousal. While there are various sub-types of arousal, the relevant type for attention is electrocortical. This sub-type can be related to mental effort and thus according to Warburton, to the level of performance.

Stress and its effects decline as the subject gains experience in handling situations that were initially stressful. Interruption theory explains that autonomic arousal is to a large degree related to the interruption of ongoing behavior, plans and expectations. Stress occurs when there is no available action or thought structures to handle the situation. When the individual has experience in similar situations, then there are available action or thought structures to carry on. One of the many intellectual functions that is affected by stress is memory. We remember better when the subject is elaborated upon. Under stress, events

are less elaborately coded and thus we remember fewer things and less well (Mandler 1979, Warburton "Physiological Aspects" 1979). Where there is great stress, the selectivity of attention is increased but primary memory capacity is decreased. Work rate will increase but accuracy will decrease (Warburton "Processing Information" 1979). Thought processes become narrowed so that only available alternatives are considered and no conscious capacity is available to consider new alternatives. The possibility of bringing in new strategies and considering their effects are reduced. Thought becomes repetitive and unelaborated (Mandler 1979). This can explain the confusion and/or frustration that is exhibited when the law student is called upon in class, and he or she is unable to think clearly or to bring in a new line of thought or to cite cases which indirectly bear upon the discussion. Others in the class are not under this pressure and will often raise their hands to add to the discussion. The student who has been called upon is thus left feeling dumb and exposed.

It is obvious that there are disagreements on the theory of stress. Dr. Herbert Benson who is more in line with Cannon and the Interruption theorists, defines stress as environmental conditions that require behavioral adjustment (Benson 1976). No matter how stress is defined, all agree that it has multiple causes, some physiological and some situational (Knox 1977). Even Mason (June 1975) as

critical as he is of Selye and his nonspecific responses to stress, is quick to point out that it is not just psychological stimuli that stimulates the pituitary-adrenal cortical system but physical stimuli as well.

The causes and effects of stress in general will be examined next and then those more specifically associated with cognitive functioning. Stress is among the factors which along with improper diet, lack of exercise, and family disposition, cause cardiac illnesses. Cardiologist Dr. Herbert Benson says, humans react in a predictable way to acute and chronic stressful situations. An inborn physiologic response, popularly called the "fight-or-flight" response, is triggered (Benson 1976). This physiologic response was first described by Dr. Walter Cannon. It is an involuntary response that increases, the blood pressure, heart rate, rate of breathing, blood flow to the muscles, and metabolism, in preparation for conflict or escape. This response is not just elicited by preparation to fight or flee from an enemy. Today the fight-or-flight response is often elicited repeatedly for less than near death events and can lead to diseases of heart attack and stroke (Benson 1974).

While no proof exists that stress causes high blood pressure or hypertension, the coincidence of it with the increased stress of daily living points to a strong connection (Benson 1976). Margolis et.al. collected data in

1973 from a representative sample of 1,496 employed persons over 16 who worked 20 or more hours per week. They found,

"In all cases the direction of the relationship indicates that increased stress was associated with poorer physical or mental health." (Margolis 1974)

Drs. Holmes and Rahe at the University of Washington Medical School devised a scale of stressful events. They found that ten times more individuals died in the first year after the death of a spouse than all others in their age group; that divorced people have illness rates twelve times higher than married people in the year following the divorce (Benson 1976). Holmes and Rahe were able to provide evidence of a high degree of agreement on the relative importance of life changes and on the association between those changes and physical health. Those in the top 10% of people having life changing experiences tended to, have twice as much illness in the following months as those in the bottom 10% (Knox 1977, Kaiser & Polczynski 1982).

Dr. Benson believes that the more frequently the fight-or-flight response is activated, the more likely it is that the individual will develop high blood pressure, especially if the circumstances do not allow an actual fight-or-flight response from danger. He cites among others, the research of Drs. Flokow and Rubinstein who induced permanent hypertension in rats by stimulating the hypothalamus which controls

the fight-or-flight response (Benson 1976). Benson cites the research of Dr. Walter Hess who was able to elicit rage and the fight-or-flight response in cats (Benson 1974). Benson also discusses the research of Dr. J. Brod who was able to subject human subjects to stressful problem solving situations which resulted in increased blood pressure levels. These studies and others indicate a definite link between stress and high blood pressure (Benson 1976).

Davis et.al. believe along with Drs. Holmes and Rahe that even positive change can result in stress. Stress says Davis, comes from three basic sources: environment, the physical body and thoughts. Environmental stress can be weather, noise, crowding, demands of others, time pressures, performance standards and various threats to security and self esteem. Physiological stress can result from the rapid growth of adolescence, aging, illness, accidents, poor nutrition, and sleep disturbances. All tax the body. When threatened by environmental stress the resultant fight-or-flight response causes physical changes in the body. The pupils dilate, hearing becomes more acute, the muscles tense and blood pulses to the head so that the brain receives additional oxygen to stimulate the thought process. The heart and respiration rate increase and blood drains from the extremities and becomes pooled in the trunk and head

making the hands and feet feel cold and clammy with sweat (Davis 1980).

At the physiological level there is cortical desynchronization and release of stress hormones from the adrenal medulla and adrenal cortex. These hormones mobilize energy resources by increasing the amount of sugar in the blood stream and by inhibiting the transport of glucose into fat cells. Similarly when adrenalin and other catecholamines are released, blood levels of carbohydrates and free fatty acids are increased. In the short term this enables extra effort to be expended and results in high performance levels. In the long term this sustained release of sugars and fats leads to depletion and fatigue. Anticipation of action can be just as tiring as action itself because uncertainty causes the release of these same stress hormones. Mental work can be just as tiring as physical work because of the electrocortical arousal and consequent stress response (Warburton 1979, 1979). Brod says that the hemodynamic reaction of the body under emotional stress is analogous to that which accompanies strenuous exercise except that in emotional stress blood flow to the muscles is increased simultaneously to all the muscles whereas in physical exercise the increased flow is limited to the active regions (Brod 1964).

If the body is not given relief from these biochemical changes chronic stress may result. When there is stress

present and more stress is added the regulatory centers of the brain will tend to over-react. This has a debilitating effect on the body. One result can be transient high blood pressure that becomes permanent hypertension. Stress has been related to many other physical ailments such as headaches, ulcers, arthritis, colitis, diarrhea, asthma, cardiac arrhythmias, sexual problems, circulatory problems, muscle tension, and even cancer.

The third source of stress say Davis et.al. is thoughts. How an individual interprets and labels his or her experience and how he or she sees the future can either produce relaxation or lead to additional stress. Interpreting a sour look from the boss as evidence of an inadequate job is likely to cause worry and anxiety. Interpreting the same look as tiredness or preoccupation with personal problems is much less threatening. Dwelling on problems and worries produces tension which creates a subjective feeling of uneasiness and leads to more anxious thoughts (Davis 1980).

The research of Holmes and Rahe culminated in the development of the Schedule of Recent Experiences. Their studies revealed that life stress is related to sudden cardiac death, myocardial infarction, pregnancy and birth complications, the seriousness of chronic illness, and a host of other major health problems. Life stress has also been found to be correlated with psychiatric symptomatology (Johnson and Sarason 1979).

Fessel reported in 1962 on a number of studies that showed that mental stress was intimately connected with psychiatric symptoms. His own study using psychiatric prisoners going before a parole review board showed significant changes in blood proteins 4S and 19S as compared to a control group of psychiatric prisoners not under review (Fessel 1962). David Spiegel has said the term "psychosis" is descriptive of a rather severe disruption in thought processes, which may be associated with any of a number of different disorders including schizophrenia, manic depressive illness, depression, hysteria, and acute stress. (Speigel 1983).

Johnson and Sarason have found that negative change has been significantly correlated with grade point average. Their results are consistent, they say with other studies that found significant relationships between life stress and measures of anxiety and academic achievement (Johnson and Sarason 1979).

Just as stress can result in debilitating effects to the body, the opposite of stress, relaxation, can provide numerous benefits, indeed can counteract the harmful effects of stress. Benson calls this the "Relaxation Response" (Benson 1974, '75, '76). He says that just as the body possesses a natural and innate protective mechanism for fight-or-flight it also has a mechanism that can protect against "over stress." This view is substantiated he feels, by the

studies of Dr. Walter Hess, the Swiss nobel laureate who stimulated a specific area of the hypothalamus in cats and got what he called a "protective mechanism against overstress (which promotes) restorative processes." (Benson 1974). By stimulating various areas of the diencephalon Hess discovered that certain areas were consistently related to certain behaviors and that these behaviors were grouped along a dynamic-adynamic, ergotropic-trophotropic, sympathetic-parasympathetic dimension.

The importance of Hess's work is that he discovered where behavioral integration occurs, in the diencephalon. It is here that the connection between acts and the physiological concomitants of those acts occur. Edmondston says that this integration means that not only do changes in physiology have the capacity to cause behavioral changes but vice versa. By creating the physical and skeleto-muscular conditions that follow these physiological changes the physiological changes themselves can be elicited. By putting the individual in a comfortable position and telling him to "deeply" relax the physiological concomittants of relaxation and hypnosis are created through skeletomuscular manipulation and diencephalon connections.

Hess's findings also reveal a second important point. Hess concludes, "One of the most prominent effects of the trophotropic-endophylactic system is adynamia, characterized by an overall

lowering of the organism's efficiency."

This physical adynamia, the skeleto-muscular lethargy of the animal is the most striking aspect of the trophotropic response. A third point that Hess makes is the hypnogenic effect that results from stimulation to areas lateral to the ventral half of the massa intermedia. This effect does not result in the cat suddenly collapsing or passing out but rather it makes several adjustments in postura apparently seeking a comfortable position, spontaneous movements progressively diminish, the eyes shut and general activity is suppressed leading to an "artificially induced" sleep. Hess noted two things about this hypnogenic effect. One was the role the exteroceptive sensory organs (the eyes, ears, nose) played in arousing the animal from its induced sleep. When the cat was stroked (eliciting the pinna effect), exposed to the smell of meat in front of its nose or to sound, the hypnogenic effect was terminated. Edmondston makes the point that "the stimulation of the exteroceptive organs elicits a skeletomuscular and physiological behavior pattern that is the antithesis of hypnosis as well as the antithesis of Hess's hypnogenic effect of the trophotropic response and Benson's relaxation response.

The second point Hess makes regarding the hypnogenic effect is that it varies between drowsiness and normal sleep and that this variation is according to the individual animal affected. Some of Hess's cats did not lie down upon

stimulation of the diencephalon but sat down, drooped the head forward and fell asleep sitting up. Others sank into extraordinary, often awkward positions. Edmondston quotes Hess, " We found repeatedly that a cat which slept while sitting was very difficult to awaken, while a reclining cat still reacted with relative ease to external stimuli." This observation says Edmondston, is reminiscent of the distinctions made in hypnosis with respect to the various stages or depths of hypnosis.

The relaxation response, introduced by Benson, Beary and Carol in 1974 was based on the trophotropic response described by Hess and the physiological measurements of the Transcendental Meditation technique published by Wallace in 1970 and 1971 (Edmondston 1981). This response is the opposite of the fight-or-flight response and enables us to turn off the harmful bodily effects, to counter the fight-or-flight response, and to bring about bodily changes that decrease the heart rate, lower metabolism, and decrease the rate of breathing, thus bringing the body back to a healthier balance (Benson 1976)

Benson et.al(1969) were able to demonstrate that organisms can learn to lower blood pressure and alter other bodily processes. They performed 273 experiments on 3 squirrel monkeys. Aortic catheters were surgically implanted in each

animal to measure blood pressure. The monkeys were successfully trained to alter their blood pressure to hypertensive levels and later to normal levels. The experiments demonstrate that mean arterial blood pressure can be made to rise or fall predictably based upon the scheduling of environmental stimuli.

d. Summation of Theories of Stress and Relaxation

In concluding the analysis of the theoretical aspects of stress it is helpful to be reminded that while the theories of Hans Selye have been careful to include "nervous stimuli" among the "stressor agents" and thus to help build up a new era of psychoendocrinology, Selye has oversimplified his theory regarding the non-specificity of stress responses and made sweeping statements that are beginning to be disproved by the very movement he began. More cautious and more reliant upon empirical evidence are the ideas of Walter Cannon that view stress as a force which acts on an organism and requires it to make some adaptive change if that force is to be able to overcome the inertia of the organism's homeostatis. These forces may consist of physical or emotional stimuli and may therefore come from external or internal sources. They may result from the normal processes of growth and development or from situations and events that arise unexpectedly as in the death of a loved one, sudden illness etc. or over a period of time such as overwork, prolonged illness, or a build-up of

many small events that over-tax the individual's ability to maintain homeostatis.

An important way to view stress in the cognitive or learning area is that described by the Interruption Theory. This theory postulates that a stress response occurs whenever some organized action or thought process is interrupted. In other words it is an elaboration on Cannon's original notion of homeostatis being upset. Interruption Theory is more specific to attention, perception, information processing and performance than the older and broader conceptions of Cannon and Selye.

The work of Drs. Walter Hess, J. Brod, and Herbert Benson on the fight-or-flight response and the relaxation response in both animals and humans indicates that both are normals correlates of each other. Moreover, Hess's findings regarding the hypnogenic effects that were seen in the stimulation of feline diencephalons have important implications for human subjects. The task of researchers is to not only continue to document the effects of stress on organisms but to document how excessive.. stress can be alleviated or prevented and when relaxation techniques are beneficial to this process.

e. Studies Using a Variety of Techniques to Decrease Test Anxiety and Increase Learning

Several studies using a variety of techniques to reduce stress and increase learning as measured by grade point average have been undertaken in recent years. Only a few will be briefly cited. Robert Zenmore used a variety of desensitization techniques with 20 male and 20 female student volunteers for test and public speaking anxieties to successfully reduce both(Zenmore 1975). Kenneth A. Holroyd succeeded in both reducing test anxiety and in increasing academic achievement. He used 2 therapists and 48 test anxious volunteers. The therapists employed cognitive therapy, systematic desensitization and a combination of both techniques. He found cognitive therapy significantly more effective in reducing anxiety in the analogue testing situation and in improving grade point average than the other treatments or the control groups(Holroyd 1976).

Goldfried et.al. compared a systematic rational restructuring with a prolonged exposure condition to reduce test anxiety. The rational restructuring technique where participants were trained to realistically reevaluate imaginably presented test-taking situations, produced greater anxiety reduction than the prolonged exposure group that had no instructions for cognitively coping(Goldfried et.al. 1978).

Recent studies by Altmaier and Woodward with undergraduates showed positive and significant results in reducing anxiety but no significant differences in grades or university retention between the experimental and control groups. Altmaier and Woodward compared study skills, vicarious desensitization through: the use of video-tapes, and a combination of the first two, with a control group. They found that vicarious desensitization alone or in combination with study skills produced significantly lower post-treatment anxiety scores than those receiving study skills alone or no treatment (Altmaier and Woodward 1981).

The University of Maryland's stress management program found significant differences between its group of 653 experimental subjects and its group of 264 controls. The study found significant differences in lowering tension levels on a variety of scales. There was no separate evaluation of academic performance (Allen 1981).

This failure to increase academic achievement while at the same time reducing test anxiety is not an unusual finding according to Altmaier and Woodward. They cite findings by D.R. Denny who says that 67% of the studies using systematic desensitization as a treatment for test anxiety failed to find achievement differences between treatment and control conditions (Altmaier and Woodward 1981).

It would seem then that the various techniques that decrease anxiety via desensitization are effective in reducing test anxiety and public speaking anxiety but are not reliable methods for increasing academic performance. It is also not known whether these techniques are useful in other stressful situations. Are there other techniques then, which are more general in their effect? Can there be a lowering in physiological indices as well as behavioral indices of stress using different techniques? Perhaps the solution lies not in reducing anxiety but in increasing relaxation with its concomittent benefits noted by Wallace (1970, 1971), Benson (1974, 1975, 1976) and Edmondston(1981, 1981).

f. Studies to Enhance Relaxation and Increase Learning

Wallace et.al.(1971) used 36 subjects who had been instructed in the technique of Transcendental Meditation or T.M. Their blood pressure, heart rate, rectal temperature, skin resistance and electroencephalographic changes were measured continuously. The ages ranged from 17-41 years with a mean age of 24.1. There were 28 males and 8 females. The findings showed consistent and pronounced physiologic changes occurred during the practice of T.M. Respiratory changes included: decreased oxygen consumption, decreased carbon dioxide elimination, decreased respiratory rate, arterial blood pH and base excess decreased slightly and

blood lactate was also decreased. Skin resistance increased markedly and EEG showed an increase in intensity of slow alpha waves and occasionally theta-wave activity. These changes were different from those associated with sleep. The EEG patterns that characterize sleep were not seen during T.M.

After 6-7 hours of sleep and during high-voltage slow-wave activity, oxygen consumption usually decreases about 15%. In these subjects, after only 5-10 minutes of meditation, alpha-wave activity predominated and oxygen consumption decreased about 17%. Skin resistance changes were also different. During sleep skin resistance generally increases continuously but the magnitude and rate of increase are generally less than those which occurred during meditation.

Physiologic changes during T.M. also differed from those reported during hypnosis or auto-suggestion. In hypnosis changes in heart rate, blood pressure, skin resistance, and respiration approximate the changes which normally occur during the states which have been suggested by the hypnotist. During the so-called hypnotic sleep when complete relaxation has been suggested no noticeable change in oxygen consumption occurs. The EEG patterns during hypnosis are usually similar to suggested wakeful patterns.

The fall in blood lactate during meditation is interesting and might be explained by increased skeletal blood

flow with consequent increased aerobic metabolism. Forearm blood flow did increase by 300% during meditation while finger blood flow remained unchanged. Patients with anxiety neurosis develop an excessive rise in blood lactate with stress and the infusion of lactate ion can sometimes produce anxiety attacks in normal subjects, and can regularly produce them in neurotics. Wallace et.al. conclude that: "A consistent wakeful hypometabolic state accompanies the practice of the mental technique called Transcendental Meditation." (Wallace 1971).

Critique:

This study fails to report the fluctuation in values that Benson finds in his study (cited on next pages) although both used continuous measurements. Instead optimal values are reported making this study's conclusions somewhat self-serving and suspect. Even so the values are consistent with those of Benson and others who have documented meditation responses. A criticism of all these studies is the use of enthusiastic volunteers. All these subjects and those of the other meditation studies are definite believers in the benefits of meditation so that it is difficult to attribute changes to the technique used or to the expectations of the subjects. An additional criticism is that Wallace offers no evidence for the lactate studies he cites. He also does not

offer any evidence for the conclusion he draws regarding changes, or the lack thereof in hypnosis. This raises an interesting point about the nature of hypnosis. Milton Erickson has said,

"It is your attitude toward the patient that

determines the results you achieve." He followed

up this comment with an example of an experiment he demonstrated many times with his medical students. He would tell one group of students that a certain patient was an excellent hypnotic subject in all areas except one and he would name the specific area. He would then tell another group the same thing except the area the patient was supposedly lacking in was changed. A third group of students was told the patient was a good subject except for one area which was different than the ones given to the first two groups. Each group then worked with the patient. Afterward they all reassembled with Erickson and the patient and began to report on their findings. Each group found what Erickson had suggested to them that they would find and they were incredulous that each group had found the patient deficient in areas they had not discovered. Erickson then asked the patient to tell what his instructions had been. The patient said Erickson's instructions had been to do "whatever they really mean," for you to do. The patient went on to say that various students had asked for one phenomena or another but that he did not really expect to see it so the patient had not done it even though the phenomena was one the patient was capable of demonstrating. Erickson's point was that hypnotists

must be very careful and aware of their own expectations (Erickson 1983). There is no specific evidence that Wallace et.al. actually used hypnosis in this experiment with T.M. If not, they should refrain from commenting on it.

Benson et.al. (1975) also report similar findings to those of Wallace et.al. In Benson's study continuous measurements are also used with 13 subjects who had practiced T.M. twice daily for at least one year. The age of his subjects ranged from 22-31 years with a mean of 25 years. There were 6 females and 7 males. Their length of T.M. practice ranged from 12-72 months with a mean of 30 months. The results confirm and extend previous observations of a wakeful hypometabolic state during meditation. This experiment reports decreases in oxygen consumption of 5% and in carbon dioxide elimination of 6% over the entire meditation period. There were also decreases of as much as 17% for oxygen consumption and 15% for carbon dioxide elimination during selected intervals of the meditation, thus confirming the Wallace findings while establishing more definite parameters.

Critique:

This study like that of Wallace et.al. was not really designed to test a hypothesis. Rather, it's purpose was to document the differences if any, between meditating individuals and those in restful but non-meditative states. The results are consistent with other-researchers findings,

although Benson is candid about results whose averages indicate less significant differences between T.M. and sleep than previously found. Never-the-less, the results of T.M. after only a few minutes are impressive when compared with those of sleep at any cycle segment.

Deffenbacher and Michaels (1981) in both an initial study and in a 12month follow-up study, compared the effectiveness of homogeneous and heterogeneous anxiety management training (AMT) which consisted of progressive relaxation techniques. The original study had 97 subjects in 6 groups. A year later 62 of the subjects were analyzed. Again this study was able to show significant reduction in test anxiety among those receiving AMT over the controls but no significant differences in either cumulative grade point averages or semester averages.

It seems fairly easy to produce reductions in test anxiety using a variety of methods but much more difficult to have these results carry over into better academic performance.

Critique:

This study had twice the number of participants as the previous one by Altmaier and Woodward and its results were remarkably similar even though one used progressive relaxation and the other desensitization. It again indicates that test anxiety reduction is not an effective technique for increased academic achievement even when the process by which anxiety is reduced is relaxation.

Perhaps test anxiety is not the crucial variable in academic performance. Other indicators, such as amount of sleep, eating habits, alcohol and drug usage, etc. may play more important roles and have not been included as variables in the above experiments.

A study designed to examine the role of concentration and test anxiety was undertaken by Collins et.al. (1981). They compared three strategies, self-initiated relaxation, self-coaching, and a combination of the first two. Previous research had shown them that relaxation training and cognitive modification were promising methods for increasing concentration and reducing test anxiety. One of the strategies, self-initiated relaxation (SIR) utilized a combination of relaxation techniques to set and maintain constructive study and test-taking states. A second strategy, self coaching (SC) was an extension of the positive self-talk techniques developed by Michenbaum. Students were taught to coach themselves into constructive states and to maintain them during study and test-taking sessions. The third strategy combined the two previous ones. This study included 92 students from general psychology classes. Four groups were randomly assigned to treatments. An initial ANOVA showed no significant differences between groups. The results of this study paralleled the ones by Altmaier and Woodward, and Deffenbacher and Michaels. Relaxation alone did not enhance performance but positive self-talk within the framework of self coaching did result in

consistently though not significantly enhance comprehension and retention of text material. When positive self-talk was supplemented by relaxation some aspects of academic performance (scores on comprehension/retention tests) were significantly facilitated when compared with the control group. This combined technique resulted in the highest level of performance.

Critique:

This study is the best conceived of those reviewed so far, for the purposes of this study. It used a fair number of students, randomly assigned them to treatments and determined that there were no significant differences prior to the treatments, and included a comparison control group. The results corroborated those of previous studies in showing relaxation techniques alone do not enhance academic performance but the results went further than earlier studies. It was found that in combination with positive self-talk, relaxation can have a significant effect.

g. History and Theories of Hypnosis

In a concise chapter of a book he and Erika Fromm edited, Ronald Shor has outlined the history of hypnotic phenomena (Shor 1972). He says, since the beginning of time man has used hypnotic and suggestive phenomena in faith healing, magico-religious rites and in other circumstances. It was not until the 18th century during the Age of Enlightenment that Franz Anton Mesmer emerged to initiate a movement to

develop a scientific understanding of these phenomena.

Mesmer's contribution was not in originality but in his insistence that the observable therapeutic effects had a scientific explanation. His therapy was a minor variant of the teachings of many other faith healers throughout history, a combination of the ancient procedure of the laying-on-of-hands with a disguised version of medieval demonic exorcism. His theory was a combination of ancient astrological concepts, medieval mysticism, and 17th century vitalism but garbed in the terminology of 18th century physical science, particularly magnetism and electricity.

To Mesmer, health was the harmonious distribution in mind and body of an ethereal fluid that permeated the universe. Fluidic imbalance resulted in disease. It was believed that this cosmic fluid could, to some extent, be controlled by the human will and could even be stored in inanimate objects. As Mesmer worked with patients he observed extreme agitation, convulsive seizures and other temporarily deteriorated behavior after his manipulations. This led him to conclude that causing some of his own stored cosmic fluid to flow into the patient would produce an even more severe fluidic imbalance, cause a violent convulsive seizure and therefore bring the malady to a head or crisis, after which equilibrium would be restored. These crises became pivotal

events in Mesmer's therapeutic technique. Today they are looked upon as simply artifacts of mutually shared expectations.

While Mesmer's theories were untenable from the standpoint of objective scientific truth, they were functionally or pragmatically true. They worked. Mesmer was acutely aware of the importance of a good doctor-patient relationship. He observed that unless his patients were cooperative and really wished to be cured, they would not allow themselves to be receptive to the physician's healing influences. He also developed very successful group treatment methods by using the storage condenser principle of accumulating cosmic fluid in inanimate objects.

Mesmer and his colleagues had also observed another phenomenon, that of somnambulism. This state was marked by the patient going into a sleeplike trance but able to speak, open his eyes and walk about, and respond to the mesmerist's wishes and commands. Subsequently patients forgot their experiences when aroused. Mesmer and his disciple d'Eslon ignored this somnambulistic phenomenon in their development of the crisis and cure.

In 1784, the same year that the Royal Commissioners disaffirmed the existence and value of Animal Magnetism as Mesmer's technique was called, Armand Chastenet, the Marquis de Peységur wrote a letter to a colleague outlining his independent discovery of artificial somnambulism, the

same phenomenon Mesmer had ignored. De Puységur and his followers believed that the curative fluid was secreted by the brain of the mesmerist and passed along his nerves to the peripheral organs in response to his will. The ability to make and transmit this vital fluid depended on the faith and self-confidence of the mesmerist. This doctrine of Will Power, while it provided an easy vehicle for the expression of the mesmerist's egotistic fantasies, also represented an advance, says Shor, in translating the interpersonal aspects of the mesmeric process into psychological terms.

As de Puységur and his followers enthusiastically experimented with the peasants and artisans of his district, they discovered nearly all of the major mesmeric-hypnotic phenomena acknowledged today: the motor automatisms, catalepsics, amnesias, anesthesias, positive and negative hallucinations, post-hypnotic phenomena, and individual differences in susceptibility. Thereafter followed an excess of mystic claims of paranormal powers conferred in the special state, clairvoyance, foretelling of the future, and spiritualism. These excesses were inevitable says Shor, given the mood of 19th century Romanticism and because the mesmerists were strongly impelled to produce the phenomena that they perceived were expected of them. Generally the most flamboyant and extravagant of these practitioners were

the most successful because according to Shor, mesmeric phenomena are initiated by enthusiasm and expectancy so that there was a natural selection in the direction of extravagance. Many of these second period mesmerists evolved the most outlandish and mutually contradictory pseudologies. This multiplicity of doctrines began to undermine the plausibility of all of them and opened the way for more sedate theories. In spite of all the sensationalism, too much that was genuine and startling had been uncovered and wiser minds recognized that something important still needed to be explained. James Braid was one of these. His contributions were the notions that hypnosis occurs as attention is concentrated on a single monotonous stimulation and the term neuro-hypnotism to replace that of mesmerism. This change in terminology made it easier for hypnotic phenomena to be brought within the bounds of cautious and respectable science. The foundation for the third stage, the Early Psychological Period was laid.

Thirty years later in 1878, Jean Martin Charcot, the eminent clinical neurologist would lend a respectability to the study of hypnosis that no other scientist of his time could have done. Despite this service, Charcot's theory, according to Shor, was primarily a disguised return to many of the old second stage mesmeric errors but phrased in advanced neurological terminology. Other

clinicians of the period, Liebeault, Bernheim and others had gone beyond Charcot in the practice of hypnosis and were already thinking in psychological terms.

This third stage was marked by two basic insights: that mesmeric-hypnotic phenomena were genuine and important, and that they were essentially psychological in nature. These two basic insights were then fused to form a third: that the psychological processes underlying mesmeric-hypnotic phenomena, i.e. imagination, expectancy, belief, receptivity, attention, attitude, monoidelism, suggestion, motivation, etc. are all scientifically valid and important.

This notion that somnambulism was produced solely by the subject's heightened expectations and receptive attitude was first enunciated by the abbot José Custodi di Faria in 1814. As a consequence of this understanding, Faria developed induction techniques that were verbal. Prior to this, the techniques had been largely direct physical contact to promote the flow of cosmic fluid into receptive patients. The latter half of the 19th century was marked by works by Alexandre Bertrand, Ambroise August Liebeault and James Braid, all expounding on the psychological viewpoint' and by the teaching of Hippolyte Marie Bernheim, professor of medicine at Strasbourg on the importance of mental therapeutics based on verbal suggestion. Outgrowths of Liebeault's and Bernheim's teachings centered on the doctrine of

suggestion and it became both the fundamental description and the unifying explanation of hypnosis and related events.

Even into our own day this doctrine of suggestion with its emphasis on critical mental faculties being held in abeyance, automatism, "will-less" obedience etc., has served to obscure other important factors such as the assertive, alert, active, and productive capacities of the hypnotized individual. This doctrine also ignored the factors of enthusiastic credence and firm expectation that had been the central features of Mesmer's faith healing. Mesmer had not sought a suspension of critical faculties in his patients but had attempted to enlist these faculties in the most direct manner possible.

A doctrinal conflict developed between the clinical practitioners led by Bernheim at Nancy and the puristic scientists led by Charcot at the Salpêtrière Hospital at Paris who were attempting to understand the physiological causes and responses connected with hypnosis. In 1889 Freud visited the clinic of Lisbeault and Bernheim in Nancy and came away fascinated by the results of their work. Freud would abandon hypnosis for dream analysis and free association as his tools for uncovering the workings of the unconscious. Nevertheless, it was hypnosis that first excited his interest in the possibility of discerning the unconscious mental processes of individuals.

With the psychodynamic insights provided by psychoanalysis, therapists began to evaluate the potentialities of hypnosis with new vigor. Milton H. Erickson, says Shor, was the first, the boldest most ingenious and influential of these new fourth stage hypnotists. Erickson was primarily a practitioner whose object was curing illness. Even today there is a divergence between the practitioners and the theorists as to what hypnosis is, how it works, and how to go about using it. A colleague of Erickson's, Clark L. Hull, exemplified this divergence. Hull was the first to use the null hypothesis in hypnosis research. This resulted in a marked increase in experimental precision but the very nature of his advanced methodology tended, according to Shor, to subtly destroy the hypnotic phenomena under investigation. Hull and other method-oriented academic experimentalists failed to realize that the experimenter's job is directly opposed to that of the hypnotist. The experimenter has to maintain an attitude of questioning skepticism. The hypnotist must do the opposite. He or she must maintain an attitude of assured optimism. One must remain neutral and impartial and the other committed and avowedly partisan. This posture of impartial neutrality says Shor, "simply does not evoke in subjects the enthusiastic expectancies and deep emotional commitments that mobilize and sustain the hypnotic processes." (Shor 1972).

Thus the difficulty of doing research with hypnosis is succinctly defined. How to effectively maintain a detached and objective attitude while attempting to induce true hypnotic phenomena. The present study will avoid this difficulty by utilizing the services of a trained hypnotist other than the experimenter to conduct the hypnotic treatment segment. This is not the only problem associated with hypnosis research, however. There is fundamental disagreement on what hypnosis is, even when there is agreement on the manifestations generally associated with it.

Barber (1972) quotes a number of definitions for hypnosis, among them that of Bowers who notes that, "Most (present-day) investigators interested in hypnosis believe that there is an hypnotic state which fundamentally differs from the waking state."

Barber goes on to say that Bowers views hypnosis as,

"An alter state within which suggestions have a peculiarly potent effect."

He explains that Gill and Brenman use the term "hypnotic state" to refer to a "regressed state" where there is a sub-system of the ego and varying degrees of control of the ego apparatuses. Orne on the other hand, talks about the tolerance for logical inconsistencies (trance logic) and alterations in subjective experiences induced by suggestions, as among the essential characteristics of the hypnotic state. Evans views

hypnosis as an altered subjective state where dissociative mechanisms are operating, and Mears talks of a primitive mode of mental functioning (Barber 1972). While Barber differs greatly from Hilgard on what hypnosis is they agree on the descriptions of fellow experimenters. Hilgard has characterized Gill and Brenman as within the orbit of psychoanalytic theory. Orne and Shor, he says, concentrate on the disappearance of a general reality orientation. Hilgard also mentions others who do not follow the traditional paradigm such as Barber himself who believes hypnosis would be better understood by using a different set of concepts, eliminating such terms as trance, or trance state, and even hypnosis. Sarbin and Coe also reject the trance concept says Hilgard. They regard hypnosis as part of a larger body of psychological topics interpreted by social learning or role theory. For them subjects figure out the role expected of them as hypnotic subjects and go about playing it (Hilgard Nov. 1973). Hilgard regards the social learning approach to hypnosis as useful but incomplete (Hilgard July 1973).

For all those who accept the notion of hypnotic trance regardless of their theoretical orientation, as a distinct state, Barber says they all have a common set of basic assumptions about hypnosis. These include:

1. Hypnosis is a state of the organism that is fundamentally (qualitatively) different from

other states of consciousness, deep sleep, or unconsciousness.

2. While hypnotic trance may occur spontaneously on occasion, it is usually induced by special procedures that usually include fixation of the eyes, suggestions of relaxation, drowsiness and sleep.

3. The trance state is not a momentary one but lasts usually until the hypnotist issues a command to come out of it.

4. Subjects in trance are responsive both overtly and subjectively to a wide variety of test suggestions including, rigidity of muscles and limbs, age regression, analgesia and anesthesia, hallucinations, freaming on a specified topic, heightened performance on physical and cognitive tasks, and amnesia and other post-hypnotic behavior.

5. Whether the adherents to this paradigm believe the suggested phenomena such as deafness, for instance, are genuine, or the subjects simply believe the phenomena to be genuine, all view the phenomena as being associated with hypnotic trance, not simply as "suggested phenomena."

6. There are varying levels of hypnotic trance.

7. As the depth of the trance increases, the subject's ability to experience suggested phenomena vividly

and intensely also increases.

In summary the trance paradigm describes the person who responds to test suggestions as being in a fundamentally different state from the person who is unresponsive to test suggestions(Barber 1972). A possible confirmation of this state theory is the work of Allen Reid who found that temperature varied an average of 0.6 F during hypnosis when compared to a restful waking state(Reid 1968).

Barber says there is another way to view responsiveness to test suggestions that does not involve special state constructs such as "hypnosis," "hypnotic state" or "trance." According to this alternative paradigm there is not a qualitative difference in the "state" of the person who is and the one who is not responsive to test suggestions. The adherents to this paradigm are primarily Barber and Sarbin along with Andersen and Coe. They maintain that the person who is very responsive to test suggestions has "positive" attitudes, motivations, and expectancies toward the communication he is receiving and thus lets himself think with and imagine the things which are suggested. The unresponsive person on the other hand, has "negative" attitudes, motivations, and expectancies toward the communication he is receiving and thus does not let himself imagine or think with the suggestions and verbalizes to himself opposing points of view. It is these which are the crucial to Barber and his cohorts, the

viewpoints. According to Barber the three factors of attitudes, motivations and expectancies vary along a continuum. The extent to which a subject thinks with and vividly imagines the suggested effects determines his overt and subjective responses to test suggestions. Concepts such as "trance," "somnambulism" and "dissociation" are derived from abnormal psychology and are misleading asserts Barber. Moreover, they fail to explain the overt and subjective responses(Barber 1972).

In Barber's criticism of the traditional paradigm of a "special state" of hypnosis he relies upon the refutation of stage hypnotism feats and on his own inability to replicate experiments done by others that purport to show evidence of a trance state. If we look back to the historical analysis of Ronald Shor, with its emphasis on the expectations of the subject and hypnotist, it is little wonder that Barber and his co-workers have been unsuccessful in duplicating experiments made by others in support of theories they believe in but that he does not. Barber is quite right in insisting upon rigorous conditions, control groups, and sound reasoning by all experimenters. His assertions that he has been able to get at least as good results from "non-trance" subjects as others who claim to have worked with "trance" subjects is no real proof. How can he know that all his "non-trance" subjects were not in a trance?

Clearly he cannot know until there is additional evidence that will allow investigators to independently and accurately determine when a subject is in a trance and when he or she is not. At this time no such conclusive evidence on which all or even a majority can agree exists.

Gruenewald, Fromm and Oberlander have summed up this controversy nicely by saying,

"...whether one espouses a 'state' or 'process' theory of hypnosis, any definitive statement concerning hypnosis is at best premature." (Gruenewald et.al. 1972)

Still, a suitable definition must be found in order to proceed. Petrel-Petrelevicius has said that hypnosis is a behavior-modifying process where there is an effort made to decrease the operation of the critical function of the mind so as to have immediate access to the subconscious mind. Hypnotists do this by the proper structuring of verbal or other stimuli.

In verbal hypnosis words are organized into suggestions to gain access to the subconscious. This is done by depth suggestions to slow down mental activity in order to by-pass the critical function of the mind. Depth suggestions also tend to decrease the existing emotional reactions. They aim toward relaxation, and non-critical observation. To Petrel-Petrelevicius, verbal hypnosis is ,

"the result of a relationship, based on sensitive

psychological tact, understanding, respect, trust and care, characterized by a sense of responsibility."

In this definition, he emphasizes rapport between the hypnotist and his subject. He adds that when self esteem, self image and self confidence are low, the ability to hypnotize oneself is low. In self-hypnosis the individual is both operator and subject at the same time (Petrel-Petrel-evicius 1975).

Andre Weitzenhoffer has said that hypnosis is multi-dimensional with the various aspects of hypnotic behavior arising out of the contributions and interactions of several processes plus the effects of various personality characteristics of the subject. In no other way can he account for the wide collection of behavioral manifestations in hypnosis. Weitzenhoffer, adheres to the traditional paradigm of hypnosis and says that there is a state of altered consciousness called a trance state that is different from other conditions of unconsciousness, sleep or deep depression of the central nervous system. He agrees with Petrel-Petrel-evicius in that the hypnotized subject inhibits or puts aside his ability of reality testing. In deeply hypnotized subjects a new reality criterion replaces the one existing at the time of induction (Weitzenhoffer 1961).

Ernest Hilgard, according to Sheehan and Perry, takes

a middle position between the extremes of Watsonian behaviorism that says only the behavioral responses for the hypnotic suggestion matters, to the other extreme of humanistic psychology that looks only at the subjective reports of hypnotized participants. Hilgard calls his position "contemporary functionalism." Sheehan and Perry regard his theoretical position as flexible, stressing the value of recognizing state, trait, and situational determinants of hypnotic responsiveness (Sheehan and Perry 1976).

Hilgard himself admits that "hypnosis resists precise definition," but he offers a set of characteristics of the hypnotic state. They are:

1. a subsidence of the planning function. The subject can plan or act but generally will not wish to unless asked by the hypnotist.
2. redistribution of attention. Whether it is a heightened responsiveness or a lessening of attention in general with only a residual amount devoted to the hypnotist so that it seems to be concentrated there is unknown.
3. availability of visual memories and heightened ability for fantasy-production (especially in age-regression and dreams within hypnosis).
4. Reduction in reality testing and tolerance for reality distortion.

5. increased suggestibility and role behavior.
6. post-hypnotic amnesia.

If Hilgard and the others who subscribe to the view that hypnosis is indeed a different state of consciousness are to be believed, they must somehow explain how or why some people are more easily hypnotized than others. Barber and others who reject the trance state say it is because of role-playing with some having more skill than others or because of "negative attitudes." Hilgard has developed what he calls a Developmental-Interactive Theory of Susceptibility to explain this difference. He offers three sets of propositions, developmental, interactive and state propositions. His Developmental Propositions are:

1. All normal infants are born with the potential to develop the ability for profound hypnotic experiences. This proposition assumes hypnotic ability does not have to be learned but that it can be lost.
2. The ability of children to disengage from reality-orientation and become deeply involved in fantasy or adventures may be preserved if enough experiences of this kind are encouraged by example and tolerated or rewarded in childhood.
3. There is probably a critical period between the acquisition of language and the onset of adol-

escence during which these behaviors will either be sustained or lost.

4. Once a favorable background is established new experiences can be grafted on and will thus reinforce the appropriate abilities.

5. Parental influences and identifications are very important in preserving and extending or reducing and destroying hypnotic susceptibility.

6. "Favorable" parental attitudes in relation to mental hygiene are not necessarily conducive to susceptibility and not all "unfavorable" ones inhibit it.

7. It may be that individualizing experiences produce selective responsiveness. Subjects with the same general level of susceptibility have different patterns of success on hypnotic tests.

Hilgard's Interactive Propositions include:

1. As long as the setting for hypnosis evokes confidence, the initial responsiveness to attempted hypnotic induction depends very little on the personal characteristics of the hypnotist.

2. In the first few sessions a susceptible subject learns to enter the trance much more promptly than at first but this does not mean the depth of the trance increases.

3. With repeated inductions by the same hypnotist, the individual characteristics of the hypnotist and the interaction between hypnotist and subject become more important.

4. Hypnotic interaction goes most smoothly in conflict-free areas. Conflict areas arouse defenses and may interfere with hypnosis.

5. Developmental experiences play a role in which, dissociative experiences, if any, are activated by hypnotic induction.

6. There are multiple ways to be hypnotized.

As for the State Propositions, Hilgard says:

1. The trance is a product of suggestion and can be considered separate from the responsiveness to suggestions given within this state. Hypnosis may but does not have to be a state of hypersuggestibility.

2. There is some increase in suggestibility after trance induction but not enough to define susceptibility.

3. The hypnotically susceptible person is part of a subset of the larger set of suggestible behavior characteristics.

4. The hypnotic state is characterized by various partial dissociations(Hilgard 1968).

These remarks are based upon Hilgard's research, but they are still tentative. He is the first to seek this

caveat. These propositions have come out of the results he has seen in his own research and in the failure of other researchers to adequately explain discrepancies or disagreements in theoretical stance between each other. They will be the theoretical underpinning of this study in regard to hypnosis.

h. Summation of Hypnosis Theories

Two schools of thought divide the theoretical ground of hypnosis, the trance school and the non-trance school. Among those who support the theory that hypnosis is an altered state of consciousness and subjects enter a so-called trance state marked by certain observable but not always consistent criteria, are Ernest Hilgard, Martin T. Orne, M.M. Gill, Margaret Brenman, F.F. Evans, A. Meares, Margaretta K. Bowers, and Andre Weitzenhoffer. The anti-trance adherents are Theodore X. Barber, T.R. Sarbin, M.L. Andersen, and William C. Coe. Within each of these two theoretical positions there is much latitude regarding the personality theories that each relies upon. For instance Gill and Brenman are psychoanalytically oriented, while Sarbin and Coe rely heavily on social learning theory. Because there does not currently exist a way to measure differences in physiological response or even in behavioral response between subjects who report they felt in a trance from those who reported they did not, the disagreement continues.

This study will rely upon the position established by Ernest Hilgard because it seems the most reasonable and cautious one. Hilgard has remarked that even before we had breathalyzer tests or EEG machines we could still determine when a person was inebriated or asleep. It does not take a definitive measure to enable one to categorize an individual as in a particular state. While these measures are helpful and provide conclusive evidence, they are not necessary in order for us to talk about or address the issue of intoxication or sleep or various other states.

Ronald Shor has provided an interesting explanation for the reason Theodore X. Barber and others have come up with so many studies that fail to substantiate the work of Hilgard and others who subscribe to the trance theory. Shor says that much of the success of hypnotic induction is dependent upon the expectations of the hypnotist. Barber and his colleagues may have entered into a self-fulfilling prophesy where they did not expect subjects to perform as well on tasks with a hypnotic induction as subjects who received no induction.

Finally in his reluctance to be no more precise than the evidence will permit, Hilgard seems to be realistically cautious. He seems more desirous of promoting research into unanswered questions than in seeking to confirm his own particular theory. His appreciation of both the contributions and limitations of other's theories also lends credi-

bility to his own integrity.

The failure among researchers and theoreticians to agree on a common description of what hypnosis is, cannot be ignored. It underlines the importance of continuing research in this area to add to the current body of knowledge on hypnosis.

i. Studies on Hypnosis that Apply to Learning

There are a number of anecdotal reports and case studies that illustrate the benefits that their authors believe hypnosis has to offer in the enhancement of learning and/or motivation to learn. These are not rigorous experiments done under controlled conditions but they are helpful in gaining a comprehensive picture of the field. The more scientific studies will be cited later.

Mirowitz and Tremonti claim that their students in hypnotic test groups showed the following results:

Able to: think more clearly, understand others better and accept dissappointments more easily,
More: frequent reading of curricular and extra-curricular materials, interest in attending classes, peace of mind, attention to academic work.
Increased ability to control temper.
Easing of nervous tension.

Critique:

It is not known if there were control groups in the work of these researchers and if so whether the controls were no-treatment controls or placebos. If no controls were used then the validity of the study is in question. There is also no indication of the number of the number of students, the time period during which they were studied or the kind of academic topics the subjects were studying or if they were taking the same courses or not.

McCord and Sherrill (1961) do not have a problem delineating the number of subjects for their research. They report on only one. Their subject was a university instructor and mathematician of know high intelligence who was placed in a deep hypnotic trance and given suggestions that when he awakened he would be given some problems in calculus that he would be able to do with high accuracy and faster than he had ever done similiar work in the past. The subject was strongly urged to make more efficient use of the knowledge he already possessed. On arousal he was given the calculus problems and asked to doas many as possible in 20 minutes. The subject completed in 20 minutes what would normally have taken him two hours without loss of accuracy. He was able to increase his speed by skipping steps in the mathematical process, performing in his head some of the calculations he would normally have written out, and by writing down some calculations extremely rapidly

The subject had spontaneous amnesia for some of his math calculations and after the 20 minute test appeared amazed at what he had accomplished. Moreover, the subject reported enjoying what he normally would view as necessary drudgery. The authors suggest further research into ways that hypnosis can be used to upgrade human intellectual functioning.

Critique:

A sample of one is hardly enough on which to base anything more than a call for further research. It is doubtful that the hypnosis, if it did anything, did more than give the subject permission to work faster, skipping some steps that had become routine but which out of habit he kept repeating. Even if this were the case, however, there is value in this for the subject and possibly for future subjects.

Summo and Rouke (1965) contend that hypnosis is one of the valuable aids sometimes used in the approximately 500 counseling sessions held each year at Manhattan College. Those cases more frequently involving the use of hypnosis were concerned with various manifestations of acute anxiety or with specific difficulties related to study habits and the learning process. They report success with students where supportive suggestion has been given to enhance concentration and uphold motivation for continuing hard work.

Critique:

There was no apparent effort made to use a control or

comparison group in order to substantiate success rates. While the number of sessions was fairly large, it is impossible to know what percentage of them were devoted to hypnosis, or how many students were seen for how many sessions. There is not enough information from which to draw any substantiated conclusions. This study does offer the opinion of an additional two clinical practitioners, out of the hundreds who also believe in the efficacy of hypnosis as a therapeutic tool.

Stanley Krippner (1963) reports on his work of five years with college students also. He says hypnosis has applicability in three areas for this population: improving study habits, reforming test-taking behavior, and strengthening academic motivation. In the author's experience, 90% of the students he worked with were able to enter a hypnotic trance and most of these reported improvements in one or more of the above areas. Krippner gives several case examples of his efforts in helping students overcome poor study habits, test taking anxiety, and lack of motivation to study.

Critique:

This is not an experiment and therefore has all the inherent problems of a set of case studies. There are no comparison groups, no generalizability beyond the individuals in the study and thus no way to account for the causes of the

behavior changes observed. While anecdotal, this study is not without value in that it serves to report findings that extend over several years with results of a consistent nature. While these lack the rigor of well designed experiments, they do report instances where students have made substantial academic improvement while undergoing hypnotic sessions with the author. It has been noted but bears repeating that the very lack of rigid, formal procedures may be one of the reasons, along with experimenter expectations, for the disparity of hypnosis research results.

Louis Tinnin (1963) investigated the role that hypnosis plays in cognitive functioning that occurs outside of conscious awareness. He performed an experiment with 3 male college students to test the effectiveness of post-hypnotic suggestions on learning. Each of his subjects was hypnotized and told he would have complete amnesia for the trance period. He was then warned that upon arousal he would be asked a question, such as "How much is $X^2 + Y^2$?" He was further told that he would be given a card with numbers in 2 columns. The second digit in the left column was the correct value for "X" and the fifth digit in the right column was the correct value for "Y". He was told that upon arousal he would be able to unconsciously solve the equation asked of him. Upon awakening, the subjects were unable to recall the trance period beyond a certain point. When given the card with the 2 columns of

figures they denied any awareness or associations to the numbers. When the problem was presented the subjects gave the correct answer and reported they were not aware of how they got it. When questioned later they were unable to recall the values used for "X" and "Y" to solve the equation and did not have any awareness of solving the problems. A variety of such situations was given to each subject. Algebraic expressions were varied to provide different degrees of complexity. Subjects were able to correctly give the right answers until the complexity of the expression exceeded their waking conscious capacity. The manner of presenting the values for "X" and "Y" were also varied and seemed to make no difference. Sometimes numerical values were paired with letters and the subject was given the letters associated with the numbers during the trance. In other instances certain letter-number pairs were given under hypnosis and later, after arousal the subject read a passage where certain letters were underlined. Out of the many letters underlined the subjects' were able to pick out the correct values based on number-letter pairs given as possibilities in the trance instructions, and solve the equation. In other instances the experiments attempted to distract the subjects upon arousal with conversation, reading aloud etc. with no apparent hindrance to the problem-solving ability of the subjects.

Critique:

While the variety of cognitive tasks is large, the number of subjects is too small to make this study generalizable beyond these three individuals. The knowledge that subjects can carry on cognitive activity without being fully aware of it, and while engaging in concurrent conscious activity is not new. It does point to the possibility of more efficient learning, not necessarily greater than the subjects would be capable of normally, but effective performance in less time than usual, of these three subjects.

Estabrooks and May(1965) were also interested in improving the cognitive abilities of students. They theorized that what was needed by their underachieving students was increased motivation. They used 22 male students, mostly undergraduates in a pilot study that used hypnosis as a vehicle for giving motivational suggestions. The experimenters wished to see if any improvement could be made in these subjects' academic performance. The study took place in the Fall of 1963.

The results were improvements in 16 of the 18 undergraduates both in grade point average over the previous semester and over the total college record.

Critique:

This was not a rigorous experimental study as the authors admit. It was instead, an exploratory pilot study. Two criticisms mentioned by the authors themselves were the volunteer

status of the subjects who all wanted and needed to improve their grades so that motivation was already present, and the additional confounding factor which was that the great majority of these men were in courses taught by the author. Results were less spectacular when grades from the author's courses were eliminated. One has to consider the possibility of experimenter bias.

Some attempt was made at statistical analysis in an "a posteriori" fashion. Each man in the study was equated with 10 others of his own class at Colgate University who had approximately the same over-all grade point average. The grades of these 10 "controls" tended to remain constant in the semester of the experiments whereas the experimental subjects showed improvement in their grades in 16 of 18 cases. While this is not a rigorous study and has many design flaws, not the least of which may be experimenter bias in grading his subjects, their already high motivation, and the lack of an equivalent control group; it is one of the few studies to use hypnosis as a vehicle for imparting motivational suggestions. The improved performance of the majority of subjects can also not be entirely discounted.

The next group of studies presented are less anecdotal and are more truly of experimental design than the previous group. They are studies that have used hypnosis as a vehicle to increase cognitive functioning.

Shulman and London (1963) used 60 female students out of 106 randomly selected from a group of 400 female undergraduate volunteers. The 60 were grouped according to hypnotic susceptibility as very tranceable (VT), tranceable (T), and untranceable (UT). Each group had 20 women. Two verbal learning tasks and one performance task were used. One learning task consisted of learning meaningful material (poetry) and the other of nonsense syllables. A tremor test was used as a buffer between the two verbal tasks during each session. One half of the subjects in each group had hypnotized sessions first and the other half began with unhypnotized sessions. Each subject was given 16 trials for the nonsense syllables and 10 trials for the poetry. After the experimental sessions, Form B of the Stanford Hypnotic Scale of Susceptibility was administered as a reliability check. Reliability between the first and second hypnotic susceptibility test was 0.90. Premeasures included a score for intelligence, anxiety, and hypnotic susceptibility. The groups did not differ significantly on intelligence or anxiety measures. Apparently no analysis was done for significant differences on hypnotic susceptibility.

A regression analysis was performed at the end of the experiment and it was found that no significant differences existed between the performance of the hypnotized and un-hypnotized treatment groups.

Critique:

The authors state that "relative differences in the subjects degree of hypnotic susceptibility did not influence the learning of nonsense syllables, poems, or performance on the Tremor test to an extent that could be detected in this experiment." By selecting a 0.01 level of significance and using groups of 20 volunteers it is little wonder that no significant differences were detected. Groups this size may not be large enough to show significant differences among them prior to treatments.

Methodologically by seeking to compare the effects of learning with hypnosis and without it and yet exposing all groups to both techniques, including a group of relatively non-hypnotizable subjects, possibly confounds the issue of determining significant differences. The authors themselves note that this "paradoxical use of hypnosis on relatively unsusceptible subjects may introduce unknown artifacts." Moreover, the hypnotic inductions in this study were not done in an orthodox fashion. Hypnosis was induced by the hypnotist reading from cue cards and without any attempt by the hypnotist to use idiosyncratic cues to deepen the trance state. Manuals for hypnotic induction caution against

reading hypnotic instructions and encourage a well rehearsed and naturally spontaneous flow of talk for induction. If there were no significant differences to begin with and procedurally one of the techniques was sloppy, then it would be very difficult to say anything about the results. Had there been a separation so that some received hypnosis and some did not, more definitive results may have been obtained, although the hypnotic induction technique would still be in question.

Swiercinsky and Coe(1970) conducted a study to see if hypnosis increases a subject's ability to learn meaningful material. White, Fox and Harris had established in 1940 that while nonsense recall did not increase under hypnosis or during the waking state poetic recall did increase under hypnosis. The authors also wished to learn if hypnotic responsiveness made a difference in learning.

The subjects were 35 male and 10 female upper-class undergraduate college volunteers. Prior to the experiment all the subjects listened to a recorded 10 minute talk on "matter" and took a 30 item short-answer test on recall. After the pre-test the Harvard Group Scale of Hypnotic Susceptibility Form A was administered. The subjects were then divided into three matched groups based on hypnotic susceptibility. Group one received a modified HGSB:A induction, group two received task motivational instructions where the subjects were told to imagine the effects of the task and

to try their very best to succeed in remembering the material. The third group received no preliminary instructions except to listen carefully.

An analysis of variance was computed on the hypnotic responsiveness scores and the "matter" pre-test scores to eliminate the possibility of initial differences between groups. No significant differences were found. All groups scored about the same on the pre-test with a mean of 34% correct. An analysis of variance of the difference between pre- and post-test scores showed no significant differences between groups. A two-way analysis of variance to determine if there were differences attributable to the level of the subjects hypnotizability and possible interaction with the treatments showed no significant main effects or interaction.

The authors found that learning material under hypnosis and being given a post-hypnotic suggestion of improved memory did not raise the subject's recall above those of subjects in either of the other two groups. The authors conclude that "...hypnosis in general can make no claim to improved learning capacity."

Critique:

Several difficulties arise with this study. First is the matching of subjects in groups to achieve equalivalence in hypnotic susceptibility. While this variable is controlled, there may have been others that may have had more profound

effects. For instance the authors state that they assume there was a random selection of intelligence levels since all subjects were from "a similar educational population." Merely being in an undergraduate psychology class does not guarantee equivalent intelligence levels. Since intelligence levels are not known the interactive effects of this variable with that of hypnotizability or even the treatment administered cannot be determined. A random selection of group participants may have been a more reliable method.

Both this study and that of Shulman and London(1963) presented the hypnotized subject with material to recall while still under hypnosis. No attempt was made to compare this method with subjects who were hypnotized and given suggestions for post-hypnotic recall and then awakened and presented with material to be learned. Parker and Barber (1964), and Gilbert and Barber (1972) used this method and found no significant differences but the two methods have not been compared in the same study. If there is any credibility to Freud's hypothesis that hypnosis improves recall by diminishing repression, then surely these two methods ought to be compared(London and Goldberg 1962). At variance with this study's findings are those of White, Fox and Harris which the authors cite, where subjects under hypnosis were able to recall poetry better than non-hypnotized subjects. Swiercinsky and Coe did not ask their subjects to recall material under hypnosis, only to learn it and then recall it

during the waking state. There may be a great difference here. Perhaps the answer lies in whether the material is meaningful. White, et.al. found no enhancement of learning of nonsense material but increased recall of poetry under hypnosis. It may be that a 10 minute recorded presentation on "matter" was essentially "nonsense" to the subjects of this study. It is true a gain was made in all groups in percentage of correct answers but that might be true of virtually any material presented. Before Swiercinsky and Coe can conclude that the 1940 study of White et.al. is invalid they must conduct a study under the same conditions and they must account for more variables than simply hypnotic susceptibility.

Much of the work of Theodore Barber is devoted to investigating the effect or lack thereof of hypnosis on cognitive functioning, or whether or not hypnosis is a separate state different from any other. Parker and Barber (1964) report that a group of 30 subjects with similar levels of high suggestibility were allocated at random to hypnotic and non-hypnotic treatments and to a control group. Another 10 subjects rated as relatively non-suggestible were assigned as a second control group. The entire 40 were pretested on digit symbol substitution, memory for words, and abstract reasoning. The group of 30 were divided into

groups of ten, one group received task-motivating instructions, another received a hypnotic induction procedure plus task-motivating instructions and the third group received no treatment. The 10 non-suggestible subjects received the task-motivating instructions without hypnosis. All subjects were then retested on alternate forms of the cognitive performance tasks.

Analysis of variance showed no significant differences between groups on the pre-tests. Findings show that on the simple task of digit symbol substitution subjects who received task-motivating instructions whether hypnotized or not showed enhanced performance. This gain was not shown on the other more complex tasks. Moreover, there was no significant difference between groups who showed improvement on the digit symbol substitution retest.

These results are at variance with Uhr and Weitzenhoffer who are cited by Gilbert and Barber (1972) as concluding that acquisition, retention, and recall can be improved by motivational suggestions given under hypnosis. These findings also contradict those of McCord and Sherrill (1961) although that study used only one subject.

Critique:

A serious criticism of this study is the small number of subjects in each group. It makes it very difficult to say this study's findings are reliable when the difference

between the three groups with enhanced performance and the control could be accounted for based simply on the Hawthorne effect. Any technique that was used might have produced enhanced performance over no technique used in the control group. One wonders what these researchers are studying. A variation which Parker and Barber did not try but which would have given them a pseudo treatment control group which could then have eliminated the confounding effects of Hawthorne would have been to have created another group that received hypnosis but no motivational suggestions. If it performed the same as the no treatment control group then one could say with more assurance that it was the motivational suggestions which affected performance.

Another area which has interested researchers is the effects that time-distortion has on learning. Can the perception that a subject has more time than he or she actually does have contribute to increased learning? Barber and Calverley (1964) wanted to know if hypnosis enhanced the perception of time distortion in subjects and if this perception enabled them to learn more efficiently by making it appear they had much more time to learn material than they actually had. They used 48 female college students, divided into 3 groups. One group of 16, rated as "good" hypnotic subjects were given a hypnotic induction procedure plus suggestions for

time distortion. The time distortion suggestion was 5 hours to learn 12 nonsense syllables. The actual time was 5 minutes. A second group of 16 whose hypnotic suggestibility was unknown were given suggestions for time distortion while awake and with their eyes open; and then asked to learn a set of 12 nonsense syllables. The third group of 16 who also had unknown degrees of hypnosibility were given the nonsense syllables without suggestions of time distortion or hypnosis. Both treatment groups were asked to memorize the nonsense syllables immediately after the hypnosis or alert suggestions.

On the subjective measurements 94% of the hypnotic induction group, 81% of the waking suggestion group and 12% of the control group reported some degree of time distortion. Analysis of variance showed a highly significant difference between the treatment groups and the control group on perception of time distortion. The hypnotic group had a mean score of 89.1 minutes while the waking suggestion group had a mean of 46.9 minutes and the control mean was 4.2 minutes. The researchers say that an analysis for significance between the hypnosis and waking suggestion group revealed no significant differences despite the hypnosis mean score being twice that of the waking suggestion group score.

An analysis of variance on results of a pretest for memorizing nonsense syllables found no significant differences between any of the groups on learning proficiency. On the retest analysis of variance found significant differences between the hypnosis treatment group and the other two. The mean retest score actually went down for the hypnosis group when it rose slightly or stayed the same for the other two groups.

Barber and Calverley commented that contrary to Cooper and Erickson, time distortion can be achieved not only in inexperienced hypnotic subjects but in waking subjects as well. they concluded that induction of a so-called trance state was not necessary for the perception of time distortion and that hypnotic time distortion does not enhance learning proficiency.

Critique:

Barber and Calverley can be criticized for selecting highly suggestible subjects for the hypnosis group but not determining the suggestibility of the other two groups. Possible differences are simply unknown. There was no testing for the usual indicators of hypnotic trance and despite the author's protestation that "the suggestions for time distortion were given firmly and seriously to both group A and group B." They admit that the procedures for the hypnotic group and the

alert suggestion group were somewhat different. This is not the usual standard of experimental procedure for Barber and his associates. They suggest both a homogeneous population and identical suggestions for further studies.

Barber and Calverley offer the following possibilities to account for the learning decrement in the retest scores of nonsense syllables: the administration of the hypnotic induction, the suggestions for time distortion, and an interaction of the hypnotic induction with suggestions for time distortion. They mention that other investigators have found hypnosis to produce a decrement in nonsense syllable learning. They do not mention increases in learning of meaningful material. They theorize that the passivity which is produced by the induction procedure may prevent optimal memorization; conversely memorization may require a higher level of activation than is generally found immediately after hypnotic induction. This would tend to be confirmed by Kahneman and Warburton (Warburton 1979) who says that the degree of resources an individual allocates to information processing is proportional to the degree of arousal. The authors speculate that the time distortion element may have had nothing to do with the results of the nonsense syllable learning. If so the importance of this experiment is the decrement in learning by the hypnotic group. If not the failure of the authors to use a homogeneous population and give both treatment groups the

same instructions were fatal flaws for obtaining any meaningful results.

In an attempt to overcome the deficiency of non-equivalent groups and the differences in giving suggestions to the two treatment groups in the Barber and Calverley study, Richard St. Jean undertook two experiments. In the first, St. Jean took 42 introductory psychology students selected because they scored either high (8-12) or low (0-4) on the Harvard Group Scale of Hypnotic Susceptibility (HGSHS). Subjects from each susceptibility group were then randomly assigned to one of three time distortion conditions, an explicit condition, an implicit condition and a control. In the explicit condition subjects were given repeated suggestions that time was slowing down followed by the suggestion that they would have an experienced time period of 10 minutes to study a list of words to be memorized. Implicit subjects were told only that they would experience a study period of 10 minutes with no suggestions for time slowing down. Control subjects were accurately told they would have 3 minutes of study time.

All subjects were first given a list of 12 trigrams to study for 3 minutes. After 3 minutes the list was removed and subjects were asked to write as many as they could from memory. A modified form of the Stanford Hypnotic Susceptibility Scale Form C was administered (2 items, age regression and amnesia were dropped). Subjects were then given a list

of 40 nouns to study and assigned randomly to one of the 3 groups. At the end of 3 minutes the list was removed and subjects were asked to provide written recall.

Analysis of initial trigram data revealed no significant effects associated with hypnotic susceptibility, time distortion condition or susceptibility by condition interaction. St. Jean found no significant difference between the way the time distortion suggestions were given either implicitly or explicitly. He did find a positive interaction between the level of hypnotizability and the kind of time distortion suggestions given. Those who were highly suggestible did better with implicit suggestions and low suggestibles did better with explicit suggestions. St. Jean surmizes that the explicit suggestions produced decreased arousal and passivity in the more hypnotizable subjects.

He did not find that any group showed any significant increase in learning. Still he is not willing to dismiss time distortion as a possible facilitator of learning and says it is possible that learning was not facilitated because neither implicit nor explicit suggestions produced a genuine or convincing experience of distorted time. Another possibility he mentions is that time distortion might be more effective if it focused directly on information processing so that each item to be learned was perceived to have a lengthened amount

of time for memorization instead of expanding the total time without regard for how the attention is distributed over the study material.

Critique:

St. Jean is his own best critic. Some subjective measure of time distortion perception would have been helpful but even this may not have shown any more than that the subjects were cooperative and said they perceived what was expected of them. It is important to note that the pre-test consisted of trigrams to be memorized and the post-test consisted of nouns. It may be that this difference produced an interaction or confusing factor which made any differences impossible to determine.

To check on the two most obvious criticisms, a convincing experience of distorted time and time distortion focused on the time allotted for each item to be learned, St. Jean designed a second experiment. A within subjects design was chosen to increase sensitivity to possible small treatment effects as well as provide a cross-methodological check for experiment one. He took 33 students from introductory psychology classes at California State University. Eighteen were high susceptibles and 15 were low susceptibles. Each was classified based on results of two different hypnotic susceptibility scales.

Subjects were first given a waking-trial then a standard hypnotic induction procedure. While the hypnotic instructions were still in effect subjects were given a second list preceded by the same instructions as the first list. When the response time had elapsed subjects were instructed to close their eyes and relax. For about a minute the instructor gave suggestions for relaxation. The next 2 lists were preceded by time distortion suggestions, explicit and implicit, in counterbalanced order. The explicit instructions included repetitive suggestions that time was slowing down and that each second would be experienced as three times longer than usual and therefore the words presented would appear on the screen three times longer than usual. The implicit instructions were simply that each word exposure would be experienced as 6 seconds. At the end of the time distortion trial and before hypnosis was terminated subjects were again given a neutral trial without any time distortion. This was followed by another minute of relaxation suggestions and then subjects were awakened in standard fashion. Subjects filled out a questionnaire probing their perceptions of the passage of time and asking for specific estimates of exposure duration for the words in each list.

The results showed that the high susceptible subjects estimated the time distortion trials to be significantly

longer than the neutral trials, but not significantly different from each other so that it appears that there was no difference in time estimation between the implicit and the explicit instructions. Low susceptibles revealed little difference in their estimates of any of the four trials. As for word recall, neither time distortion condition produced a level of recall that was greater than the waking or neutral hypnosis recall, and implicit time distortion recall was significantly less than that which occurred in the waking trial.

Critique:

This experiment also showed that time distortion perception changed but it failed to show whether this was due to the hypnosis or simply because the subjects were cooperative and gave the experimenter what he wished to hear. The lack of an increase in learning, particularly since the material was words and not nonsense syllables, indicates that hypnotic time distortion may not increase learning. In all these experiments however, the learning asked of the subjects was material chosen by the experimenter and not by the subjects. Perhaps all the material in all three preceding studies is essentially nonsense to the subjects or at least not significant enough to be meaningful. One might surmise that the initial high performance was based more on its novelty than its waking state. We are still left not knowing if hypnotic

time distortion can increase learning of material meaningful to the subject.

If time distortion brings us no closer to increasing learning, are there other methods using hypnosis that make for more efficient and effective learning? Peter Mutke(1967) believes there is. He worked with students at the Monterey Peninsula College to increase reading speed and comprehension using image rehearsal as part of the hypnotic process. He used 94 subjects chosen at random for his experimental group and an equal number of subjects enrolled in the general course of the Dan-Ro Remedial System as a control group. Both groups used the teaching methods of the Dan-Ro system except that the hypnosis group also received "image rehearsal" and some of the terminology was changed to make it more suitable for hypnosis. Image rehearsal was explained by the author as rehearsal of imaginary situations in school, their own businesses, or during exams. It was also used during hypnosis to review the actual situations they had earlier imagined for errors, or failure and then to rehearse corrective measures and desired results. The training period for both groups was essentially the same.

The results of the experiment showed that both groups made improvements in reading speed and comprehension ranging from 200% to 1,000% with an average increase of 600% over the base line. The differences occurred in the length of time the

two groups required to reach these levels. The hypnosis group made these improvements in 5-6 sessions while the control group needed 22 sessions to attain the same level of performance. It was also noted that the experimental group was more relaxed and had more esprit de corps.

Critique:

This study has the positive features of using subjects randomly assigned with equal numbers in both groups. The teaching methods are similar and the length of training sessions are equal. The problem of a no-treatment control group is thus eliminated. Confounding features of this study include the training in an additional technique (hypnosis) which may have been the cause of the esprit de corps irregardless of the technique itself. Another important confounding feature was the time spent counseling individuals with personal problems in the experimental group that the control group did not receive. This last could have been the cause of much of the rapid change seen here. When problems of a personal nature that interfere with studies are resolved or alleviated, resources are freed up that can be brought to bear on the task at hand (reading speed and comprehension). Assuming that the groups were truly random, others in the control group must have had personal problems too, but they were not given these special counseling sessions. Still

the over-all results of shortened training time are impressive, even though both groups eventually obtained the same results.

Researchers who also worked with subjects in increased reading speed but with different results were Donk, Vingoe, Hall and Doty (1970). They conducted an experimental study that compared three techniques for increasing reading efficiency. The study used 32 college volunteers (16 male and 16 female) from a mental health class who had participated in a group hypnotic demonstration. The subjects were divided into 4 groups. One group received a traditional hypnotic induction, a second group was given an alert-trance induction, a third a "Barber-type" no-induction procedure, and a fourth a random-talk control procedure. In the three experimental groups the procedures were followed by suggestions for improved reading efficiency. One half of the subjects in each of the four groups were given first a reading test and then the experimental procedure followed by a second reading test and then given an irrelevant task of a comparable length of time, whereupon a third reading test was given. The other half of the four groups were given these assignments in reverse order: reading test, irrelevant task, reading test, experimental procedure, and reading test.

Analysis of variance on the initial reading levels revealed no significant differences between the groups. The

results showed reading speed increased significantly for both the alert and Barber-type induction procedures and no significant increase for the traditional or the random talk groups. There was no change for any of the groups on reading comprehension. The authors stated these findings were at variance with previous ones by Donk, Knudson, Washburn, Goldstein and Vingoe where reading speed increases had taken place using a traditional induction procedure but without comparison groups.

Critique:

The way volunteers were obtained may have affected the results since these volunteers were chosen not based on the Stanford Hypnotic Susceptibility Scale scores as the previous study by Donk et.al. but by volunteering after participating in a group hypnosis demonstration. Their experience with the demonstration may have affected how they viewed hypnosis and their degree of cooperativeness. More relevant is the smallness of the sample size. A larger sample may well have provided a showing of significance in the traditional hypnotic group. It is rare for there to be differences shown with various methods of induction that do not include a traditional approach. Much research by Barber and his colleagues is reported as showing equal achievement for groups using traditional approaches and Barber's technique or a motivating non-

induction procedure. No other research has shown the traditional method failing to produce significant or similiar results when others did.

Gilbert and Barber (1972) undertook a study similiar to one done by Parker and Barber (1964) nearly ten years earlier. Gilbert and Barber used 120 female student nurses at Northeastern University and Medfield State Hospital as volunteer subjects. All were pre-tested on four cognitive tasks that had been shown by earlier pilot studies to have high reliability, validity, comparability, sensitivity and brevity. The four tasks consisted of a visual-motor coordination task taken from the Digit Symbol Substitution Test of the Wechsler-Bellevue Intelligence Scale, a number facility task of addition, an abstract reasoning task and an associative memory task. One third of the subjects were given an extended induction procedure, one third received a minimal induction procedure, and the remaining third were not exposed to any hypnotic induction. One half of the subjects received tape-recorded motivational suggestions for improved performance. Each subject was then assessed on alternate forms of the four cognitive tasks.

The results did not show any significant difference between the groups on any of the four tasks except that there was an interaction between motivational suggestions and levels

of suggestibility on the number facility post-test. Highly suggestible subjects who got motivational suggestions showed a gain in proficiency and those who did not showed a loss. Also those in the extended hypnotic induction group tended to have higher gain scores between pre- and post-tests on the visual-motor coordination task than the minimal induction group. The minimal induction group scores were also higher than the no-induction group. With the exception of this trend on the visual-motor coordination test the duration of hypnotic induction did not significantly interact with either of the other two variables, motivational suggestions or level of suggestibility. On none of the tests did the presence or absence of motivational suggestions have any significant effects. This result is at variance with the findings of Parker and Barber (1964) where motivational suggestions were the only variable that appeared to improve performance on the digit-symbol substitution task, Peter Mutke (1967) and his study with image rehearsal, Summo and Rourke (1965) who used supportive suggestions in their sessions with clients, or McCord and Sherrill (1961) who used motivational suggestions to increase cognitive performance. Gilbert and Barber offer their own suggestions for why there were no clear-cut gains in performance by these subjects on tasks of cognitive functioning. They surmized that a tape-recorded hypnotic induction may be less effective in producing deep hypnosis than one given

personally and that it may also be less motivating. This is disputed by Shor and Easton (1973) who assert that the tape recorded presentation of the Harvard Group Scale of Hypnotic Susceptibility works about as well as the Scale given personally. More importantly, different experimenters were involved in each phase of the experiment so that recruitment, testing, and administration of hypnotic inductions and motivational suggestions were all delivered by different people. This variable may be important if behavior in a hypnotic situation is closely related to the interpersonal relationship between experimenter and subject that Gilbert and Barber suggest. Hilgard says this is not a factor in the first sessions of hypnosis and Gilbert and Barber used only one session (Hilgard 1968). Gilbert and Barber also speculate that the number of and kind of tasks may have affected the results or that since the subjects were all highly motivated to begin with little could be gained by additional manipulation.

Critique:

Perhaps Gilbert and Barber protest too much in their lack of significant differences. Even though the trend on the motor-visual coordination task increased as the length of hypnotic induction increased, there was no significant difference found between the groups. Looked at another way,

however, one sees that the mean scores for the extended hypnotic induction group (8.2) were nearly twice that of the minimal induction (4.8) and nearly three times that of the no-induction (3.1) group. One other result not mentioned by these experimenters but obvious from the chart included is the mean gain scores on the associative memory task of the highly suggestible subjects who received the extended induction procedure. These subjects' mean scores were 2.9 while no other group even approached this score. The highly suggestible subjects who received no induction had mean scores of -0.3 and the minimal induction subjects had mean scores of 0.6. It seems possible that Gilbert and Barber have overlooked where highly suggestible subjects can make substantial improvement.

Another possible flaw in the design of this study is the failure of the experimenters to give those hypnotic subjects who were to receive motivational suggestions the suggestions while they were hypnotized. Research has shown (Donk et.al. 1968, Salzberg 1960) that when these two are paired, cognitive performance does improve. This in itself may account for the lack of clear cut results. Another reason comes from the researchers themselves who pointed out the necessity of good rapport between subject and hypnotist (Shor 1972, Petrel-Petrelievicius 1975). While Hilgard says this

is not a factor in the beginning session, these subjects did have a variety of experimenters working with them and perhaps they were somewhat overwhelmed. Even with this lack of personal rapport, there were trends of increased cognitive functioning following induction procedures on the visual-motor coordination task and among highly suggestible subjects on the associative memory task. Gilbert and Barber are right to not draw conclusions merely from trends and to stick to significant differences. They need to be somewhat more attentive however, to the possibilities of their precluding any significant differences by the design of the experiment itself, namely by not giving the hypnotic subjects motivational statements while under hypnosis instead of under waking conditions. It is understandable why these researchers did not do this since they do not subscribe to the belief that hypnosis is a state, distinct from waking conditions, but this does not absolve them from considering this possibility.

From this sample of research it is apparent that much contradictory data is being collected and the conclusions reached from this data depend more on the theoretical stance of the researcher and the scientific rigor with which the studies are conducted than any other considerations. It becomes evident that those researchers who already accept the trance paradigm of hypnosis are far more willing to be

flexible in their approach to the investigation of hypnosis and thus under-cut their credibility and the validity of their studies. The most rigorous experimenters, while they have methodological inadequacies also, have made an attempt to control variables and keep to an experimental standard of control and comparison groups and equality of treatment. Of the researchers who concluded that hypnosis had a favorable effect on cognitive learning: McCord and Sherrill (1961), Krippner (1963), Tinnin (1963), Estabrooks and May (1965), Summo and Rouke (1965), and Peter Mutke (1967), only Mutke came close to providing the rigorous experimental conditions that are necessary to enable well-founded conclusions to be drawn. Those researchers who found hypnosis to have no significant effect on improved learning: Barber and Hahn (1963), Shulman and London (1963), Parker and Barber (1964), Donk et al. (1970), and Swiercinsky and Coe (1970) were also those who carried out the more experimental of the studies. Even these had important methodological or analytical flaws.

In all the experimental studies the groups had very small numbers of subjects. They ranged from 8-20 subjects with an average of 13 in each group, except for the Shulman and London (1973) study which had 40 participants per group. These numbers are too few to base well founded conclusion upon. The most interesting result of this review however, is the clear

delineation between the case studies and the group experimental studies. The case studies tend to conclude that hypnosis has significant if poorly measured effects. The experimental studies generally fail to substantiate this. It is also interesting that the case studies are reported by clinicians who use hypnosis in their practice. The experiments are done by clinicians who are more skeptical of positive results. It takes us back to the dilemma that Shor (1972) and Erickson and Hull all experienced, the need to be convincing as a hypnotist in order to obtain effective responses and the need to be detached and neutral in order to analyze the results or even design the experiment so that appropriate controls and measurements are assured.

j. Theory of Relaxation as a Necessary Element of Hypnosis

The fundamental common thread that runs through all the work of all of the investigators of hypnosis, Mesmer, de Peységur, the Abbé Faria, Braid, Charcot, Liebeault, and Bernheim is that relaxation precedes and lays the groundwork for eliciting the various phenomena associated with hypnosis (Edmondston 1972, 1981). Bärmark and Gaunitz (1979) brought up the possibility that mantra-meditation/relaxation procedures and hypnotic-relaxation procedures produce similar phenomenological states. Describing ancient sites of healing, Edmondston assures us that "Sleep and hypnosis are longtime bedfellows." The one pervasive theme transcending all the social context explanations of hypnosis has been the sleep-relaxation observations, regardless of the particular emphasis of a particular era (Edmondston 1981). Electroencephalographic recordings have shown that sleep and hypnosis are quite different states but the differences between relaxation and hypnosis are less clear (Graham et.al. 1975).

Even when this pairing was not expected it was observed and reported. Mesmer was apparently so taken with his magnetic fluid belief system that he was blinded to the sleep-relaxation phenomena present in his mesmerism. He considered the coma that followed the induced crisis to be at best inconsequential and at worst an interference. De Peységur was not afflicted

by the same tunnel vision. Taught by Mesmer, he was surprised when he observed phenomena he did not expect, sleep, drowsiness, relaxation. His desire had been to reduce the severity of the crisis that Mesmer's technique frequently elicited, not to eliminate it or produce a different result. For the Portuguese priest José Custodio de Faria, a pupil of de Puységur, the processes involved in the production of trances were the same as those involved in the production of sleep. So pervasive was Faria's awareness of the sleep-hypnosis relationship that he selected his subjects based on their ability to fall easily into a natural sleep. It could be said that the Abbé anticipated the modern scales of capacity for hypnosis which generally begin with the subject demonstrating his or her ability to become "naturally" relaxed.

The English successor to the Abbé Faria was James Braid. Braid extended Faria's observation that hypnotic phenomena were due to happenings within the subject, not the operator and that there was no fluid passing between the operator and the subject. Braid went on to demonstrate that hypnosis was related to sleep in his choice of the word hypnosis over mesmerism. Hypnosis is a Greek word for sleep. He also learned that hypnosis could be achieved by creating fatigue in the eyes that generalized and

affected the activity level of the entire nervous system, producing a "nervous sleep". He soon found that the attention did not need to be fixed through physical means (eye fixation) only, but could be accomplished through mental fixation on a particular thought or idea suggested verbally. The legacy of Braid's ideas of hypnotism and sleep/relaxation and his techniques of fixing the attention of the subject either physically or mentally was furthered by Liebeault and Bernheim. Other researchers would contribute to our knowledge of hypnosis and Pavlov would add the rigors and elegance of the controlled experiment that would replicate the findings of others. Modern researchers have largely concentrated on the various characteristics of hypnosis, the conditioned response elements, EEG changes during hypnosis, the stages of trance etc. and its underlying element relaxation has been diminished in importance. Recently this trend has been reversed.

Edmondston has put the elements that Benson has enumerated as basic to producing the relaxation response in the language of hypnosis. This juxtaposition is a powerful argument for his position that relaxation is a necessary if not sufficient condition for hypnosis. Benson outlines 4 basic elements that produce the relaxation response: a mental device, a passive attitude, decreased muscle tone, and a quiet environment.

For the first, the mental device, virtually all the present day techniques and many of the past ones begin with some method of arresting the subjects attention. Eye fixation, hand levitation, visual imagery techniques, and even the "relaxation technique" in which the subject's attention is drawn progressively to various muscle groups are mental devices. Even the words of the operator can serve as this "mental device" to help the subject exclude the external, the logical, and other sensory input.

A passive attitude helps in concentrating on the mental device. Hypnotic operators tell their subjects to "let the cares of the day fade into the background." If the individual becomes distracted he or she is directed back to the technique. In the Stanford Scale and the Harvard Group Scale we find, "Just relax. Don't be tense. Keep your eyes on

the target. Look at it as steadily as you can.

Should your eyes wander away from it, that will be all right... just bring your eyes back to it."

Just as with meditation, hypnosis urges the subject to not be concerned with performance, on how well the technique is working. Hypnotic subjects are told, "Your curiosity will

be satisfied (regarding what the experience will be like) before we are through, but you can best

get the answers you want by just letting yourself

be a part of what goes on, and by not trying to watch the process in detail."

Likewise decreased muscle tonus is encouraged in hypnosis just as in relaxation. The subject is asked to get comfortable, often reclining, told to loosen clothing, remove contact lenses, go to the bathroom etc, before beginning the procedure.

The fourth feature, a quiet environment is also not unique to meditation or relaxation but is common to hypnosis as well. "All four elements used to elicit the relaxation response are basic to the induction of hypnosis." says Edmondston.

Edmondston agrees that by 1972 Wallace and Benson had established that Transcendental Meditation did yield physiological changes that pointed to a decrease in the meditators metabolism. Wallace originally proposed that the physiological effects of TM differed from those of hypnosis. A few years later Benson reported the relaxation response appearing in a variety of techniques, hypnosis among them (Edmondston 1981).

k. Summation of Theory that Relaxation is a Necessary Element of Hypnosis

Common to virtually all techniques of hypnosis is the element of relaxation. In the 19th century Braid showed this common theme by using hypnosis from the Greek word hypnos, to sleep, as a substitute for the word mesmerism. Edmondston has pointed out the similiarity between Benson's four basic elements

necessary for relaxation and the techniques currently used to elicit a trance state.

1. Studies that Compare Hypnosis and other Relaxation Techniques

Relatively few investigations of hypnosis have attempted to understand it from a fundamentally neutral base; that is from the presentation of induction suggestions without additional instructions suggesting either hypnotic phenomena commonly associated with trance induction be exhibited, or that hypnosis would be effective in alleviating this or that disorder, worry or distress. Edmondston maintains that studies which both induce hypnosis and attempt to alleviate symptoms give up a measure of clarity and simplicity and are open to confounding factors. He cites a 1960's series of studies conducted by Evans that seek to get around this complication. Evans(1967) wished to know if it was possible to induce deep hypnosis without subjects awareness or knowledge that the experimental procedure involved hypnosis. He chose a relaxation method of induction and told his subjects that he was investigating "the effects of relaxation on behavior." They were further told that their "main task was to relax as completely as possible." Words of hypnosis and trance were omitted. The induction procedure lasted 30 minutes and included having the subject lie down on a couch with a "blank mind" and listen to the experimenter talk and count in rhythm to the subject's breathing

along with suggestions of eye fatigue and relaxation. At the end of the induction procedure a natural transition was made to the testing procedure. Subjects were tested with suggestions for arm rigidity, visual and auditory hallucinations, illusions, amnesias, anesthesias etc. along with suggestions of continued deep relaxation

Three samples of subjects were tested over a 5-year period for a total of 296 subjects. The depth of hypnosis was rated on a four-point scale and distributions, both with respect to central tendency and variability, were strikingly similar to those reported from subjects undergoing an ordinary hypnotic induction that was labeled as such. In Evans' study 13% of all his subjects were rated as achieving deep hypnosis while usual hypnosis studies yield 16%. In other words, relaxation instructions elicit the same responses in the same distribution format as blatant hypnotic instructions (Evans 1967).

Edmondston asserts that what Evans has shown is that when subjects are given an explicitly non-hypnotic relaxation approach, all the phenomena ordinarily associated with hypnosis occurs without the subject being aware that hypnosis has taken place (Edmondston 1981).

Critique:

This study is impressive because of the number of subjects which were used as well as for the conclusions reached that hypnosis even when labeled something else works. Weak points

of this study include the confounding factor Edmondston just described. Subjects were given suggestions for various hypnotic phenomena as a way to test hypnotic depth. This gets away from his aim of separating hypnosis from its "neutral" ground of eliciting relaxation only. Still these measures are the ones accepted as indicators of the trance state.

Another complication was Evan's use of a 4-point scale of hypnotic depth instead of Stanford, Harvard, or the HIP (Hypnotic Induction Profile). In spite of these minor points the importance of Evan's work is clear. The major element or precondition for hypnosis to occur seems to be relaxation.

Another study that also compared hypnosis and relaxation was one by Graham et.al. They used the same procedure but labeled it self-hypnosis for one group and systematic relaxation for the other. The guise of this experiment was to treat insomnia. Graham et.al. (1973) used 22 undergraduate student volunteers. They were chosen on the basis of their reporting that they needed an hour or more to get to sleep at least once a week. Subjects were enlisted during the Fall semester and were asked to carefully record their sleep habits during the last 20 school nights of the semester. During the first half of the next semester each volun-

teer participated in four, half-hour training sessions. Each training session consisted of 10-15 minutes of general relaxation instructions followed by instructions to concentrate on one part of the body. Subjects were then instructed to practice at home between the sessions and for the rest of the semester. All sessions for all subjects were identical except that half were told the procedure was systematic relaxation and the other half were told it was self-hypnosis. The instructions were taken from the Stanford Hypnotic Susceptibility Scale: Form C. Suggestions to "go to sleep" or "become hypnotized" were changed to "relax" for the relaxation group.

At the end of the second semester, the subjects were asked to complete another sleep data card for the final 20 school nights. Four months after the training a follow-up questionnaire was mailed to each subject. Each was asked to report on the results of the study and the present state of his or her sleep problem. Subjects were matched according to severity of insomnia and hypnotic susceptibility, then assigned to one of two treatment groups. This was to eliminate any significant differences between the groups.

In the subjective ratings from questionnaires filled out at the conclusion of the study and 4-6 months later, there were significant decreases in problem severity at the 0.01 level of significance. The objective data also

showed improvement of both treatment conditions but a significant difference was found only in the relaxation group. T-tests revealed no significant differences in hypnotic susceptibility, initial expectations of improvement, incidence of insomnia or subjective ratings of insomnia severity. The experimenters' conclusion is that the findings are a result of differences in experimental treatment and not initial differences (Graham et.al. 1975).

Critique:

While the author's claim to have eliminated possibilities of significant differences between groups initially, analysis of their data show that the percentage of nights of insomnia after training was 12% for the hypnosis group and 13% for the relaxation group; but the pre-training data show that incidence of insomnia in the hypnosis group prior to the experiment was 23% and 36% for the relaxation group. Thus the difference in scores was far greater for the relaxation group because initial severity was more. No covariance techniques were performed so that interpretation of these data is uncertain. Common sense will note however, that additional statistical analysis could possibly have resolved this dilemma. Edmondston theorizes that there may be an optimal level of improvement with either treatment. If one group starts out with a larger deficit it will show a more significant improvement (Edmondston 1981).

In analyzing the similarities in hypnosis and various relaxation-meditation states Bärmark and Gaunitz (1979) and Heide et.al. (1980) found some interesting results. The Bärmark and Gaunitz study sought to compare hypnosis and meditation while Heide et.al. sought to find a predictor of benefit to meditation subjects in hypnotic susceptibility or responsivity.

Bärmark and Gaunitz (1979) used 42 subjects, 23 of whom were experienced meditators and 19 highly susceptible (as determined by the Harvard Group Scale of Hypnotic Susceptibility) but inexperienced hypnotic subjects. The meditators were volunteers from a local Transcendental Meditation center. Each group was exposed to one experimental and one control condition. One half of each group began with a quiet-sitting control period where subjects sat quietly with eyes closed in a comfortable position. The other half began with their experimental condition of either hypnosis or meditation. In the next session one week later, the half who had been in the control condition switched and went to the experimental condition while their counterparts were in the control condition or quiet-sitting.

During both the experimental and control conditions all subjects were measured continuously for heart-rate, respirations, and skin temperature. For both experimental groups the results of these readings showed a decreased

heart rate during the procedure by about one beat per minute. There was a similiar decrease in respirations for both when compared with their quiet-sitting control time. The physiological data showed that meditation and hypnosis cannot be assumed to be different physiological states." There were differences in the subjective experiences of the two groups. Hypnotic subjects experienced more vivid imagery but this may be due to the different expectation of each group. Hypnotic subjects are encouraged to be attentive to suggestions while meditators expect to be detached from conscious activity. The author's concluded that, "TM is a phenomenologically altered state of consciousness which resembles the hypnotically altered state."

Critique:

Meditators were not administered the HGSHS:A because they refused to take it; considering it to be contradictory to the purposes of TM. Therefore it was not possible to know if significant differences between the two experimental groups existed or not. The study by Heide et.al. may make this a moot point since they claim that hypnotic responsivity is related to the ability to sustain attention in a meditative task (Heide et.al. 1980). Never-the-less, a pre-test measure taken on all participants would have made this study stronger. Every effort was made to give each group

equal amounts of time in all conditions. All sessions were held in a dimly lit, semi-soundproof room where subjects sat upright in comfortable chairs. None of the measures revealed any significant differences between the hypnosis and meditation groups. It may be that the measures taken were not those which would indicate differences between the groups. If there are differences, the method by which they can be measured is unknown.

Heide et.al. (1980) took 58 undergraduate psychology student volunteers who had no previous experience with hypnosis or meditation and taught them meditation using a mantra technique. Prior to the meditation instruction they were pre-tested with the HGSHS:A. The subjects were then stratified into 3 levels of hypnotic responsivity: low (1-4); medium (5-7); and high (8-12). They were then divided randomly within each level into an experimental and control group. In the second session all participants completed a State-Trait Anxiety Inventory. The controls were then dismissed and the experimental subjects were instructed in mantra meditation.

The instruction was a single 1-hour group session. The subjects practiced for 20 minutes after being taught the passive, sub-vocal repetition of mantra meditation. They then discussed the experience with the instructor. They were asked to meditate twice daily for a week and were given an

instruction sheet and a log in which to record their morning and evening meditations.

After 7 days the subjects returned and both control and experimental subjects were given the State-Trait Anxiety Inventory, HGSHS:A, and for the meditation subjects a questionnaire asking them to rate how much they had benefited from the meditation and how likely they were to continue practicing it.

Results showed no significant differences on the pre-test measures of hypnotic responsibility or anxiety. There were no significant differences in the number of sessions of meditation practice by any of the three levels of hypnotizable subjects. The high hypnotizable subjects in the experimental group showed significantly greater drops in trait anxiety than either the low or medium hypnotizable subjects. Findings provide support for the hypothesis that hypnotic responsibility is predictive of benefit from meditation as measured by a decrease in trait anxiety.

Critique:

The major critique of this study is the short time in which it was carried out. One week is hardly enough time to adequately test the effectiveness of a technique. It may be that a longer trial period would have seen a decrease in trait anxiety among the medium and low hypnotizables as well. Experiments with far greater numbers of participants are

also needed before it can be said that a predictor of behavior has been found. Even with these caveats, the findings of this study are encouraging in that they provide a link between the traits that indicate benefit from one technique, meditation, with those of another, high hypnotic responsivity.

A number of theories and several groups of studies have been reviewed in order to both explain and draw together the different threads which make up the fabric of the reduction of stress through relaxation using Benson's relaxation technique and the Harvard Group Scale of Hypnotic Susceptibility's protocol of self-hypnosis. The attempt has been to show how the theories of stress, hypnosis, and the theory that relaxation is a necessary element of hypnosis, are related. Relevant studies have been reviewed in an attempt to show what has already been done and what needs yet to be done to clarify and expand the body of knowledge regarding how stress affects performance and whether the two techniques used in this study are effective in reducing stress and in enhancing academic performance among first year law students.

Chapter III Methods and Procedures

a. Population and Selection of the Sample

The population consisted of twentynine (29) first year law students at Southern Illinois University, who volunteered for this project. Typically the first year class at SIU has 110 members with approximately 75% being male and 25% being female. This year the university accepted 111 students in its first year class, 71% male and 29% female.

Cooperation from the Dean's office at SIU Law School was excellent. The experimenter met with the Dean and the first year law faculty during the summer prior to the experiment. All pledged their cooperation. Prior to orientation and the beginning of Fall classes a meeting with second and third year students, serving as small group leaders during the Student Bar Association Orientation was held to enlist their support for this project. The experiment was scheduled for the first week of classes. During Orientation approximately 90 students took questionnaire packets. On Monday of the first week 21 students took the Harvard Group Scale of Hypnotic Susceptibility. At this time the group was randomly assigned to two treatment and one control group. Many students in the control group voiced objections and some refused to participate if they did not receive one of the treatments. The following day, 8 people showed up for the self-hypnosis training, and 1 person for the relaxation training. As a

consequence of this poor showing the experiment was cancelled for the Fall term and re-scheduled for the Spring. Subsequent student feedback revealed that after orientation the perceived stress was so great that students felt they literally did not have an hour to devote to learning a stress reduction technique. Faculty and staff reported students crying in their offices on the first day of classes and a few dropped out after only a day or two of classes. During orientation students had been forewarned of the rigors of studying the law and they were given lengthy reading assignments to be completed over the week-end. They were warned that they were expected to be prepared for classes on Monday.

In this hectic atmosphere, students were reluctant to commit themselves to any extra project no matter how benign or even positive. In the aftermath of these developments the experiment was redesigned to eliminate random assignment of treatments and subjects were allowed to choose which technique they wished. It was also felt that running the experiment during the second term would result in better participation by students who would have a clearer perspective on both the usefulness of stress reduction and the amount of time available to them. It was not true that students did not have time to participate in this experiment but it was true that they perceived their time as greatly constricted. Also the experimenter could undoubtedly have done a better job

in soliciting participation.

Subsequent to the cancellation of the experiment in the Fall, the experimenter personally contacted each of the 21 participants who had returned the questionnaire packet. Of this number 17 elected to participate during the Spring term and 5 additional students volunteered. This group of 22 was then divided into two groups based upon individual preference for one of the two treatment groups. Thirteen(13) chose the self-hypnosis and 9 chose the Benson Relaxation Procedure. As training for these two groups commenced, solicitation for a control group began anew. Nine (9) volunteers were obtained for a no-treatment control group with the promise of learning one or both techniques subsequent to the conclusion of the experiment and an opportunity to monitor stress levels throughout the term by participation in the stress assessments that all experimental subjects would be given.

b. Procedures

1. Data Gathering. Pre-test measures included two proxy pre-test scores: undergraduate grade point average and Law School Admissions Test Score(LSAT); the Harvard Group Scale of Hypnotic Susceptibility Score; Scores on the General Well Being Schedule; Tennessee Self Concept Scale; and data collected from a general questionnaire. As the experiment progressed data was collected by a short questionnaire, filled

out by the subjects on general characteristics of stress level. They were completed twice a month and included questions about sleeping and eating habits, alcohol and drug usage, ability and comfort in classroom performance etc. (See appendix for questionnaires and instruments). A Likert type scale was utilized for this instrument. Every participant met with the experimenter twice a month to complete this questionnaire. These meetings served as a reminder to those in the treatment groups to continue to practice the technique they had been taught and to provide a measure of relative stress levels throughout the term. They also served as a spot check on all participants who may have needed to be referred for counseling at one of the on-campus facilities. In addition the General Well Being Schedule was given once each month as a second measure of stress levels. Post experiment measures consisted of a comparison of first and second semester grades, grade point average, and change in class ranking.

2. Treatments. Two treatments were administered. One was a relaxation technique developed by Herbert Benson at Harvard University. It consisted of a procedure whereby the student was instructed to:

1. Sit quietly in a comfortable position.
2. Close your eyes.
3. Deeply relax all your muscles beginning at your feet

and progressing up to your face.

4. Breathe through your nose and become aware of your breathing. Say the word "one" silently to yourself as you breathe out. In... Out... "one"... Breathe easily and naturally.

5. Continue for 10-20 minutes. When you finish sit quietly for several minutes, at first with your eyes closed and later with your eyes opened. Do not stand up for a few minutes.

6. Do not worry about whether you are successful in achieving a deep level of relaxation. Maintain a passive attitude and permit relaxation to occur at its own pace. When distracting thoughts occur, try to ignore them by not dwelling upon them and return to repeating, "One". With practice, the response will come with little effort. Practice the technique once or twice daily, but not within two hours after any meal, since the digestive processes seem to interfere with the elicitation of the Relaxation Response.

The second treatment consisted of the standard hypnotic induction technique incorporated in the Harvard Group Scale. It is a classical eye fixation and relaxation procedure. This procedure also included use of two motivational statements that emphasized:

1. The ability to concentrate, assimilate, and extrapolate material. This was to aid in more efficient

studying with increased ability to understand and apply the cases being studied.

2. Feeling relaxed and confident about ones abilities.

This was designed to ally excessive fears of being called on in class. (See appendix for verbatim motivational statements).

3. Ethical Safeguards and Considerations. The two treatments were administered by professionals employed by Southern Illinois University. Mr. Marc Cohen, Director of the SIU-C Wellness Center, administered the Relaxation Treatment. Mr. Cohen has a M.A. in Rehabilitation Counseling and five years experience in the Stress Management field. Dr. Howard Timm, Assistant Professor at the Center for the Study of Crime, Delinquency and Corrections at SIU-C, did the hypnosis instruction and administered the Harvard Group Scale of Hypnotic Susceptibility. Dr. Timm has been practicing hypnosis in experimental research for eight years. The on-site Clinical Supervisor was Dr. Donald J. Shoemaker, Director of the Clinical Center at SIU-C as well as Professor of Psychology. He is both a practicing clinician and a teacher of clinical skills. He was available to monitor the administration of the Harvard Group Scale and the instruction session in self-hypnosis. He also served as an advisor and general reference person as the experiment progressed. It was agreed that any subject who was seen in extreme distress because of the course load, stress associated with class work

personal problems etc. was to be referred to the Clinical Center or the Counseling Center on campus. Any person who appeared to be suffering due to the treatment effects, although this was considered unlikely, was to be referred to Dr. Shoemaker directly.

The no-treatment control group was offered the opportunity to learn one or both of the two treatment techniques taught to the experimental groups at the end of the experiment. Persons in this group were assessed on stress levels just as the treatment groups were. The experimenter did not know which group individuals were in while doing the stress assessments.

c. Instrumentation

1. The Tennessee Self Concept Scale is a personality assessment instrument to measure self concept. It consists of 100 self descriptive statements which the subject can use to portray the picture he or she has of him or herself. It is self administered and is applicable to subjects from age 12 onward who have at least a 6th grade reading level. It is also applicable to a wide range of psychological adjustments from healthy to psychotic. The TSCS has the following scores: Self Criticism Score (SC)- indicated the amount of openness or defensiveness of the individual; Positive Scores (P) which consist of total P score or the overall level of self esteem; Row 1 P score: Identity, Row 2 P score: Self Satisfaction,

Row 3 P score: Behavior, Column A: Physical Self, Column B: Moral-Ethical Self, Column C: Personal Self, Column D: Family Self, Column E: Social Self; Variability Scores (V); Distribution Score (D); Time Score; True-False Ratio (T/F); Net Conflict Scores consisting of Acquiescence Conflict and Denial Conflict; Total Conflict Scores; and the Empirical Scales. The Empirical Scales have been derived by item analysis and differentiate the following groups: Norm group, Psychotic group (Psy), Neurotic(N), Personality Disorder (PD), Defensive Positive (DP), Personality Integration Scale (PI); and there is also a Number of Deviant Signs Score (NDS).

The test was normed on a broad sample of 626 people that included people from various parts of the country, ages from 12 to 68, and nearly equal males and females, blacks and whites and represented all social, economic and intellectual levels from 6th grade through the Ph.D. degree.

Reliability data is based on test-retest scores with 60 college students over a two-week period. Coefficients range from a high of 0.92 on the Total Positive and Psychotic Scores to 0.61 on the Column A Total Conflict Scores. In general the coefficients are in the high 80's. The empirical scales have coefficients that range from 0.87 to 0.92.

Content Validity is assured in that an item was retained in the Scale only if there was unanimous agreement by the judges that it was classified correctly. The validity of

an instrument is also measured by how well it discriminates between groups. A statistical analysis was done with a group of 369 psychiatric patients and compared to the 626 non-patients of the norm group. Highly significant differences (mostly at the 0.001 level) were found for almost every score. Data collected from the other extreme, from people characterized as high in personality integration were also compared with the norm group. They differed in a direction opposite from that of the patient group.

Cross validation data indicates that the original level of discrimination holds up quite well with the cross-validation groups. These data were obtained from three patient groups, an Ohio State hospital group, a community mental health center group, and a VA psychiatric hospital group.

It appears that the TSCS also differentiates degrees of disorder as well as type of disorder. The scale was successfully used to discriminate between paranoid schizophrenics, depressive reactions and emotionally unstable personalities. Correlations between TSCS scores and those of the MMPI are also available.

2. Harvard Group Scale of Hypnotic Susceptibility. Dr. Seymour Fisher reports that, "Available data indicate good concordance between a subject's self-report and observer ratings ..." on the Harvard Group Scale of Hypnotic Susceptibility. This instrument is a self-report scale

filled out by the subject at the end of a standardized induction procedure. The subject is asked to rate him or herself on how an observer would report their behavior. For instance, if the subject was given the suggestion of the head falling forward, he or she would then be asked at the end of the procedure to what degree an observer would have noticed the subject carrying out this suggestion (Fisher 1977). This test is an adaptation of Form A of the Stanford Hypnotic Susceptibility Scale for group administration. Author's Ronald E. Shor and Emily C. Orne, state that "norms derived from the adapted are congruent with norms derived from the individually-administered version." (Shor and Orne 1962). Fisher notes the score obtained in a group session correlates 0.74 with an observer's score in a subsequent individual session. A study by Jean-Roch Laurence and Campbell Perry (1982) tested a total of 535 subjects over 3 years and compared them with samples from Stanford, Boston, Berkeley and Australia. Total sample reliabilities across all the samples were within acceptable limits of 0.76 to 0.85.

3. The General Well Being Schedule was developed by the Dept. of Health, Education and Welfare as part of its National Center for Health Statistics. Developed by Harold Dpuy, it has been used since 1977 as an assessment for general functioning and stress level. The test consists of 25 questions with answers on a Likert type scale. It's advantages are its

brevity and yet its specific measurement of those items which are indications of stress, such as feelings of being under a lot of pressure or strain, illness or bodily disorder, amount of energy, amount of rest, etc.

Pre-testing of the GWB was done on 373 adult subjects and it was administered to over 6,900 adults as part of the national study of the Health and Nutrition Examination Survey which began in April 1971 and was completed in October 1975. A concurrent validation study of the National Center for Health Statistic's General Well Being Schedule was published in 1977. This study compared 195 subjects who took the GWB, the MMTI, the Psychiatric Symptoms Scale (PSS), and participated in a personal interview. The participants were divided into two groups. Group one also took the Zung Self-rating Depression Scale and the College Health Questionnaire. Group two took the Personal Feeling Inventory. The interviewer ratings were used as an independent criterion against which to assess the concurrent validity of the various measures of depression and other self-reported data measures. The 0.01 level or better of statistical significance was used to describe a significant relationship. The three short sub scales of the GWB correlated with the criterion of depression about as well or better than the many other scales with many more items. The 18 item total GWB scale had the highest correlation to the criterion when responses

from the total sample were considered. The GWB total scale had a 0.69 correlation with the six independent depression scales and 0.64 with the three independent anxiety scales.

The GWB was readministered to 41 students from the original sample three months after the first test. The test-retest correlation was 0.851. The investigator of this study, Anthony F. Fazio reports that the GWB's "capability to measure distress is clearly supported." He goes on to say,

"The surprisingly high correlations of the GWB items with the other measures of depression and anxiety indicate that the multiple response options of these items are properly ordered and form mini-scales in their own right."

In his over-all evaluation of the GWB, Fazio says,

"The GWB was 'pragmatically professional' when compared with the 566-item true-false MMPI or the relatively new Collega Health Questionnaire with its multiple choice format."

He states without equivocation that the GWB does differentiate the more depressed students from the less depressed ones. Of all the instruments in this study, "the GWB emerged as the single most useful instrument in measuring depression." The major weakness of the GWB was found to be that the sub-scales had too few items to provide homogeneous and reliable content on sub-scales. Fazio ends by stating that, "Because the GWB

is brief, well designed, and relevant in content, it should be useful in a variety of research and applied settings, such as a quality-of-life index, a mental health status appraisal, a measure of psychotherapy outcome evaluations, and a social indicator for measuring population changes in sense of well-being over time."

(Fazio 1977)

In addition to these standardized instruments, the experimenter designed a questionnaire for general demographic information. These data were used to determine if significant differences existed among group members prior to the experiment, and if habits changed over the semester in such things as sugar, caffeine, alcohol or drug consumption.

d. Design

The design is a simple experiment comparing the effects of two treatment modalities with a non-treatment control group. The design can be diagrammed thus:

O	X	O	O	X = Relaxation technique
I	1	7sa	gpa	1

O	X	O	O	X = Self-hypnosis paired with
I	2	7sa	gpa	2 motivational statements

O	X	O	O	X = No treatment control
I	3	7sa	gpa	3

I= initial tests: TSCS (Tennessee Self Concept Scale)
 GWB (General Well Being Schedule)
 LSAT (Law School Admission Test)
 HGSHS (Harvard Group Scale of Hypnotic
 susceptibility).

7 = seven stress assessments : Sept. 1983, Feb.'84 x2
 sa Mar.'84 x2, and Ap.'84 x 2.

gpa= change in grade point average from first to second
 semester.

A proxy pre-test procedure was used since these first year law students had undergraduate grade point averages from different schools with differing course loads. The LSAT scores were unique instruments and they provided a baseline with which to measure equivalence between and within groups at the beginning of the experiment. This proxy pre-test has the advantage of having no relationship to the experiment when it was taken and thus the subject's scores cannot be affected by knowledge or participation in this procedure. All subjects also took the Harvard Group Scale of Hypnotic Susceptibility (HGSHS) and the Tennessee Self Concept Scale (TSCS) as additional pre-test measures. There were no post-tests administered for these latter two instruments.

Many data points were collected subsequent to the initial treatment and many treatments were self administered before the experiment was over. Seven short form questionnaires and

four General Well Being Schedules (GWB) were collected on each participant. All subjects who received training in either relaxation or self-hypnosis were expected to practice the procedure at least once a day for the entire term.

e. Statistical Analysis

An analysis of variance was performed on the standardized scores of all the initial tests (TSCS, HGSHS, GWB, and LSAT) to determine if there was a significant difference between groups on any of the initial instruments. A Spearman Rank Correlation was performed on all the initial tests to determine if there were correlations between scores on each test. In addition, a one-way analysis of variance on the Harvard Group Scale of Hypnotic Susceptibility (HGSHS) scores was performed to see if there were significant differences between the means of each group on hypnotic susceptibility.

A one-tailed t-test was performed between each treatment group and the number of hours each group practiced to determine if there was a significant difference in the number of hours the two groups practiced.

A one-way analysis of variance was performed on the undergraduate grade point averages (UGPA's) of the three experimental groups. Another was performed on the first semester GPA's of the three groups to determine if there was a significant difference between the groups in academic performance.

A third ANOVA was performed on the second semester GPA's as well for the same purpose. In addition a one-way analysis of variance on grades within each experimental group to see if there were significant differences between grading periods was also done. When significance was found a t-test between each period of the same group was done to indicate where the significance lay. In an attempt to determine if there was any significant difference between experimental group grades and over-all class grade point average, **one-tailed t-tests** of first and second semester GPA's between each experimental group and the total class GPA were computed. In addition a one-way analysis of variance on change in GPA between first and second semester by groups was done to see if any groups' GPA changed significantly.

On other variables, a one-way analysis of variance on the number of hours of sleep by each group was done to determine if there were any significant differences between groups. If any were found a t-test between groups was done to determine where the significance lay. Similiar analyses were done on hours each group spent studying, partying, exercising, on leisure activities, and time devoted to another stress reduction technique other than the one taught for this experiment.

Analyses on the seven stress assessments consisted of:

1. an analysis of variance on the three groups for differences in academic pressure from one stress assessment period

to another. 2. analysis of variance on the three experimental groups and the GVB scores to determine if there were any significant differences between any group on any of the GVB instruments, 3. an analysis of variance on the change in GPA, hours practiced of the taught technique, and the scores of the HGSHS for the two experimental groups to see if there were any significant differences between the two groups.

f. Specific Hypothesis

There will be no significant differences between the experimental groups and the control group on the post-tests.

g. Summary of Methodology

The experiment used two treatment groups and one non-treatment control group. All participants were given the same tests. All were given the same amount of time with the experimenter and the trainers. One experimental group was instructed in the Benson Relaxation Procedure. A second received instruction in self-hypnosis and was given two motivational suggestions relating to increased academic performance and comfort during class presentations. The experiment ran for an entire semester in the Winter of 1983-84 with observations taken every other week after the initial training session and with many self-administered treatments. All treatments were designed to provide benefits of relaxation. The self-hypnosis treatment with its additional element of motivational suggestions was designed as the optimum treatment.

Chapter IV. Analysis of Results

The sample consisted of 31 students in 3 groups. There were 12 students in the self-hypnosis group, 10 in the relaxation group and 9 in the non-treatment control group. Those in the self-hypnosis group averaged 24.5 years of age. Those in the relaxation group averaged 27.8 years and those in the control group averaged 23.1 years. The relaxation group was older than the other two groups at the 0.05 level of significance. There were 20 males and 11 females in the total sample. The ratio was 2 males for every female in the hypnosis and control groups and 3 males for every 2 females in the relaxation group. Females are somewhat over represented in this sample from the total law school class from which they are drawn, where there were 2½ males for every female. Table 4.1 presents this data in tabular form.

The following table, 4.2 contains the means for each group and the total sample means for the major variables with which this study is concerned.

The results of the analysis of variance on the standardized scores of the initial tests (TSCS, HGSHS, LSAT, and GWB) showed no significant difference. The null hypothesis was accepted. That is:

$$H_0: \mu_{hyp} = \mu_{rel.} = \mu_{con.}$$

Table 4.1

	Hypnosis	Relaxation	Control
Mean Age	24.5	27.8	23.1
Male	8	6	6
Female	4	4	3
White	12	10	9

Table 4.2

	Tot. Group Mean	Hypnosis Mean	Relaxation Mean	Control Mean
UGPA	3.2768	3.4642	3.169	3.1467
LSAT	35.2258	35.75	34	35.8889
GPA-1	2.5554	2.6968	2.5796	2.3401
GPA-2	2.6034	2.7444	2.4671	2.5667
HGSHS	6.7419	7	7.3	5.7
GWB-1	61.9355	66.7273	59.5455	48.2727
GWB-2	59.6774	58.5833	49.25	46.3333
GWB-3	58.1613	54.6666	50.8333	44.75
GWB-4	61.8710	60.8333	49.1666	49.8333
TSCS	344.3548	342.75	348.5	341.8889
Hrs, sleep	45.0619	39.3992	47.6558	48.1308
Hrs. study	49.7153	49.7375	45.5558	53.8525
Hrs. party	2.5280	3.5233	1.2033	2.8575
Hrs. exercise	3.8058	3.7675	4.5517	3.0983
Hrs. leisure	9.4030	9.7558	9.8733	8.58
other tech.	2.5497	2.7025	3.4083	1.5383

In addition a one-way analysis of variance of the means of each group on each initial test was done. No significant difference was found. The null hypothesis was accepted for each initial test.

$$H_0 : \mu_{\text{hyp.}} = \mu_{\text{rel.}} = \mu_{\text{con.}}$$

A Spearman Rank Correlation was performed on all the initial tests. Each of the TSCS's three (3) row and five (5) column scales as well as the six (6) empirical scales were ranked and correlated with the over-all positive of the TSCS, the GWB, LSAT, and the HGSHS. Only 2 scales showed any appreciable correlation. They were the neurotic empirical scale of the TSCS and the total positive of the GWB. The correlation was 0.5005 with 29 df. The alternate hypothesis would be accepted in this instance.

$$H_0 : \text{rank placement between tests will be the same for all tests, } R = \neq 1$$

$$H_a : \text{Rank placement between tests will be different, } R = > 0.500$$

A one-tailed t-test was performed between each treatment group and the number of hours each group practiced to determine if there was a significant difference in the number of hours that each treatment group practiced. The results were $T = 0.9683$ with 20 df. No significance was found. The null hypothesis was accepted.

$$H_0 : \mu_{\text{hyp.}} = \mu_{\text{rel.}} = \mu_{\text{con.}}$$

The results of the one-way analysis of variance performed on the undergraduate GPA of the 3 experimental groups found a significant difference at the 0.05 level with 2 and 33 df. $F = 4.164$. The null hypothesis is rejected and the alternate hypothesis is accepted.

$$H_0 : \mu_{\text{hyp.}} = \mu_{\text{rel.}} = \mu_{\text{con.}}$$

$$H_a : \mu_{\text{hyp.}} \neq \mu_{\text{rel.}} \neq \mu_{\text{con.}}$$

When the analysis was repeated, eliminating the undergraduate GPA's, no significance was found for any of the groups GPA's from first to second semester. These results are confirmed by one-tailed t-tests of semester grades for each experimental group. The null hypothesis is accepted.

$$H_0 : \mu_{\text{GPA-1}} = \mu_{\text{GPA-2}}$$

A one-way analysis of variance on the first and second semester grade point averages by experimental group did not find any significant differences, thus the null hypothesis was accepted.

$$H_0 : \mu_{\text{hyp.}} = \mu_{\text{rel.}} = \mu_{\text{con.}}$$

The one-way analysis of variance on grades within each experimental group found a significant difference at the 0.01 level in the hypnosis group when both undergraduate grades and semester law school grades were analyzed. The alternative hypothesis was accepted and the null rejected.

$$H_0: \mu_{UGPA} = \mu_{GPA-1} = \mu_{GPA-2}$$

$$H_a: \mu_{UGPA} \neq \mu_{GPA-1} \neq \mu_{GPA-2}$$

Significance was found between the hypnosis group UGPA and the relaxation group UGPA on a one-tailed t-test at the 0.05 level of significance with 22 df, where $T = 2.3867$. The alternate hypothesis was again accepted over the null.

$$H_0: \mu_{UGPA-hyp.} = \mu_{UGPA-rel.}$$

$$H_a: \mu_{UGPA-hyp.} \neq \mu_{UGPA-rel.}$$

Significance was also found at the 0.01 level on a one-tailed t-test between the hypnosis group UGPA and the control group UGPA. The alternate hypothesis was accepted.

$$H_0: \mu_{UGPA-hyp.} = \mu_{UGPA-con.}$$

$$H_a: \mu_{UGPA-hyp.} \neq \mu_{UGPA-con.}$$

The only other t-test which revealed significance between groups was the first semester hypnosis group's GPA and the control group's GPA. Significance was found here at the 0.05 level with 22 df., where $T = 1.8707$. The null was rejected and the alternate hypothesis accepted.

$$H_0: \mu_{GPA-1\ hyp.} = \mu_{GPA-1\ con.}$$

$$H_a: \mu_{GPA-1\ hyp.} \neq \mu_{GPA-1\ con.}$$

One-tailed t-tests between the semester grades of each group and the total class GPA for each semester were performed. None of these tests revealed any significant

differences between any of the experimental groups and the total class for either semester.

$$H_0: \mu_{\text{exp. grp. GPA}} = \mu_{\text{total class GPA}}$$

The one-way analysis of variance on the change between first and second semester grades for all three groups showed no significant differences. The null hypothesis was accepted.

$$H_0: \text{Change hyp. grp.} = \text{change rel. grp.} = \text{change con. grp.}$$

One-way analyses of variance on the number of hours of study, sleep, partying, exercising, leisure, and time spent on other stress reduction techniques were all done. Significance was found only on hours of sleep at the 0.01 level with 2 and 33 df, where $F = 7.1365$. T-tests results with 22 df. show that this significance at the 0.01 level is found between the hypnosis and relaxation groups and between the hypnosis and control groups. The null hypothesis was accepted for all these tests except that for sleep where the alternate hypothesis was accepted.

$$H_0: \mu_{\text{hyp. grp.}} = \mu_{\text{rel. grp.}} = \mu_{\text{con. grp.}}$$

$$H_a: \mu_{\text{hyp. grp.}} \neq \mu_{\text{rel. grp.}} \neq \mu_{\text{con. grp.}}$$

The analyses on the 7 stress assessments included:

1. an analysis of variance on the total group for differences in academic pressure from one assessment period to

another. 2. an analysis of variance on the total group for differences in perceived sense of general purpose and achievement. The results show significance at the 0.01 level with 5 and 168 df., where $F = 9.1429$ for the difference in perceived academic pressure over the entire period of the experiment including the first stress assessment done in Sept. 1983. Significance at the 0.05 level with 1 and 56 df., where $F = 6.2781$ was found for the difference in perceived academic pressure from the first stress assessment in Sept. 1983 to the second one in Feb. 1984. Similar results were obtained for the stress assessments #2 and #3 in Feb. 1984 where $F = 4.7335$ and significance was again at the 0.05 level. Academic pressure differences were found at the 0.01 level with 1 and 56 df. where $F = 11.1747$ for the period between #2 in Feb. and #1 in Mar. 1984. Significance at the 0.05 level with 1 and 56 df., where $F = 5.8102$ was found for the period between the two March assessments. No significance was found for the values between the last four assessments at the end of March and the first of April, and between the last two in April. See Table 4.3 for a summary of these findings.

Table 4.3

STRESS ASSESSMENT - ACADEMIC PRESSURE

	Significance	degrees freedom	F=
Total Period	0.01	5 & 168	9.1429
Sept. 1983- Feb. 1984	0.05	1 & 56	6.2781
#1 Feb.- #2 Feb.	0.05	1 & 56	4.7335
#2 Feb.- #1 Mar.	0.01	1 & 56	11.1747
#1 Mar.- #2 Mar.	0.05	1 & 56	5.8102
#2 Mar.- #1 Ap.	none	1 & 56	1.7050
#1 Ap.- #2 Ap.	none	1 & 56	0.5524

T-tests done between each stress assessment period for the entire group show a significant difference at the 0.005 level with 56 df. for the period between the second Feb. assessment and the first one in Mar. 1984.

Similar analyses for differences between assessment periods in the category of perceived General Sense of Purpose and Achievement using both a one-way analysis of variance and t-tests found no significant differences between any of the assessment periods. Table 4.4 contains the results of the one-way analysis of variance.

Table 4.4

STRESS ASSESSMENT - PURPOSE & ACHIEVEMENT			
	Significance	degrees freedom	F=
Total Period	none	6 & 210	1.2283
Sept. 1983- Feb. 1984	none	1 & 60	1.4803
#1 Feb.- #2 Feb.	none	1 & 60	0.1267
#2 Feb.- #1 Mar.	none	1 & 60	1.4026
#1 Mar.- #2 Mar.	none	1 & 60	1.8158
#2 Mar.- #1 Ap.	none	1 & 60	0.1178
#1 Ap.- #2 Ap.	none	1 & 60	0.5318

The results of the analysis of variance on the means of the three experimental groups' General Well Being scores (total of 4 each) show significance at the 0.01 level with 2 and 9 df., where $F = 9.2725$. The null hypothesis is rejected and the alternate hypothesis is accepted.

$$H_0: \mu_{\text{hyp.}} = \mu_{\text{rel.}} = \mu_{\text{con.}}$$

$$H_a: \mu_{\text{hyp.}} \neq \mu_{\text{rel.}} \neq \mu_{\text{con.}}$$

There was a significant difference at the 0.05 level with 2 and 30 df., where $F = 4.0362$ on the first GWB schedule done in Sept. 1983. No significance was found on GWB schedules done in Feb., Mar., or Ap. 1984. The null hypothesis

was accepted.

$$H_0: \mu_{\text{hyp.}} = \mu_{\text{rel.}} = \mu_{\text{con.}}$$

On a one-way analysis of variance for change in GPA, hours practiced of the taught technique, and HGSHS scores, no significant difference was found between the two treatment groups. The null hypothesis was accepted.

$$H_0: \mu_{\text{hyp.}} = \mu_{\text{rel.}}$$

Summary of Analysis

One-way Analysis of Variance	Null Accepted	Null Rejected	Sig.
1. Standard Scores of all initial tests	*		
2. Means of each exp. grp. on each initial test.	*		
3. UGPA of 3 exp. grps.		*	0.05
4. 1st. & 2nd. sem. GPA by exp. grp.	*		
5. grades within each exp. grp. incl. UGPA & law school GPA's		*	0.01
6. change b/t 1st. & 2nd. sem. grades for all 3 groups.	*		
7. # hrs. of study, party, exercise, leisure, & time with other techs.	*		
8. # hrs. sleep for all 3 groups.		*	0.01
9. Stress asses. on acad. pressure for tot. period		*	0.01

Summary cont'd.

	<u>One-way Analysis of Variance</u>	Null Accepted	Null Rejected	Sig.
10.	Stress asses. on acad. press for periods 1-2, 2-3		*	0.05
11.	Stress asses. on acad. press. for period 3-4		*	0.01
12.	Stress asses. on acad. press. for period 4-5		*	0.05
13.	Stress asses. on acad. press. for periods 5-6, 6-7	*		
14.	Stress asses. on Purpose & Achievement for all periods	*		
15.	Means of all 3 grps. GNB Schedules		*	0.01
16.	GWB-1 schedule for all 3 groups		*	0.05
17.	GWB-2,3,4 for all 3 grps.	*		
18.	Change in GPA, hrs. practiced, & HGSHS for 2 treatment groups.	*		
	<u>One-tailed t-test</u>	Null Accepted	Null Rejected	Sig.
1.	Treatment grp. vs. hrs practiced	*		
2.	Hyp. grp. UGPA vs. rel. grp. UGPA		*	0.05
3.	Hyp. grp. UGPA vs. con. grp. UGPA		*	0.01
4.	1st. sem. hyp. grp. GPA vs. 1st sem. con. grp. GPA		*	0.05

Summary cont'd.

<u>One-tailed t-test</u>	Null Accepted	Null Rejected	Sig.
5. 1st sem. rel. grp. GPA vs. con. grp. GPA	*		
6. 1st sem. hyp. grp. GPA vs. rel. grp. GPA	*		
7. 1st sem. vs. 2nd. sem. GPA for all groups	*		
8. Semester grades of each grp. vs total class GPA	*		
9. # hrs. sleep for hyp. vs. rel. grp.		*	0.01
10. Stress asses. on acad. achieve- ment for 2nd Feb. asses & 1st March one.		*	0.005
11. Stress asses. on acad. acheive- ment for all periods except 10 above	*		
12. Stress asses. on General Purpose and Achievement for all periods	*		
<u>Spearman Rank Order Correlation</u>	Null Accepted	Null Rejected	Sig.
1. All initial tests plus row, column, & empirical scales for TSCS, except Neurotic & total Pos. of 1st GWB	*		
2. TSCS neurotic scale & total pos. of 1st GWB		*	0.5005

Chapter V. Summary and Conclusions

The findings of this study point to several conclusions. The first of these is that the first year of law school is indeed stressful. This is evidenced by:

1. An analysis of variance on the total group for differences in academic pressure from one assessment period to another which shows significance at the 0.01 level for the entire period from Sept. 1983 through March 1984, and again at the 0.01 level for the period between the second Feb. assessment and the first Mar. assessment.

This is consistent with both observations by the experimenter and the long-term observations and experience of law school faculty and staff. First semester is very stressful because it is both a new experience and a rigorously challenging one. The other peak of this measure falls at the time when a paper was due for Moot Court, toward the end of the second semester. Again agreement of observers and law school faculty and staff substantiate this period as a highly stressful time.

The entire first year except for the last month of April was also significant at the 0.05 level for perceived academic stress.

2. Additional evidence is provided by results of the General Well Being Schedule given every

month during the experiment and at the beginning of the first semester. The third GWB, taken in March 1984 was the lowest of the four administered for both the hypnosis and control groups. This corresponds to the same time period as the high peak for stress during the second semester on the stress assessment in perceived academic stress cited above. The relaxation group score on the GWB varied by less than one point for the three GWB Schedules given during the experiment. All three were much lower than the initial one given in Sept. 1983.

3. Correlation between the TSCS Neurotic scale and the total positive score on the first GWB also shows evidence of increased stress. Both these tests were administered in the Fall of 1983 at a time of perceived high academic pressure. Correlation between the two is not therefore surprising given this highly charged environment. The GWB is scored so that the lower the score the lower the sense of well being of the individual.

With one exception there was no difference in academic achievement found between the treatment groups or the control group. This is consistent with the specific hypothesis

cited in Chapter 3.

On an analysis of variance of first and second semester GPA's there was no significant difference found within any of the groups. There was no significant difference within groups on a one-tailed t-test from first to second semester for each experimental group.

One t-test between the hypnosis and control groups on the first semester GPA found a significant difference at the 0.05 level. This is an aberration not found elsewhere or substantiated by any other test.

There was no significant difference found between groups on an analysis of variance of first and second semester GPA's.

There were no significant initial differences between groups. This is substantiated by:

1. An analysis of variance on the sex of the three groups.
2. An analysis of variance on initial test scores.

There was no significant difference between groups found over the course of the experiment. This was evidenced by:

1. Analyses of variance on the number of hours of study, partying, exercising, leisure, and

practicing of another stress reduction technique, which showed no significant differences.

2. An analysis of variance on number of hours practiced, change in GPA, and HGSHS scores revealed no significant differences in the treatment groups.

3. An analysis of variance on the number of hours practiced by each treatment group found no significant difference.

There were differences which were statistically significant but were not practically significant, such as:

1. An analysis of variance on age showed the relaxation group to be significantly older than the other two groups at the 0.05 level.

2. An analysis of variance on undergraduate GPA found a significant difference between groups and within the hypnosis group at the 0.05 and 0.01 levels respectively. No significant difference was found between law school GPA's however.

3. There was a significant difference on an analysis of variance in the number of hours of sleep that each group obtained. The t-test showed a significant difference at the 0.01 level between the hypnosis and relaxation groups and between the hypnosis and control groups.

a. Implications of Findings

It has been demonstrated that a study of first year law students can document high levels of stress. These data were obtained by both self-report, Likert scale ratings and objective testing. It is less clear that the techniques taught to the two treatment groups were successful in reducing that stress or that grades were improved by these techniques, since there were no significant differences between the groups on stress levels or grades. It has also been demonstrated that assessment of stress levels can be done as part of the regular routine of law students without unduly interfering with their normal activities.

According to the Interruption Theory and the Yerkes-Dodson Law, stress affects the ability to learn. Depending on the degree and intensity of interruption of the intellectual process and by the level of autonomic arousal, an individual's performance is enhanced or diminished. Stress declines according to the Interruption Theory as the subject gains experience in handling situations that were initially stressful. The data seem to support this. Initial stress levels were high, then receded somewhat and leveled off at a still significant level for the first part of the second term, peaked again as an important paper was due then fell dramatically for the last month of the term. Finals

were still to be studied for and passed but students had, by this time, gained experience in this process and it was much more managable.

Whether the relaxation response was achieved by the two treatment groups with each group practicing between 1.83 and 1.34 hours per week or 15.6 minutes per day and 11.4 minutes per day is unknown but questionable. This is approximately half what is recommended by Benson and those in the field of meditation and relaxation. It is doubtful that utilizing two techniques for only one half the recommended time would result in benefits great enough to be significant. While there were no significant differences between the number of hours each group practiced, neither group practiced enough to produce results that would be expected to achieve significant results.

One anecdotal incident which is not significant statistically may serve to illustrate this. One student in the self-hypnosis group practiced 4.34 hours per week or 37.2 minutes per day, nearly three times the group average. This same student's class rank improved by 23 positions and her GPA increased by 0.728 points. She was also brought before the honor court by a professor because the professor could not believe anyone could make such a dramatic improvement without cheating even though no one had seen her cheat and she was acquitted by the honor court's proceedings. This

makes one suspect that more conscientious practice by participants could have made a difference both on stress level and on academic performance.

b. Recommendations for Further Study

First a study that includes subjects who can be persuaded to practice the techniques taught to them with more diligence will provide a clearer indication of whether these techniques are useful for reducing stress in law school and also for improving academic performance. This would also enable a researcher to discover if there is any difference between the techniques of self-hypnosis with motivational statements and Benson's Relaxation Procedure. A question which needs to be addressed is do these techniques actually produce the same effect? This study assumed they did and presented both theoretical and research evidence to indicate this to be the case, at the end of Chapter II. No actual comparison between these two specific techniques has been done however, until now and the present study can offer no conclusive findings on this question.

Second a larger number of participants in each group would lend more power to the results and conclusions of any future study.

Third, studies at more than one law school would enable results to be generalized to the larger population of law students. Additional studies in medical schools where again

the stress is known to be high and where the curriculum at least in the first year is the same for all students would be helpful in assessing the effects of stress and its reduction on the performance of graduate professional education in these two fields. So much of graduate education is unique to the individual student but law and medicine share the characteristic of requiring every student to take the same courses at least in the first year. It would be a beginning in understanding how stress affects graduate students in general and perhaps young adults as well.

Consent Form For SIU-C Law School Study

*I, the undersigned, do declare that in my adult capacity I agree to participate in a study of law students undertaken by Mrs. Yvonne Siddall, called *The Effects of Stress on Cognitive Functioning in First Year Law Students*. I have been fully informed of the nature of this study and I understand the information obtained is to be used for academic and research purposes only.*

I have been assured that my name will not appear, nor any other identifying description of me in the final form of this study. My confidentiality will be respected at all times. I am aware that I may withdraw from the study at any time. I understand that I will be asked to respond to a series of psychological inventories, fill out a questionnaire, be available to receive training in a relaxation or self-hypnosis technique and meet with Mrs. Siddall for a few minutes twice a month.

I also give my permission for my undergraduate grade point average and my Law School Admissions Test Score to be released by the Admissions Office to Mrs. Siddall for the purposes of this study. If at any time I feel that personal or sensitive areas are being covered which I would prefer not to discuss, I may feel free to inform Mrs. Siddall and my desires will be respected.

This project has been reviewed and approved by the Carbondale Committee for Research Involving Human Subjects. The Committee believes that the research procedures adequately safeguard the subject's privacy, welfare, civil liberties and rights. The Chairperson of the Committee may be reached through the Graduate School, Southern Illinois University at Carbondale, Carbondale, Illinois 62901. The telephone number of the office is 618/536-7791, ext. 22.

I have read the material above, and any questions I asked have been answered to my satisfaction. I agree to participate in this activity, realizing that I may withdraw without prejudice at any time.

Subject or Authorized Representative

Date

Investigator

Date

The Department of Health and Human Services requires that you be advised as to the availability of medical treatment if a physical injury should result from research procedures. No special medical arrangements have been made regarding your participation in this project. If you are a registered student at SIU-C, you are eligible to receive medical treatment at the University Health Service. If you are not a registered student at the University, immediate medical treatment is available at usual and customary fees at the Carbondale Memorial Hospital. In the event you believe that you have suffered any injury as a result of the participation in the research program, please contact the Chairperson of the Committee (536-7791) who will review the matter with you, and identify any other resources that may be available to you.

SIU-C Law School Research Study

ID # _____ (please fill in the first two (2) letters of your Mother's maiden name, followed by the last four (4) digits of your social security number)

Name _____
first middle last

Present Address _____
number street city state

Sex: _____ Male Birthdate _____
_____ Female month day year

Marital Status:
_____ Single _____ Married _____ Seperated _____ Divorced _____ Other

Number of Children: _____

Race: _____ Black _____ White _____ Other _____
specify

Residence:
_____ Commuter
_____ Evergreen Terrace _____ Small Group Housing
_____ Off Campus Carbondale _____ Southern Hills

Educational History:
College Attended _____ Years _____
_____ Years _____
Degrees Obtained _____ Under-Grad. GPA _____

Medical History:
List Major illnesses and approximate dates:

List any operations or hospitalizations and approximate dates:

List any abortions or other obstetrical procedures and approximate dates:

Do You Have a Disability? _____ Yes _____ No
How many times in the past year have you been to see a Physician? _____
Are you taking any prescription or over-the-counter medication to help you relax?
_____ Yes _____ No
Are you taking any prescription or over-the-counter medication to help you sleep?
_____ Yes _____ No

Of all the methods you use to deal with stressful times, please indicate the percentage of time you use the following techniques. The total should add up to 100%

- _____ Talking things over with a friend
 - _____ Running or other vigorous exercise
 - _____ Drinking Alcohol
 - _____ Smoking Marijuana
 - _____ Taking a drug other than marijuana or alcohol
 - _____ Ignoring the stressful situation
 - _____ Using a Relaxation Technique
 - _____ Being more Sexually Active
 - _____ Other (Please specify) _____
- 100%

Listed below is a list of feelings and reactions commonly associated with stress. Please read each one carefully and indicate to what extent the feeling or reaction bothers you.

	0	1	2	3	4	5							
	Never	Not Much					Severely						
<i>Extent Affected By:</i>													
1. Fast heart beat	0	1	2	3	4	5	12. Difficulty staying asleep	0	1	2	3	4	5
2. Sweaty palms	0	1	2	3	4	5	13. General feeling of anxiety	0	1	2	3	4	5
3. Clenching teeth or jaws	0	1	2	3	4	5	14. Indigestion heartburn	0	1	2	3	4	5
4. Neck ache	0	1	2	3	4	5	15. High Blood pressure	0	1	2	3	4	5
5. Upset stomach butterflies	0	1	2	3	4	5	16. Skin problems	0	1	2	3	4	5
6. Stomach ache	0	1	2	3	4	5	17. Sweating	0	1	2	3	4	5
7. Headache	0	1	2	3	4	5	18. Inability to relax	0	1	2	3	4	5
8. Chest Pain	0	1	2	3	4	5	19. Inability to concentrate	0	1	2	3	4	5
9. Back pain	0	1	2	3	4	5	20. Feeling like "I can't cope"	0	1	2	3	4	5
10. Bowel problems	0	1	2	3	4	5	21. Teariness (crying)	0	1	2	3	4	5
11. Trembling hands or knees	0	1	2	3	4	5	22. Loss of appetite	0	1	2	3	4	5

Medical History cont'd.

ID # _____

- | | | | |
|--|-------------|---|-------------|
| 23. <i>Biting fingernails</i> | 0 1 2 3 4 5 | 28. <i>Colds</i> | 0 1 2 3 4 5 |
| 24. <i>Unexplained weight loss</i> | 0 1 2 3 4 5 | 29. <i>Feeling like I can't get a deep breath</i> | 0 1 2 3 4 5 |
| 25. <i>Unexplained weight gain</i> | 0 1 2 3 4 5 | 30. <i>Rapid breathing</i> | 0 1 2 3 4 5 |
| 26. <i>Short temper</i> | 0 1 2 3 4 5 | 31. <i>Other (physical)</i>
Specify _____ | 0 1 2 3 4 5 |
| 27. <i>Difficulty getting to sleep</i> | 0 1 2 3 4 5 | 32. <i>Other (psychological)</i>
Specify _____ | 0 1 2 3 4 5 |

Of all the feelings and reactions listed above which is most bothersome to you?

1st. _____ 2nd. _____

To what extent do you feel you can control your reactions to stress?

0 1 2 3 4 5
I have no control *I have complete control*

If you take positive action to prevent stress what do you usually do?

How would you describe yourself before a typical exam?

0 1 2 3 4 5
Very calm & confident *Fairly calm* *Very nervous* *So nervous I can't think clearly*

How would you describe the way you feel before giving a speech or making a presentation before professors and/or peers.

0 1 2 3 4 5
Very calm & confident *Fairly calm* *Very nervous* *So nervous I can't think clearly*

How would you describe yourself most of the time?

0 1 2 3 4 5
Very calm & confident *Fairly calm* *Very nervous* *So nervous I can't think clearly*

Circle the number of servings of the following you eat or drink daily. (A serving = 1 piece, 1 drink, 1 cup etc.)

Sweets (candy, ice cream, cake, pie, etc) 0 <1 1 2 3 4 5 6 >6

Caffeinated drinks (diet or regular soda, tea, coffee) 0 <1 1 2 3 4 5 6 >6

Alcohol (beer, wine liquor) 0 <1 1 2 3 4 5 6 >6

Cigarettes 0 1 1/2 pack 1 pack 2 pack >2

How tall are you in inches? _____ *What do you weigh in pounds?* _____

Do you think you are at your ideal weight? _____ Yes _____ No

Medical History cont'd.

ID # _____

If you said No to the last question and consider yourself under weight:
How would you classify yourself?

0	1	2	3	4	5
Slightly underweight					Extremely underweight

If you said you were overweight. How would you classify yourself:

0	1	2	3	4	5
Slightly overweight					Extremely overweight

Do you eat in response to being bored? Yes No

Do you eat in response to being depressed? Yes No

Do you eat in response to feeling anxious? Yes No

Please describe the amount of exercise you get regularly: List the exercises you do for at least 15 minutes per session and how many times a week you do the exercise. Please include team sports if you do this regularly.

_____ Does not apply	Exercise	Number of times Weekly
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
 PUBLIC HEALTH SERVICE
 HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
 NATIONAL CENTER FOR HEALTH STATISTICS
 HEALTH AND NUTRITION EXAMINATION SURVEY

GENERAL WELL-BEING

a. Name (Last, first, middle)	b. Deck No. 171	c. Sample No. _____	d. Sex 1 <input type="checkbox"/> Male 2 <input type="checkbox"/> Female	e. Age _ _
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READ - This section of the examination contains questions about how you feel and how things have been going with you. For each question, mark (X) the answer which best applies to you.

1. How have you been feeling in general? (DURING THE PAST MONTH)	1.	(001) 1 <input type="checkbox"/> In excellent spirits 2 <input type="checkbox"/> In very good spirits 3 <input type="checkbox"/> In good spirits mostly 4 <input type="checkbox"/> I have been up and down in spirits a lot 5 <input type="checkbox"/> In low spirits mostly 6 <input type="checkbox"/> In very low spirits
--	----	--




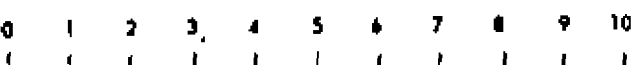
2. Have you been bothered by nervousness or your "nerves"? (DURING THE PAST MONTH)	2.	(002) 1 <input type="checkbox"/> Extremely so -- to the point where I could not work or take care of things 2 <input type="checkbox"/> Very much so 3 <input type="checkbox"/> Quite a bit 4 <input type="checkbox"/> Some -- enough to bother me 5 <input type="checkbox"/> A little 6 <input type="checkbox"/> Not at all
--	----	--

3. Have you been in firm control of your behavior, thoughts, emotions OR feelings? (DURING THE PAST MONTH)	3.	(003) 1 <input type="checkbox"/> Yes, definitely so 2 <input type="checkbox"/> Yes, for the most part 3 <input type="checkbox"/> Generally so 4 <input type="checkbox"/> Not too well 5 <input type="checkbox"/> No, and I am somewhat disturbed 6 <input type="checkbox"/> No, and I am very disturbed
--	----	--

4. Have you felt so sad, discouraged, hopeless, or had so many problems that you wondered if anything was worthwhile? (DURING THE PAST MONTH)	4.	(004) 1 <input type="checkbox"/> Extremely so -- to the point that I have just about given up 2 <input type="checkbox"/> Very much so 3 <input type="checkbox"/> Quite a bit 4 <input type="checkbox"/> Some -- enough to bother me 5 <input type="checkbox"/> A little bit 6 <input type="checkbox"/> Not at all
---	----	--

5. Have you been under or felt you were under any strain, stress, or pressure? (DURING THE PAST MONTH)	5.	(005) 1 <input type="checkbox"/> Yes -- almost more than I could bear or stand 2 <input type="checkbox"/> Yes -- quite a bit of pressure 3 <input type="checkbox"/> Yes -- some - more than usual 4 <input type="checkbox"/> Yes -- some - but about usual 5 <input type="checkbox"/> Yes - a little 6 <input type="checkbox"/> Not at all
--	----	---

<p>6. How happy, satisfied, or pleased have you been with your personal life? (DURING THE PAST MONTH)</p>	<p>6. (006) 1 <input type="checkbox"/> Extremely happy -- could not have been more satisfied or pleased 2 <input type="checkbox"/> Very happy 3 <input type="checkbox"/> Fairly happy 4 <input type="checkbox"/> Satisfied -- pleased 5 <input type="checkbox"/> Somewhat dissatisfied 6 <input type="checkbox"/> Very dissatisfied</p>
<p>7. Have you had any reason to wonder if you were losing your mind, or losing control over the way you act, talk, think, feel, or of your memory? (DURING THE PAST MONTH)</p>	<p>7. (007) 1 <input type="checkbox"/> Not at all 2 <input type="checkbox"/> Only a little 3 <input type="checkbox"/> Some -- but not enough to be concerned or worried about 4 <input type="checkbox"/> Some and I have been a little concerned 5 <input type="checkbox"/> Some and I am quite concerned 6 <input type="checkbox"/> Yes, very much so and I am very concerned</p>
<p>8. Have you been anxious, worried, or upset? (DURING THE PAST MONTH)</p>	<p>8. (008) 1 <input type="checkbox"/> Extremely so -- to the point of being sick or almost sick 2 <input type="checkbox"/> Very much so 3 <input type="checkbox"/> Quite a bit 4 <input type="checkbox"/> Some -- enough to bother me 5 <input type="checkbox"/> A little bit 6 <input type="checkbox"/> Not at all</p>
<p>9. Have you been waking up fresh and rested? (DURING THE PAST MONTH)</p>	<p>9. (009) 1 <input type="checkbox"/> Every day 2 <input type="checkbox"/> Most every day 3 <input type="checkbox"/> Fairly often 4 <input type="checkbox"/> Less than half the time 5 <input type="checkbox"/> Rarely 6 <input type="checkbox"/> None of the time</p>
<p>10. Have you been bothered by any illness, bodily disorder, pains, or fears about your health? (DURING THE PAST MONTH)</p>	<p>10. (010) 1 <input type="checkbox"/> All the time 2 <input type="checkbox"/> Most of the time 3 <input type="checkbox"/> A good bit of the time 4 <input type="checkbox"/> Some of the time 5 <input type="checkbox"/> A little of the time 6 <input type="checkbox"/> None of the time</p>
<p>11. Has your daily life been full of things that were interesting to you? (DURING THE PAST MONTH)</p>	<p>11. (011) 1 <input type="checkbox"/> All the time 2 <input type="checkbox"/> Most of the time 3 <input type="checkbox"/> A good bit of the time 4 <input type="checkbox"/> Some of the time 5 <input type="checkbox"/> A little of the time 6 <input type="checkbox"/> None of the time</p>
<p>12. Have you felt down-hearted and blue? (DURING THE PAST MONTH)</p>	<p>12. (012) 1 <input type="checkbox"/> All of the time 2 <input type="checkbox"/> Most of the time 3 <input type="checkbox"/> A good bit of the time 4 <input type="checkbox"/> Some of the time 5 <input type="checkbox"/> A little of the time 6 <input type="checkbox"/> None of the time</p>

<p>13. Have you been feeling emotionally stable and sure of yourself? (DURING THE PAST MONTH)</p>	<p>13. (013) 1 <input type="checkbox"/> All of the time 2 <input type="checkbox"/> Most of the time 3 <input type="checkbox"/> A good bit of the time 4 <input type="checkbox"/> Some of the time 5 <input type="checkbox"/> A little of the time 6 <input type="checkbox"/> None of the time</p>
<p>14. Have you felt tired, worn out, used-up, or exhausted? (DURING THE PAST MONTH)</p>	<p>14. (014) 1 <input type="checkbox"/> All of the time 2 <input type="checkbox"/> Most of the time 3 <input type="checkbox"/> A good bit of the time 4 <input type="checkbox"/> Some of the time 5 <input type="checkbox"/> A little of the time 6 <input type="checkbox"/> None of the time</p>
<p>For each of the four scales below, note that the words at each end of the 0 to 10 scale describe opposite feelings. Circle any number along the bar which seems closest to how you have generally felt DURING THE PAST MONTH.</p>	
<p>15. How concerned or worried about your HEALTH have you been? (DURING THE PAST MONTH)</p>	<p>15. (015) 0 1 2 3 4 5 6 7 8 9 10  Not concerned at all Very concerned</p>
<p>16. How RELAXED or TENSE have you been? (DURING THE PAST MONTH)</p>	<p>16. (016) 0 1 2 3 4 5 6 7 8 9 10  Very relaxed Very tense</p>
<p>17. How much ENERGY, PEP, VITALITY have you felt? (DURING THE PAST MONTH)</p>	<p>17. (017) 0 1 2 3 4 5 6 7 8 9 10  No energy AT ALL, listless Very ENERGETIC, dynamic</p>
<p>18. How DEPRESSED or CHEERFUL have you been? (DURING THE PAST MONTH)</p>	<p>18. (018) 0 1 2 3 4 5 6 7 8 9 10  Very depressed Very cheerful</p>
<p>19. Have you had severe enough personal, emotional, behavior, or mental problems that you felt you needed help DURING THE PAST YEAR?</p>	<p>19. (019) 1 <input type="checkbox"/> Yes, and I did seek professional help 2 <input type="checkbox"/> Yes, but I did not seek professional help 3 <input type="checkbox"/> I have had (or have now) severe personal problems, but have not felt I needed professional help 4 <input type="checkbox"/> I have had very few personal problems of any serious concern 5 <input type="checkbox"/> I have not been bothered at all by personal problems during the past year</p>

<p>20. Have you ever felt that you were going to have, or were close to having, a nervous breakdown?</p>	<p>20. (020) 1 <input type="checkbox"/> Yes -- during the past year 2 <input type="checkbox"/> Yes -- more than a year ago 3 <input type="checkbox"/> No</p>
<p>21. Have you ever had a nervous breakdown?</p>	<p>21. (021) 1 <input type="checkbox"/> Yes -- during the past year 2 <input type="checkbox"/> Yes -- more than a year ago 3 <input type="checkbox"/> No</p>
<p>22. Have you ever been a patient (or outpatient) at a mental hospital, a mental health ward of a hospital, or a mental health clinic, for any personal, emotional, behavior, or mental problem?</p>	<p>22. (022) 1 <input type="checkbox"/> Yes -- during the past year 2 <input type="checkbox"/> Yes -- more than a year ago 3 <input type="checkbox"/> No</p>
<p>23. Have you ever seen a psychiatrist, psychologist, or psychoanalyst about any personal, emotional, behavior, or mental problem concerning yourself?</p>	<p>23. (023) 1 <input type="checkbox"/> Yes -- during the past year 2 <input type="checkbox"/> Yes -- more than a year ago 3 <input type="checkbox"/> No</p>
<p>24. Have you talked with or had any connection with any of the following about some personal, emotional, behavior, mental problem, worries, or "nerves" CONCERNING YOURSELF DURING THE PAST YEAR?</p> <p>a. Regular medical doctor (except for definite physical conditions or routine check-ups) 24a.</p> <p>b. Brain or nerve specialist b.</p> <p>c. Nurse (except for routine medical conditions) c.</p> <p>d. Lawyer (except for routine legal services) d.</p> <p>e. Police (except for simple traffic violations) e.</p> <p>f. Clergymen, minister, priest, rabbi, etc. f.</p> <p>g. Marriage Counselor g.</p> <p>h. Social Worker h.</p> <p>i. Other formal assistance: i.</p>	<p>(024) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>(025) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>(026) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>(027) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>(028) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>(029) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>(030) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>(031) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>(032) 1 <input type="checkbox"/> Yes -- What kind? _____ _____</p> <p>2 <input type="checkbox"/> No</p>
<p>25. Do you discuss your problems with any members of your family or friends?</p>	<p>25. (033) 1 <input type="checkbox"/> Yes - and it helps a lot 2 <input type="checkbox"/> Yes - and it helps some 3 <input type="checkbox"/> Yes - but it does not help at all 4 <input type="checkbox"/> No - I do not have anyone I can talk with about my problems 5 <input type="checkbox"/> No - no one cares to hear about my problems 6 <input type="checkbox"/> No - I do not care to talk about my problems with anyone 7 <input type="checkbox"/> No - I do not have any problems</p>

SUN-C LAW SCHOOL RESEARCH STUDY

BI-MONTHLY QUESTIONNAIRE

INITIAL FORM

1 2 3 4 5 6 7 8 9 10
worst usual best

On a scale of 1 to 10 with 1 representing the worst, 5 the usual and 10 the best, rate yourself on the following items for the semester just passed. Try to come up with an accurate approximation of the term in general, or on the average, taking into account the highs and the lows:

My general sense of purpose and achievement. _____

My relationship with my spouse, lover, friend. _____

My relationship with my parents. _____

The quality of my sex life. _____

My performance in class. _____

My relationship with my professors. _____

1 2 3 4 5 6 7 8 9 10
least usual most

On a scale of 1 to 10 with 1 representing the least, 5 the usual and 10 the most, rate yourself on the following items for the term just passed. Again, give as accurate an approximation as you can of the term in general as it compared with the year before law school.

The amount of academic pressure I was under. _____

The amount of personal pressure I was under apart from my studies. _____

The amount of Junk food I ate. _____

The number of times I ate well-balanced, leisurely meals. _____

The number of times I had sex. _____

The amount I participated in class. _____

The amount of alcohol I drank. _____

The amount of recreational drugs, other than alcohol, I took. _____

How much time did you spend each week, during last term:

Studying _____ Staying up late partying _____

Sleeping _____ Doing vigorous exercise _____

Doing leisure activities _____

The number of hours I spent practicing a stress reducing technique
each week during last term: _____

Please list the activity _____

Student ID# _____

(first 2 letters of mother's maiden
name and last 4 digits of SS #)

SIU-C LAW SCHOOL RESEARCH STUDY

BI-MONTHLY QUESTIONNAIRE

1 2 3 4 5 6 7 8 9 10
worst best

On a scale of 1 to 10 with 1 representing the worst, 5 the usual and 10 the best rate yourself on the following items for the two week period just ending:

My general sense of purpose and achievement _____

My relationship with my spouse, lover, friend. _____

My relationship with my parents. _____

The quality of my sex life. _____

My performance in class. _____

My relationship with my professors. _____

1 2 3 4 5 6 7 8 9 10
least most

On a scale of 1 to 10 with 1 representing the least, 5 the usual, and 10 the most, rate yourself on the following items for the two week period just ending:

The amount of academic pressure I am under. _____

The amount of personal pressure I am under apart from my studies _____

The amount of junk food I eat. _____

The number of times I have eaten well-balanced, leisurely meals. _____

The number of times I have had sex. _____

The amount I have participated in class. _____

The amount of alcohol I drink. _____

The amount of recreational drugs, other than alcohol, I take. _____

How much time do you spend each week:

studying _____ Doing vigorous exercise _____

sleeping _____ staying up late partying _____

doing leisure activities _____

Student ID # _____

(first 2 letters of mother's maiden
name and last 4 digits of SS #)

During the last two weeks I spent _____ hours practicing the
technique I was taught for this study.

During the last two weeks I spent _____ hours practicing another
stress reducing technique. Please List: _____

Final Questionnaire Law School Study

I.D. _____

Current Marital Status: _____

How many times have you seen a physician this semester? _____

Are you now or have you taken any medication to help you relax
this semester? _____ If so for how long. _____Are you now or have you taken any medication to help you sleep
this semester? _____ If so for how long. _____Circle the number of servings of the following you eat or drink
daily. (A serving= 1 piece, 1 drink, 1 cup etc.)

Sweets(candy, ice cream, cake, pie, etc.) 0 <1 1 2 3 4 5 6 >6

Caffeinated drinks (diet or regular soda,
tea, coffee) 0 <1 1 2 3 4 5 6 >6

Alcohol (Beer, wine, liquor) 0 <1 1 2 3 4 5 6 >6

Cigarettes 0 1 1/2 pack 1 pack 2 pack >2

How much do you weigh in pounds? _____

What if anything did you find helpful in this study?

Did the process of being in the study make you more or less aware
of stress factors in your life? _____ If so which things
were you more aware of:

Any Comments, criticism or other helpful feedback:

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Motivational Statements for the Self Hypnosis Group

1. My ability to concentrate, assimilate and extrapolate is increasing daily.
2. At all times I will feel relaxed and confident about my abilities.

Vita

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Abstract

AN EXPERIMENT COMPARING THE EFFECTS OF TWO TECHNIQUES THAT ELICIT THE RELAXATION RESPONSE ON STRESS REDUCTION AND COGNITIVE FUNCTIONING IN FIRST YEAR LAW STUDENTS AT SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE

Yvonne Robena Siddall, Ed.D.

The College of William and Mary in Virginia, May 1985

Chairman: Professor Emeritus, Curtis O'Shell

The purpose of this study was to investigate the relationship between eliciting the relaxation response in first year law students and academic performance.

First year law students at Southern Illinois University were chosen for this study. Law students were chosen because their course of study was rigorous and stress producing and every student had the same courses during the first year.

There were two treatment groups and a non-treatment control group. One treatment group was taught Benson's Relaxation Procedure and the other was taught a classical eye fixation, self-hypnosis technique. Stress assessments were conducted every other week for an entire semester.

It was hypothesized that 1) the students would be able to lower their anxiety levels from the beginning of the term to the end of the term, 2) that the treatment groups would have lower stress levels than the non-treatment group and 3) that the self-hypnosis group with its motivational statements would show the greatest improvement in academic performance over the other two groups.

It was concluded that there were no significant differences between any of the groups. The treatment groups did not practice enough to be able to assess whether either of the techniques was helpful in reducing stress or in improving academic performance.

Further study is needed to determine if these techniques when used conscientiously will reduce stress and improve academic performance. In addition, comparisons between self-hypnosis and Benson's relaxation procedure still need to be made to determine the role of relaxation in hypnosis.