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THE ROLE OF PRESCRIBED ATTRIBUTIONS IN LEARNED HELPLESSNESS AND DEPRESSION

Gordon F. K. Hope

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to the School of Graduate Studies
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in partial fulfillment of the requirements
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THE ROLE OF PRESCRIBED ATTRIBUTIONS IN LEARNED HELPLESSNESS AND DEPRESSION

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ABSTRACT

An investigation was carried out of the applicability of the three-dimensional attributional framework to learned helplessness induction as described by Abramson, Seligman and Teasedale in their 1978 reformulation of the learned helplessness model of depression. Ten university students -- five males and five females -- were assigned to each of six conditions in an expanded version of the typical learned helplessness experimental paradigm. The experimental conditions were a no-pre-treatment group, a successful-pre-treatment group, and four distinct learned helplessness groups. With the pre-treatment task being a lever-pressing speed task, the successful-pre-treatment and learned helplessness groups were distinguished from one another through having received contrived information as to whether they had succeeded or failed to achieve an above-average lever-pressing score. The four learned helplessness groups were further distinguished from one another through having received contrived information as to the internality or externality of their failure, its stability or instability, and its globality or specificity. The octants of the attributional framework into which the "helplessness" groups were placed were the external/unstable/specific octant, the internal/unstable/specific octant, the internal/stable/specific octant, and the internal/stable/global octant. Measures were then taken of the speed and effectiveness with which subjects from all six groups were able to learn a time-estimation task. Finally, measures of all subjects' levels

of expectancy for performance and fluctuations in those expectancies were taken from fourteen five-trial tests of the time-estimation task. As their perceived scores were made to change from test to test of the time-estimation task, the relationships between fluctuating scores and fluctuating expectancies were examined.

The results indicate that, with regard to speed and effectiveness of learning the test task, and, in general, with regard to both level and fluctuations in expectancies, the helplessness groups showed impairments and pessimism relative to the successful-pre-treatment group, but not relative to the no-pre-treatment group. A sex-by-conditions interaction was also revealed by several of the measures. These indices suggest that females in all of the learned helplessness groups incurred "helplessness" while almost always only males in the internal/stable/global group and the internal/stable/specific group were so afflicted.

This paper includes a discussion on the nature, though not the causes of differences between males and females with regard to learned helplessness induction. It also includes comments on measures used in learned helplessness investigations, and on the relationship between learned helplessness and depression.

THE ROLE OF PRESCRIBED ATTRIBUTIONS IN LEARNED HELPLESSNESS AND DEPRESSION

CHAPTER I: INTRODUCTION AND REVIEW OF THE LITERATURE

Learned Helplessness and Depression

For as long as the problem of human depression has been studied, be it through verbal, literary, theoretical and/or experimental attention, there have been difficulties in conceptualizing and classifying in scientific terms this simply complicated disorder. Depression is, perhaps, the "common cold" of psychology, for our young science has provided methodologies usable in the construction of theories and models of depression, but the number and complexity of such tools, meant to aid its conceptualization and study, have rendered it difficult to derive an integrated understanding of the depressive disorders. One method which has become more prominent over the last twenty years in attempts to conceptualize and study psychological phenomena is the creation of laboratory-induced states which model them. The present investigation presents a study of the phenomenon "learned helplessness" which, in 1972, was proposed as being the central "theme" in "reactive" depression (Seligman, 1972). Along with an in depth review of the literature, these pages report an attempt to reproduce and study the learned

helplessness phenomenon under laboratory conditions.

Some authors have referred to the potential convenience of having a laboratory model of a clinical disorder (Buchwald, Coyne and Cole, 1978). Such a model, though, must be understandable, and more importantly, appropriate to that which it proports to emulate.

The topic of learned helplessness, and its presentation as a model of depression has received much theoretical and experimental study over the last ten years. The present literary and experimental exploration has lasted three years, and has resulted in this thesis. Throughout those years, when asked by friends and fellow researchers to state the topic of these investigations, the present author invariably felt an urge to respond with words about not only the title itself, but with a brief explanation of the subject matter. That explanation was often similar to the following:

> Most of the literature on learned helplessness refers to occasions wherein persons will find themselves in a particular situation, or set of situations, in which it seems that no matter what they do most of the results of their efforts are negative. Sometimes persons in such situations will develop beliefs that "bad times are here to stay", and that there is nothing that they can do to change this, and so, all efforts on the part of these persons to change these negative situations cease. Some writers have proposed that this negative cognitive set, along with the affective and motivational deficits which may accompany it, compose a depressive state. They refer to this negative cognitive set as "learned helplessness", and write that experimental manipulations can be developed which will allow it to be replicated under psychology laboratory

conditions.

This writer has found, and many to whom he has spoken find the concept of learned helplessness to be cognitively appealing, though a little shallow as stated in the terms mentioned above. After reading Martin Seligman's early learned helplessness studies, and after studying the pages of debate on the topic found in the special edition of the Journal of Abnormal Psychology, produced in February of 1978, (Journal of Abnormal Psychology, 87(1): 1978(7): 1. Rowell Hues (guest Editor)) he decided to expand his investigation of learned helplessness, and to make it the topic of his M.A. thesis.

Non-Contingency and Learned Helplessness

The first learned helplessness investigations were animal studies carried out in the mid and late 1960's. Many used dogs as subjects, (Seligman, 1965, Seligman and Miller, 1967; Overmier and Seligman, 1967; Seligman, Maier and Solomon, 1971) and sought to examine the effects of uncontrollable aversive events on efforts made to avoid subsequent similar aversive events. In learned helplessness literature the term "non-contingency" was used to refer to the lack of a cause-effect relationship between behaviour and outcome ("outcome" in those early learned helplessness studies being the termination of the aversive events) which rendered those events uncontrollable.

The Non-Contingent Relationship Between Behaviour and Outcome:

Ever since the inception of schedules of reinforcement one-dimensional contingencies have been used to conceptualize them as they were observed both in natural and laboratory settings. In the 1960's reinforcement programmes outlined by two-dimensional contingencies began to appear. Two-dimensional contingencies are programmes in which a reinforcement occurs during a fixed number of occasions on which a subject performs a specified behaviour, but also occurs on a fixed number of occasions on which that behaviour is not performed (Premak, 1965; Prokasy, 1965; Rescorla, 1967).

Writing in 1971, Seligman, Maier and Solomon conceptualize this idea using a graph wherein points along the horizontal axis show the probability that a reinforcer will occur in the presence of a specific response, and points along the vertical axis show the probability that a reinforcer will occur in the absence of that response (Seligman, Maier and Solomon, 1971, p.365). A line with a positive slope can be drawn through this plane to illustrate by its slope the relative strengths of the two probabilities. A line drawn through the graph at a 45-degree angle would indicate that the contingency for reinforcement to the animal is the same in the presence and in the absence of the specified response. In such a case that animal would not be able to influence to any degree the frequency of the presentation of the reinforcer -- the animal would be unable to control outcomes (see Figure 1). Since animals are sensitive to changes along both dimensions, they would also

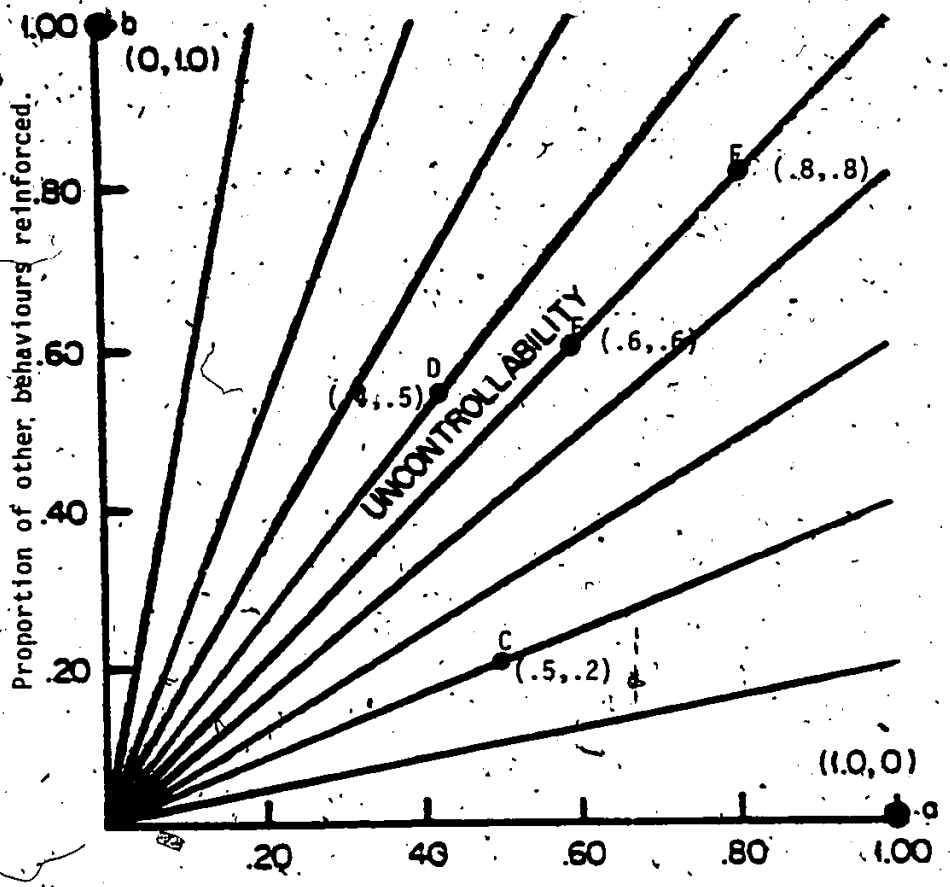

Fig.1 Examples of 2-dimensional contingencies of reinforcement.

be sensitive to, and over time become aware of a contingency with uncontrollable outcomes.

Effects of Non-Contingent Outcomes:

A contingency of uncontrollability, wherein outcome is non-contingent upon behaviour, can be applied where the reinforcer or outcome is success in avoiding, or escaping from an aversive stimulus or event. In such cases, once an animal becomes sensitized to its inability to control the outcome, it will suffer what is referred to by the aforementioned authors as an interference effect (Seligman, Maier and Solomon, 1971). Interference here refers to a retardation on the part of the animal in learning about the contingency of controllability in subsequent events during which it is subjected to aversive stimuli.

Martin Seligman had demonstrated this "interference" phenomenon in his 1967 study (Seligman, 1967A). In that investigation he placed two groups of dogs in restraining harnesses. While one group was not otherwise stimulated, the other was subjected to short, weak shocks from which they had no means of escaping. Twenty-four hours after this pre-treatment all dogs were put into a two-way shuttle box on one side of which was a shock grid. A ten-second tone was given; if a dog jumped the barrier the tone was turned off and no shock was administered, otherwise the dog received a weak 60-second shock from which it could escape by leaping over the partition. Seligman found that sixty-three percent of the pretreated dogs failed to escape within fifty secons of

shock onset on ninety percent of the trials. On the other hand, this was true of only six percent of the untreated dogs. He also reported that during the first trial all dogs exhibited stress, but that after a few trials, while a majority of the untreated animals were busily escaping, the pretreated ones were busily submitting to the majority of the test treatment. Some of them would escape from the shock on one trial, but on the next would show no signs of having learned from that "successful" escape attempt.

Using shocks as an example of aversive stimuli, Maier and Seligman present the logic for sensitization to contingencies of uncontrollability in this way: (Maier, Seligman and Solomon, 1971)

> Each period of shock can be divided into hypothetical periods of delta-t in length, each delta-t being shorter in time than any response the animal can make. In this way the animal may or may not be responding during any delta-t. When a shock is inescapable, the probability that it will end on any delta-t is zero, except in the case of the final delta-t of its duration during which the probability that it will end is one. Therefore, the probability that a shock will end on any given delta-t is the same whether or not the animal is responding. The animal becomes sensitized to this condition because of the following process:
>
> Active responses are made in the presence of the inescapable shock;
>
> Because shock treatment cannot be controlled, the animal learns that the aversive stimulus is independent of its behaviour;
>
> It is assumed that an animal's incentive for initiating active, instrumental responses during a shock is produced in part by its having learned that the probability of shock termination will be increased by those responses, and when that expectation is removed, as happens in the case of a contingency of uncontrollable outcomes, the incentive for responding should be reduced;
>
> The presence of shock in subsequent situations: e.g. — the escape/avoidance training situation of the shuttle box, should arouse the same

> expectation as had been acquired during the previous exposure to inescapable shock: e.g. — . shock is uncontrollable.

They proposed the term "learned helplessness" for instances wherein the incentive on the part of an animal is reduced due to the expectation acquired through previous learning that an aversive stimulus is uncontrollable.

In 1967 Seligman and Maier reported a study wherein the findings were offered as a refutation of the alternative hypothesis that animals do not learn the contingency attached to uncontrollable stimuli, but rather, learn to react to it by "freezing" (Seligman and Maier, 1967). A second 1967 study, this by Overmier and Seligman, showed that learned helplessness effects dissipate over time (Overmier and Seligman, 1967). Maier, Seligman and Solomon account for this effect, saying that it is correlated with the dissipation of emotional exhaustion, emotional exhaustion being one of the underlying factors of learned helplessness (Maier, Seligman and Solomon, 1971).

Learned Helplessness As a Model of Depression

In 1972, attention paid to the concepts of non-contingency and uncontrollable outcomes increased when Martin Seligman proposed learned helplessness as a model of reactive depression. He referred to, at that time, perceived similarities in reports of behaviours of animals and humans in instances of labratory-induced helplessness, and some symptoms

of a specific class of depression -- "reactive" depression. The following is an exerpt from Seligman's article in the 1972 "Annual Review of Medicine":

> The phenomenon of human depression, particularly reactive depression, has a number of parallels to the phenomenon of learned helplessness. Like learned helplessness, depression is characterized by reduced response initiation, as well as a "negative cognitive set" -- difficulty in believing or learning that one's own responses will succeed, even when they do. In a factor-analytic study of the symptoms of depression a factor including feelings of hopelessness, helplessness and worthlessness has been characterized as the essence of depression. It is also of interest that the nor-epinephrine depletion produced in uncontrollable shock parallels the catacholamine hypothesis of affective disorders, which holds nor-epinephrine depletion to be responsible for human depression. Several recent theorists have postulated that learning and believing that one is helpless and hopeless is the central psychological cause of depression, and this articulates well with the ethiology of learned helplessness. Finally, sucessful psycho-therapy for depression, like therapy for learned helplessness, may involve having the patient come to believe that he can be effective in controlling the events that are important to him, and recent evidence lends support to this view.

This presentation was followed by many investigations between 1973 and 1977, to which Seligman was a party in a number of cases, which debated the concept of learned helplessness, and its viability as a model of depression (Miller and Seligman, 1973; Miller and Seligman, 1975; Miller, Seligman and Kurlander, 1976; Klein, Fencil-Morse and Seligman, 1976; Klein and Seligman, 1976). Of course, those writings whose authorship included Seligman tended to support learned helplessness as a model of depression, though not as a model for other clinical and non-clinical disorders (Miller, Seligman and Kurlander,

1976). In general, each of those writings, and all of them taken together, are regarded by their authors as supporting the same hypothesis:

> If learned helplessness is a model of depression, depressed subjects, and non-depressed subjects made to believe they are helpless, should show the same deficits relative to normal controls.

Early support for this position came from a number of authors (Dunlop, 1976; Eckleman, 1976; Hammen and Krantz, 1976; Johnson, 1976), while dissenters were few (Greer, 1976). The latter investigation suggested that learned helplessness characteristics were more predominant in psychiatric, nondepressive patients than in either depressed or normal subjects, who were reported as being quite similar to one another. Two of the aforementioned writers supported learned helplessness as specifically emulating reactive depression (Dunlop, 1976; Johnson, 1976).

By the end of the following year the rate of contributions to the learned helplessness debate had increased significantly. Of those which supported a link between learned helplessness and depression, two studies were based on the effects of manipulating perceptions of control (Raps, 1977; Rawlings, 1977). Opposition to such a link included two who refuted the claim that learned helplessness could be induced in a laboratory setting (Cole and Coyne, 1977; Smolen, 1977), while a third author reported having induced the helplessness affect, but found no link between it and depression (Anderson, 1977). One contribution (Gatchel, McKinney and Moebernick, 1977) found evidence on both sides; on the level of performance deficits similarity was noted, while

similarities in an arousal measure (electro-dermal response) were not found.

Since then many authors have conducted studies which support a learned helplessness model of depression (Abrams, 1979; Abramson, 1978; Anderson, 1978; Bowles, 1979; Broderick, 1978; Burger and Arkin, 1980; Campbell, 1978; Cheerry, 1979; Evans and Dinning, 1978; Gody, 1978; Hill, 1979; Krimsdorf; 1978; Lloyd, 1980; O'Leary, Donovan and Cysewski, 1977; Orourke, 1978; Orourke, Tryon and Raps, 1980; Price, Tryon and Raps, 1978; Raps, 1978; Seligman, 1978; Sherwood, 1978; Sutton, 1980; Teasedale, 1978; Theis, 1978; Tsarnas, 1978; Willis and Blaney, 1978). Many writings have shown evidence against similarities between depression and learned helplessness (Ball, 1978; Buchwald, Coyne and Cole, 1978; Callaway, 1978; Chartier, 1978; Dillon, 1978; Duffy, 1978; Faulkner, 1979; Foster, 1979; Frankel and Snyder, 1978; Garrett, 1978; Goldstein, 1980; Kreuger, 1978; Margolies, 1978; McReynolds, 1980; Sergent and Lambert, 1979). Still others presented questions and doubts as to whether learned helplessness accounts for the deficits ascribed to it by its proponents (Haris, 1978; McReynolds, 1980; Sergent and Lambert, 1979; Wortman and Dintzer, 1978; Zuroff, 1980).

As can be seen, since 1977 the topic of learned helplessness has received a great deal of attention. The authors mentioned here, and many others as well, have written about other aspects of learned helplessness besides its role as a model of depression. That link is only one aspect of the debate. Other issues have also been attended to on a broad scale.

Other Issues of Learned Helplessness

Issues of Non-Contingency:

The literature on learned helplessness has dealt to some extent with this question: is non-contingency, or uncontrollability of outcome, of itself sufficient to induce learned helplessness, irregardless of whether the non-contingent reinforcement is positive or negative, and irregardless of the rate at which it is received by the subject? The concept of non-contingency has already been discussed as basic to learned helplessness theory (Maier, Seligman and Solomon, 1971), but, in that same presentation those authors described failure, citing the case of "unsuccessful" efforts to terminate electric shocks, as a special and exemplary case of non-contingency. In fact, however, the term non-contingency has nothing to do with the rate of reinforcement -- be it zero or one hundred percent -- but only stipulates that the subject be reinforced at the same rate in the absence of a specified behaviour as the subject is reinforced in the presence of that behaviour. The term also applies independently of whether the outcome is negative -- as is the case in instances of failure to escape an aversive stimulus -- or positive.

Few authors write that subjection to failure is insufficient or incapable of inducing some or all of the deficits associated with learned helplessness -- performance, cognitive, emotional and motivational deficits. Only a few of the disputing papers are unqualified in stating that failure experiences are insufficient

precipitators (Kreuger, 1978; Solomon, 1980). Some authors, however, do take qualified exception to the concept of failure-induced learned helplessness, saying that such a paradigm does not apply to social contexts (Chartier, 1978), that it is not perceptions of non-contingency but manipulations of self-esteem which may lead to learned helplessness (Dillon, 1978), that the perceived failure must produce a drive state (Feinberg, 1977), that perceived failure must be preceded by experiences of success (Solomon, 1980), and their views are sprinkled throughout the literature.

Most authors, though, support claims about the effects of failure (Alloy and Seligman, 1979; Buchwald, Coyne and Cole, 1978; Butkowsiy and Wilson, 1980; Goetz and Strauss, 1980; Hammen and Krantz, 1976; Miller and Seligman, 1976; Sherwood, 1978). Other types of aversive stimuli and reinforcement have been examined and also found to be effective in producing helplessness symptoms. They include failure to do well on a task described as not difficult (Tennen and Eller, 1978), and the random beatings reported to be typical in cases of ongoing wife-battering (Walker, 1978).

The effects of non-contingent, positive or non-aversive reinforcement have also been discussed in the literature. If non-contingency is both necessary and sufficient for the induction of learned helplessness, then positive or non-aversive reinforcement presented according to such a schedule should yield results similar to those of non-contingent aversive reinforcement. Supporters for the effects of non-contingent positive reinforcement include Kóller and Kaplan, 1978; Orourke, Tryon

and Raps, 1980; Skitarelic, 1977; Wilson, Seybert and Craft, 1980; Gampel, 1979; and Orourke, 1978. Most of these findings are qualified: Tryon et al found that non-contingent, positive reinforcement yields learned helplessness effects only when as much as a 60-percent schedule of non-contingent is used, and not under a 30- or 0-percent schedule of non-contingent reinforcement; others report that non-contingent successful is less powerful than non-contingent failure as an inducer of learned helplessness. Some writers completely reject the effects of uncontrollable positive reinforcement (Daughtry, 1979; Sabbeth, 1979; Sergent and Lambert, 1979; Heffler, 1979). Others qualify their rejection, saying that such a schedule leads to performance, but not affective deficits (Duffy, 1978). That it yields no performance deficits, but does lead to perception of non-control over outcomes (Danewitz, 1979), and that it leads to superstitious behaviour (Stegman and McReynolds, 1978).

Differential Effects of Learned Helplessness Training On Males and Females:

An interesting discussion regarding the phenomenon of learned helplessness deals with the differences between the effects had upon males and females by helplessness training and induction. Studies reporting no differences between the sexes are few in number (Beaucom and Danker, 1979; Breen, Vulcano and Dyck, 1979; Frings-Raftery, 1980; Sabeth, 1979). Of those reporting differences, few suggest that males are more susceptible than females (Abrams, 1979).

Most authors aggree that females are more vulnerable to helplessness training and induction than are males (Bagley, 1978; Broderick, 1980; Dweck, Davidson, Nelson and Bradley, 1978; Dweck, Goetz and Strauss, 1980; Gody, 1978; Hill, 1979; Leunes, Nation and Turley, 1980; Stuart, 1977; Wilson, Seybert and Craft, 1980). A number of these writers attribute the difference in vulnerability to differences in the upbringing and social treatment of males and females (Mamlak, 1980; Bagley, 1978; Broderick, 1980; Dweck, Davidson, Nelson and Bradley, 1978; Stuart, 1977).

On the other hand, there are authors who write that males and females are equally susceptible to helplessness training, but, as evidenced by differences between the sexes in displayed symptoms, the nature of the helplessness induced in females is different from that of the helplessness induced in males. It has been reported that males exposed to uncontrollable outcomes displayed more interest in the tasks than did females similarily subjected (Bowles, 1979), that helpless females display a longer latency in responding with solutions to problems than do helpless males (Gody, 1978), that females, but not males, who can control outcomes in as much as fifty percent of the reinforcement presentations exhibit helplessness symptoms (Wilson, Seybert and Craft, 1980), that there is no relationship between attributions for failure made by females and their performances, whereas males attributing their failures to internal factors tend to display improved performances (Holman, 1980), and that sucessful recovery from helplessness induction for female children depends on a change in the ability area under examination, whereas for male children it is precipitated by a change in

the evaluator (Dweck, Goetz and Strauss, 1980).

Developments in the Learned Helplessness Model of Depression

Since the review and summary of the phenomenon of learned helplessness (Maier, Seligman and Solomon, 1971), and the presentation of learned helplessness as a model of depression (Seligman, 1972), the sperious findings as to some of its underpinnings have led to efforts to refine and better understand its induction. Much of the model's new shape have stemmed from increased understanding of the conditions under which non-contingent presentations of outcomes are most effective.

Perceived Locus of Control and Learned Helplessness:

Examinations of locus of control in learned helplessness studies have been carried out in attempts to better understand what had come to be seen as two separate perceptions made by humans -- perceptions of failure and perceptions of non-control (Cohen, Rothbart and Phillips, 1976). The concept of locus of control states that a person, faced with an outcome of either success or failure, will develop a belief that that outcome is due to circumstances which are either within or outside of his/her control. Where one's perceptions fall along these two dimensions -- outcome and locus of control -- will determine whether his/her responses to following events will be enhanced, will remain constant, or will be impaired (Mirels, 1970).

Most studies dealing with this question sought to understand whether persons who have a propensity to believe that control of situations is within their grasp, or those who have a propensity to believe that it is outside of their control suffer more under helplessness training and induction. Of these studies, several found there to be no difference (Evans and Dinning, 1978; Hanrick, 1976; Roth, 1976). The majority of the remaining studies which examine this question give evidence that persons believing that they do not have control over outcomes -- externals -- are more susceptible to helplessness induction than internals (Albert and Geller, 1978; Cohen, Rothbart and Phillips, 1976; Feinberg, 1977; O'Leary, Donovan and Cysewski, 1977). One study found this to be true of males, but not of females (Holman, 1980). Some researchers found this to hold true through applied studies: among drug users, particularly multi drug users (Makedonsky, 1977), and among sufferers of uncontrollable skin diseases (Mitchell, 1979). In a unique study, though, it was found that performances of subjects who believed they could control outcomes sufferred impairment when those subjects found themselves in a situation where it was demonstrated to them that they could not control the outcomes, while others who believed they could not control outcomes, upon finding themselves in a situation wherein it was demonstrated to them that they could control the outcomes showed enhanced performances (Hiroto and Seligman, 1975). This finding was replicated (Gregory, Chartier and Wright, 1979).

Attributions for Failure and Learned Helplessness:

The development of beliefs about locus of control of outcomes is a specific style of attribution regarding those outcomes. The examinations of locus-of-control attributions prevalent in the mid 1970's has given way to studies of broader styles of attributions of outcomes in learned helplessness investigations. Locus of control is a uni-dimensional attributional framework. The first attributional framework with more than one dimension applied in a learned helplessness study was one which examined persons' beliefs about locus of control and stability of outcomes. The quadrants of that framework were labelled ability, task difficulty, effort and luck (Feather and Senior, 1971(1); Feather and Senior, 1971(2)) (see Figure ii).

In an example of this sort of investigation (Menapace and Doby, 1976), college students and psychiatric rehabilitees performed tasks, experiencing either continual success or continual failure outcomes. These authors reported that students who "succeeded" and rehabilitees who "failed" accounted for the outcomes by attributing them to stable factors -- ability and task difficulty, while students who "failed" and rehabilitees who "succeeded" attributed those outcomes to unstable factors -- effort and luck. There were no differences between the groups in the attribution of control to locus-of-control factors.

Those findings are supported by an investigation which applied a similar attributional framework to the classic learned helplessness experimental paradigm (Kelbaugh, 1979), and by one which examined the

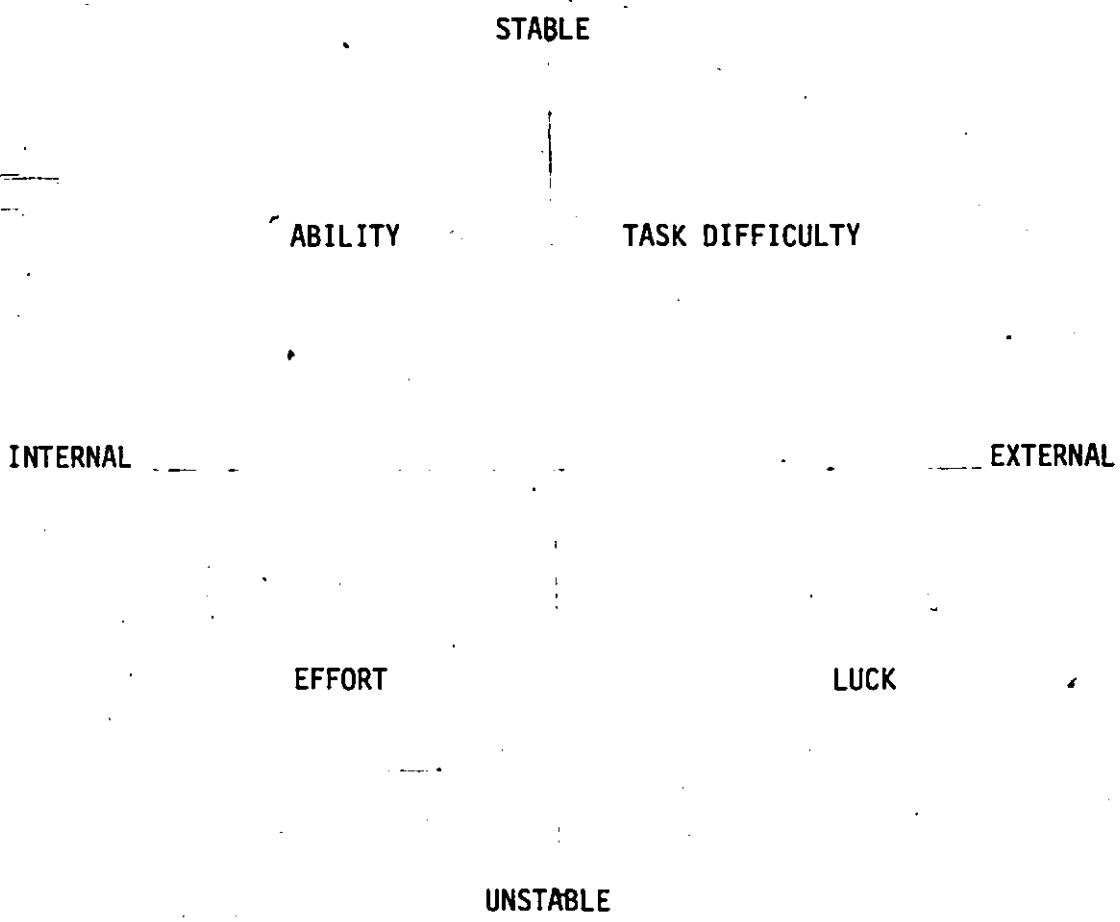

Figure 2. 2-Dimensional framework for causal attribution.

attributions of poor readers (Butkowsky and Wilson, 1980). Evidence against these findings, however, is given in an investigation which showed that subjects exhibited helplessness, no matter to which of the the framework they were instructed to attribute (Bachus, 1979). Yet another study, using the same framework, revealed an interaction between experiences of success and failure and locus of control variables on measures of performance and depression (Sherwood, 1978).

Temporally contiguous with these studies, investigations were carried out which took a different approach to the examination of locus-of-control attributions. Whereas the previously mentioned studies had used as dependent variables measures of subjects' ppropensities to believe in an internal or external locus of control, the latter ones, like studies of the two-dimensional attributional framework, used as the independent variable instructions given to subjects to attribute outcomes to internal or external factors. Several researchers report evidence that, using such manipulations, subjects instructed to attribute failure to internal factors exhibited more and stronger symptoms of learned helplessness (Anderson, 1977; Watson, 1979; Dweck, Davidson, Nelson and Bradley, 1978), and that self-blame for failure is necessary to the induction of learned helplessness (Callaway, 1978).

Under the weight of the increasing rate of publications of learned helplessness research, and in the face of such evidence and questions presented by the aforementioned works, it was inevitable that the concept of learned helplessness would be presented in a new form, and that the reformulation would include a framework to account for

attributions for the causality of failure and non-contingent outcomes which accompany the cognitive, emotional, motivational and performance deficits of learned helplessness. In a special edition of the Journal of Abnormal Psychology, published in February, 1978 (Journal of Abnormal Psychology, 87(1), 1978), whose pages were entirely devoted to debate on the learned helplessness phenomenon, such a reformulation appeared (Abramson, Seligman and Teasedale, 1978). This reformulated version is based on a three-dimentional framework of attributions for causality. It states that, faced with non-contingent, uncontrollable outcomes, one will come to believe that the reason they are uncontrollable stem from within him- or herself, or that they stem from the environment in which case others in the same situation would also find the outcomes uncontrollable; one will come to believe that outcomes are uncontrollable only in the situation in which he/she is presently experiencing the uncontrollable outcomes, or that his/her inablilty to control outcomes is generalized across a number of situation(s); one will come to believe that the situation(s) in which he/she is unable to control events is either recurrent and longterm, or that they are intermittent and/or shortterm. The first of these dimensions is an internal/external dimension, and where a person's belief falls in that dimension will determine to what extent the helplessness sufferred is thought to be personal or universal; the second of these dimensions is a global/specific dimension, and where a person's belief falls along that dimension will determine to what extent the resulting helplessness is thought to be broad or narrow; the third of these dimensions is a stable/unstable dimension, and where one's belief falls along that

dimension will determine to what extent the resulting helplessness is thought to be chronic or acute. The reformulated learned helplessness model of depression is summed up in the following four statements (Abramson, Seligman and Teasedale, 1978, p/68):

1: Depression consists of four classes of deficits: motivational, cognitive, self-esteem and affective.
2: When highly desired outcomes are believed improbable, or highly aversive outcomes are believed probable, and the individual believes that no responses in his repertoire will change their likelihood (helplessness), depression results.
3: The generality of the depression deficits will depend on the globality of the attribution for helplessness; the chronicity of the depression deficits will depend on the stability of the attribution for helplessness, and whether self-esteem is lowered will depend on the internality of the attribution for helplessness.
4: The intensity of the deficits depends on the strength or certainty of the expectation of uncontrollability, and in the case of affective and self-esteem deficits, on the importance of the outcome.

The reformulated model has been the topic of much writing and research. It has been rejected by some authors saying that there are no differences to be found between groups of subjects using differing attribution styles (Allen, 1978; Campbell, 1979; Goldstein, 1980). One study has presented evidence for the refutation of the global/specific dimension of the attributional framework. Though supporting a statement from the reformulated model that when the training task is believed to be a powerful predictor of the test phase task helplessness effects will be emminent (Pasahow, 1978). Yet another paper questioned the appropriateness of the reformulated model, the dimensions of the framework it proposes, and even the use of attributions as predictors of the onset of helplessness deficits (Wortman and Dintzer, 1978).

Pasahow's study (Pasahow, 1978) is not the only one offering partial support for the reformulated model, however. With favourable findings regarding statements about the internal/external dimension (Abramson, 1978), about the global/specific dimension (Allegra, 1979), and about the stable/unstable dimension, saying that belief in the stability of uncontrollable events leads to learned helplessness (Kelbaugh, 1979). Other papers provide support for the general taxonomy of attributions of the reformulated model (Diener, 1979; Jackson and Lawrence, 1979; Krimsdorf, 1978; Sutton, 1980), while Seligman (1978) wrote in total support of the reformulated model.

Including in the learned helplessness model of depression a framework of attributions made by persons regarding the uncontrollability of outcomes constitutes a major turning point, and adds understanding and depth to the model (Sutton, 1980).

"Helplessness Depression":

In the same article in which he gave support for the reformulated model of learned helplessness (Seligman 1978), Seligman presented revised statements of the relationship between learned helplessness and depression. In a paper which presented classes of depression commonly referred to by many writers on the subject, after a review of the literature, the learned helplessness/depression link was shown as confounded, and perhaps tenuous (Depue and Monroe, 1978). These authors wrote that learned helplessness seemed to model no particular class of depression, including that of the reactive or neurotic classification. Rather, its deficits as listed by Seligman (Seligman 1972; Seligman

1975) occur in several categories of depression -- both minor and major, and both endogenous and neurotic (This last depressive dimension is most like the reactive category described by Seligman (Seligman, 1972; Seligman, 1975).

In response to these criticisms, Seligman maintains that learned helplessness is a model for depression, proposing that it models what can be called "helplessness" depression (Seligman, 1978). This class of depressions, he suggests, may cut across traditional classifications of the disorder, but is clinically useful. It is characterized by deficits presented earlier in this investigation as resulting from helplessness training (Abramson, Seligman and Teasedale, 1978), and by a symptomology composed of negative cognitive sets and passivity. Seligman speculates that these features are common to disorders which are both clinical and sub-clinical, and which are induced by a belief on the part of the depressive person that outcomes in important situations are uncontrollable (Seligman, 1978).

Rationale and Purpose for the Present Investigation

The study of learned helplessness as a model of depression has taken several major turns since it was first proposed in the early 1970's (Seligman, 1972). Perhaps the most significant of these is the formal inclusion of the three-dimensional framework to account for the development of a belief in one's inability to control outcomes in an important, negative situation (Abramson, Seligman and Teasedale, 1978).

It may account for much of the inconsistency between studies seeking to answer questions regarding the replication of learned helplessness under laboratory conditions (Jackson and Lawrence, 1979), and if confirmed through experimentation would shed much light on the understanding of the phenomenon of learned helplessness (Abramson, Seligman and Teasedale, 1978; Seligman, 1978). Despite blatant opposition to the reformulated model (Goldstein, 1980; Pasahow, 1978; Wortman and Dintzer, 1978), the presentation of Abramson et al must be considered as having gained credibility through the independent support on the theoretical level given by Miller and his colleagues a year later (Miller and Norman, 1979).

The present study is an examination of several aspects of the reformulated model of learned helplessness. The three dimesnions of the attributional framework divide it into eight octants (see Table 1). Through the use of verbal instructions subjects in the present investigation were given reason to ascribe to beliefs which would place their attributions for failure on the training task into one of four octants examined in the experiment presented in this paper. The octants chosen for investigation are those marked with an asterisk in Table 1. It was intended that subjects would ascribe to the attributions for failure described in those octants so that the differential and/or summative effects of attributing to zero, one, two or three "negative" ends of the dimensions of the framework could be assessed.

Table 1

Octants of the 3-Dimensional Framework of Attributions

H1*	H2*	H3*	H4	H5	H6	H7*	H8
Specific	Specific	Specific	Specific	Global	Global	Global	Global
Unstable	Unstable	Stable	Stable	Unstable	Unstable	Stable	Stable
External	Internal	Internal	External	External	Internal	Internal	External

The negative ends of dimensions are as follows: the internal end of the internal/external dimensions, attributions to which result in loss of self esteem (Abramson, 1978; Abramson, Seligman and Teasedale, 1978; Dweck, Davidson, Nelson and Bradley, 1978; Firestone, 1978); the stable end of the stable/unstable dimension (Kelbaugh, 1979), attributions to which result in chronic helplessness (Abramson, Seligman and Teasedale, 1978); the global end of the global/specific dimension (Allegro, 1979; Abramson, 1978), attributions to which result in generalized helplessness (Abramson, Seligman and Teasedale, 1978).

The affectiveness of instructions as a tool for manipulating beliefs and attitudes in an experimental paradigm has been a subject for some debate. In the learned helplessness literature it has been found to be ineffective by some (Buchwald, Coyne and Cole, 1978), but its usefulness has been espoused by a greater number (Dunlop, 1976; Tennen and Eller, 1978; Skinner, 1979; Watson, 1979). In the present study instructions for attribution were indirect, taking the form of contrived information as to subjects' uniquenesses or similarities to "significant others" in their failure on the training task, the stability or instability over time of scores on the training task, and the effectiveness or ineffectiveness of the training task as a predictor of performances on the test task.

It is the feeling of the present author that if a person develops a belief as to the globality or specificity of his/her helplessness, it is done based on beliefs as to the strength of the task or event for which uncontrollable outcomes were experienced, as a predictor for outcomes on

other tasks or events. In learned helplessness studies other authors have viewed subjects' beliefs regarding the strength of the training task as a predictor for outcomes on the test task as a separate dimension and independent variable (Skinner, 1979). That author found support for the effects of instructions to attribute along that dimension.

As well as measuring the effects of the different sets of instructions for attribution, subjects' scores on the several dependent variables generated by performances on the test task were compared with their scores on the first half of the Beck Depression Inventory (see appendix I). Many authors of learned helplessness experimental studies have used the B.D.I. as a measure of the level of depression in subjects, in efforts to research the learned helplessness/depression link. Several authors write in opposition to the use of Beck's inventory in learned helplessness studies, arguing that it is not a diagnostic tool (Buchwald, Coyne and Cole, 1978; Costello, 1978; Depue and Monroe, 1978; Smolen, 1978). Martin Seligman himself states that elevated B.D.I. scores alone are insufficient for a diagnosis of depression (Seligman, 1978). However, primarily because of the proposal in the same article that learned helplessness models "helplessness" depression -- a type of disorder which may be either mild or severe, and which may cut across traditional sub-classes of depression (Seligman, 1978), the learned helplessness/depression link has been given less attention in the present study than have questions regarding the induction of learned helplessness under laboratory conditions. For this reason no stronger effort was made to establish levels of depression for

subjects of this investigation. This is in spite of the attention which the reputed relationship between depression and learned helplessness has received. That relationship has many supporters (Abrams, 1979; Abramson, 1978; Abramson, Garber and Seligman, 1978; Albert and Gelling, 1978; Anderson, 1978; Bowles, 1979; Broderick, 1978; Burger and Arkin, 1980; Campbell, 1979; Cherry, 1979; Dunlop, 1976; Eckelman, 1976; Evans and Dinning, 1978; Garber, Miller and Seaman, 1979; Gatchell, McKinney and Moebernick, 1977; Gody, 1978; Hammen and Krantz, 1976; Hill, 1979; Johnson, 1976; Kilpatrick-Tabak and Roth, 1978; Krimsdorf, 1978; Lloyd, 1976; Klein and Seligman, 1976; Klein, Fencil-Morse and Seligman, 1976; Miller and Seligman, 1973; Miller and Seligman, 1975; Miller and Seligman, 1976; Miller, Seligman and Kurlander, 1975; McKnitt and Thornton, 1978; O'Leary, Donovan and Cysewski, 1977; Orourke, 1978; Orourke, Tryon and Raps, 1980; Price, Tryon and Raps, 1978; Raps, 1977; Rawlings, 1978; Seligman, 1972; Seligman, 1975; Seligman, 1978; Sherwood, 1978; Sutton, 1980; Teasedale, 1978; Theiss, 1980; Willis and Blaney, 1978). However, many writers have found no support for such a relationship (Anderson, 1977; Ball, 1978; Buchwald, Coyne and Cole, 1978; Callaway, 1978; Chartier, 1978; Cole and Coyne, 1977; Dannewitz, 1979; Dillon, 1978; Duffy, 1978; Faulkner, 1979; Foster, 1979; Frankel and Snyder, 1978; Garrett, 1978; Goldstein, 1980; Greer, 1976; Haris, 1978; Krenger, 1978; Margolies, 1978; McReynolds, 1980; Mytar, 1978; Rosenbaum and Shichman, 1979; Sergeant and Lambert, 1979; Smolen, 1978; Zuroff, 1980).

Perhaps the most important factor in the laboratory induction of learned helplessness is the establishment of beliefs on the part of

"helpless" subjects in the uncontrollability of outcomes, often done through the manipulation of outcomes on the "helplessness training" task. In the present investigation this effect was executed by telling the "helpless" subjects that they had failed to achieve an average score on a lever-pressing task -- a task wherein the instructions require a subject to press a spring-loaded lever as many times as he/she can in each of twenty ten-second time segments. The rationale is that a person, after relatively intense physical exertion, will believe that he/she is unable to succeed or control the outcome on the task when told that his/her efforts to achieve a high score have resulted in a below-average performance.

When learned helplessness is induced in a person, the deficits associated with it are motivational, cognitive and emotional deficits, and loss of self esteem (Abramson, Seligman and Teasedale, 1978; Seligman, 1978). In the present investigation the relative levels of motivation of the groupings of subjects was examined by administering learning trials of the test task to them. Measures of the speed and effectiveness with which subjects learned the task were used as levels of motivation. Subjects' cognitions regarding their abilities to control outcomes in the test task -- expected to be distorted in the "helplessness" subjects -- were examined through measures of levels of expectancies, both on selected performances of the test task, and across all performances of the task (Seligman, 1972; Seligman, 1975).

Measures of changes in expectancies across performances of the test task were also taken for all participants in the present study. In

early learned helplessness literature expectancy-change was viewed as a further measure of a distorted cognitive set -- belief that negative outcomes would not change (Seligman, 1972; Seligman, 1975). Several authors found no indication that learned helplessness was linked to small expectancy changes (Buchwald, Coyne and Cole, 1978; Kreuger, 1978; Smolen, 1977). This variable, however, has been found to be linked to learned helplessness in uni-polar, clinically depressive patients (Abramson, Garber and Seligman, 1978). In the 1978 reformulated model, though (Abramson, Seligman and Teasedale, 1978), expectancy-change is associated with persons' attributions along the stable/unstable dimension, with smaller changes in expectancy reflecting attributions to unstable factors.

Aspects of the test task procedure in the present study were devised especially to examine expectancy-change scores. In previous learned helplessness studies subjects registered their expectations for either success or failure, as those were the only outcomes allowed by the test tasks (Miller, Seligman and Kurlander, 1975). Each performance of the test task in the present study consisted of five trials. The specifications of the task require that on each trial (be it during the learning trials or during the test phase) a subject indicate, by pressing a lever, when he/she believed that the light on the panel of the lever-pressing device had shone for five seconds. This facet of the experiment allowed expectancies of performances, as well as performance scores, to fluctuate between zero and five points. Pressure was put upon subjects to change their expectancies for performance from performance to performance of the time-estimation task through

fluctuations in their "perceived" scores. Fluctuations were induced in perceived scores through the activation of a probability-generator. With the probability set at .30, when the probability-generator was engaged, a subject making a correct estimation that five seconds had elapsed had only a thirty percent chance of receiving a point for his effort. Thus, on each five-trial test of the time-estimation task during which the probability-generator was activated a subject's perceived score was likely to be lower than his/her actual score, resulting in perceived score fluctuatiions.

The effects of the experimental procedures upon subjects' emotions were examined in a post-test interview. This interview was recorded, and took an informal format. The interview was also used to debrief the participants, informing them of their performances, and of the manipulations and purposes of the investigation. It also provided an opportunigy for the experimenter to deal directly with any mood or emotional deficits which a subject may have incurred through participation in the study.

Finally, males and females were compared with one another on all measures. As shown earlier in this chapter, much attention has been paid to this topic in the learned helplessness literature. Although this author acknowledges the importance of the work done by Dweck and others regarding the effects of socialization as a factor contributing to differences between males and females in their vulnerability to learned helplessness (Bagley, 1978; Beaucomp and Danker, 1979; Dweck, Davidson, Nelson and Bradley, 1978; Stuart, 1977), this factor was not

considered in the present investigation; this is because the examination of differences between the sexes under the designs required by the reformulated model of learned helplessness is, as yet, uncommon to the literature.

For a more in depth discussion of the tasks, measures, and post-test interview, and other aspects of the experimental procedure, see chapter II.

Hypotheses and Expectations

As has been mentioned, the "helplessness" subjects in the present investigation -- those who were told they had failed to achieve an average score on the lever-pressing task -- were divided into four groups (see Table 1). The group assignments were made based on differing instructions which subjects received, which were intended to shape their attributions for failure (see appendix V-a, V-b, V-c, V-d and V-e). There were two other groups in the present investigation, as well: a "success" group, whose members were told that they had achieved an above average score on the lever-pressing task, and a control group, whose members did not perform the lever-pressing task. These groups are denoted by the symbols np, sp, H1, H2, H3, and H7, for the control, or No Pre-treatment group, the "Successful" Pre-treatment group, and the four "helplessness" groups respectively. The numerical component of the symbols for the "helplessness" groups refers to the octant of the framework into which their sets of attributions fall.

Subjects in the "helplessness" groups were compared with those from the "Successful" Pre-treatment and control groups on a number of variables which measured speed and effectiveness of learning the time-estimation task, optimism about performance on the time-estimation task as shown by overall level of expectancy, and levels of expectancies for performance on the first, second, third and last of the time-estimation sets, expectancy-change across the time-estimation performances, and a further examination of degrees of vulnerability to fluctuating scores shown through a comparison of subjects expectancies made when the probability-generator was engaged with those made when it was disengaged. Groups of "helplessness" subjects were also compared with one another on the same list of variables.

The present author feels that it would have been unwise to predict differences on any of the variables between the "helplessness" groups as a whole, or any of them singularly, the "Successful" Pre-treatment group and the control group, due to the diversity in the "helplessness" groups induced by the differing instructions which their members received. Nor are any differences predicted on any of the variables between any combinations of the helplessness groups. It is hypothesized, however, that, among the "helplessness" groups as a whole, and within each of them separately, male subjects are less vulnerable to helplessness training then are females. Finally, the relationship between depression and each of the variables listed above is examined. It is hypothesized that no correlation exists between subjects' depression scores and their scores on any of these variables.

Descriptions of all experimental and statistical procedures used to test these hypotheses and predictions are included in the pages of the following chapter of this paper. Results of the examinations are given in the third chapter, andd a discussion of the findings of this study are found in the fourth chapter.

CHAPTER II:

METHOD

Subjects

Selection:

Sixty subjects -- thirty males and thirty females -- were required for the present study, so that five of each gender could be assigned to each of the experimental conditions. The subjects were students of the University of Ottawa, and were chosen in one of two ways: most were selected at random from the University's student directory, and were solicited by telephone to participate in the study; the remainder were students of the University's introductory psychology course who volunteered to take part in the research.

Demographic Data:

Participants in the present investigation were from many levels of university studies, including graduate school, and came from a variety of programmes in both the arts and sciences faculties. Some were part-time students, and some held part-time or full-time jobs, including that of housewife.

Materials

The Experimental Setting:

The experiment took place in a small room which measured 2.7m by

1.9m. This room was furnished with a table and two chairs, and its back wall contained a one-way mirror which was left exposed. At the long side of the table, facing the one-way mirror, was the chair in which the subject was to sit; at the short side of the table, with the door to the left, was the chair in which the experimenter was to sit. On the table, in front of the subject's chair, was set a lever-pressing apparatus, and in front of the experimenter's chair was set a reel-to-reel tape recorder. A second room contained the electrical monitoring and scoring equipment for the experiment.

Technical Equipment:

The lever-pressing apparatus was composed of a Stromberg-Carlson cam key 171d lever-pressing device mounted in a 19cm by 28cm chassy with a sloping-faced panel. In the centre of this panel was a red "go" light, to the right of which was located the spring-loaded lever-pressing key, and to the left of which was located an electrical impulse counter. The reel-to-reel tape recorder used in the experiment was a Soni 110 model, on which were mounted 18cm reels of recording tape. The experimental tasks were controlled, and monitoring and recording of subjects' performances on the lever-pressing and time-estimation tasks was done using standard electrical laboratory equipment. Included in this equipment were the mechanisms for the probability-generator.

Charts and Scales:

Subjects' levels of depression were measured on the first half of the Beck Depression Inventory (see appendix I). The B.D.I. requires that

subjects indicate their responses by writing the numbers which accompanied their choices beside the numbers appearing on the inventory; for example, if a respondent felt that the most appropriate response to a question was the second one, then he/she would write a "2" beside the number 2 on the inventory which accompanied that choice.

Enjoyment scales were used to assess the degree to which participants in the present investigation found the lever-pressing and the time-estimation tasks enjoyable. This scale was composed of a 100cm line to the left end of which was the word "enjoyable", and to the right end of which was the word "unenjoyable" (see appendix IV). Subjects were instructed to draw a stroke across the line at a point which reflected the degree to which he/she found the task enjoyable.

Subjects' levels of expectancy for performance were recorded by subjects on expectancy-charts. During the testing phase of the time-estimation task each subject performed fifteen five-trial tests. Before each five-trial test each subject filled out an expectancy-chart to indicate the number of correct estimations he/she expected to achieve on that test. All fifteen charts, an example of which is appended (see appendix vIII), were presented to each subject before the first of the five-trial time-estimation tests, stapled together in booklet form.

A graph formed by the experimental assistant compared a subject's expectancies for performance with his/her perceived performance scores. An example of this type of graph is appended (see appendix vIII). Each subject's perceived-score/expectancy graph consisted of a small cartesian graph which was filled out on the basis of his/her list of

perceived performance scores and expectancy-charts. A red curve was drawn to illustrate a subjects' perceived scores, and a black curve to illustrate the distribution of his/her expectancies as they were recorded by the subject after each of the first fourteen five-trial tests. Along the horizontal axis of the graph the subjects probability-generator schedule, which was assigned to him/her at random, was charted by the experimental assistant.

Procedure

Phase 1:

When a subject first entered the laboratory he/she was instructed to self-address an envelope so that results of the experiment could be forwarded at a later date. He/she was then led into, and seated in the experimental room, where the experimenter, also seated, took down demographic information, including the subject's name, age, sex, weight, course of studies and/or occupation, desired career, sports in which he/she participated, hobbies, general favourite pastimes of his/her family and friends, most important thing to him/her at the time of the experiment, and most important goal in his/her life. Besides providing demographic information, a subject's responses to these questions were later used for the formulation of contrived information, which he/she later received if he/she had been assigned to one of the "helplessness" groups, as part of the instructions which were intended to guide him/her to various attributions for failure. If the subject was later assigned to group H1, his/her instructions to attribute would include the information that persons like him- or herself (significant others)

usually, as he/she did, scored below the average on the lever-pressing task; if the subject was later assigned to group H2, H3 or H7, his/her instructions to attribute would include the information that persons like him- or herself usually scored above the average in the lever-pressing task, and so relative to most "significant others" he/she had done poorly. The subject was then given a copy of the first half of the Beck Depression inventory (see appendix I), and instructed on how to fill it out. Instructions on how to complete the B.D.I. are as those found in the appended script (see appendix II). The experimenter then left the experimental room, and the subject proceeded to complete the inventory.

The experimenter returned to the room after a period of five minutes to inquire as to whether or not the subject had finished with the inventory. If the inventory had not yet been completed the experimenter left the room to return two minutes later. When the experimenter returned and found the inventory completed he took it from the subject, explaining that he would return shortly.

Phase 2:

The second phase of the experiment included scoring the inventory, assignment of the subject to one of the six experimental condition groups, familiarization of the subject to the lever-pressing apparatus, instructions to the subject on how to perform the lever-pressing task (given to all subjects excepting those in the No Pre-treatment, control group -- group NP), performance by the subject, if he/she was so-instructed, of the lever-pressing task, scoring of the lever-pressing

task, and assignment of a probability-generator schedule to the subject.

The Beck Depression Inventory scores were obtained in the following way: for questions wherein the higher numbered of the choices which a subject could choose as his/her response reflected a higher level of depressive mood, the subject was assigned points equal to the number which he/she circled; where a lower number which a subject could choose in response to a question reflected a higher level of depressive mood, the number which he/she circled was subtracted from ten, and the subject was assigned points equal to the difference; a sum of points assigned for the fourteen questions was that subject's score on the B.D.I. Scores on the inventory were grouped in the following fashion: A. 22 points and fewer, B. 23 to 26 points, C. 27 to 31 points, D. 32 to 38 points, E. 39 to 48 points, and F. 49 points and higher. This was done to ensure that no experimental condition group would be loaded with subjects having similar scores on the B.D.I.; no more than three subjects from a particular B.D.I. group were assigned to any of the experimental condition groups. A subject was assigned to an experimental condition group on the basis of his/her B.D.I. score only; when a subject's inventory score allowed that he/she could participate as a member of more that one group, he/she was assigned to one of the available groups by random selection.

Once a subject was assigned to an experimental condition group the experimenter returned to the experimental room to familiarize the subject with the lever-pressing apparatus. The subject was referred to the "go" light, the spring-loaded lever and the electrical impulse

counter, and was instructed to press the lever a few times to get used to its tension. This familiarization process was done using the appended script (see appendix III-a). At this point, if the subject was a member of the NP group, the experimenter left the room, stating that he would return shortly; otherwise, the experimenter continued with the script, instructing the subject on how to perform the lever-pressing task (see appendix III-b). The lever-pressing task was composed of two halves, each half consisting of ten ten-second sessions which were separated by five-second intervals. During each of the ten-second sessions the "go" light shone, and subjects were instructed to press the lever as many times as they were able while the light was shining. Unknown to the subjects, the ten-second session did not commence until the first press of the lever. After delivering the instructions the experimenter left the room, to return when the lever-pressing task was completed.

The experimenter then assigned to the subject, by random draw, a probability-generator schedule, which the experimental assistant recorded along the horizontal axis of the subject's perceived-score/expectancy graph by marking p's at the appropriate time-estimation tests (see appendix X). For more information about the probability-generator and the probability-generator schedules see "phase 4" of this section. While the experimenter and his assistant were working the subject, if he/she was in the NP group, was waiting for the experimenter to return, and if he/she was in any of the other groups, he/she was performing the lever-pressing task. If he/she was performing the lever-pressing task the counter in the monitoring area, like the electrical

impulse counter on the lever-pressing machine, was keeping a cumulative total of the score. The Experimental assistant recorded two scores for each subject -- one at the half-way point, after the first ten ten-second trials, and one at the completion of the task.

Phase 3:

The third segment of the experiment included the verbal manipulations and inductions to attribute which served to divide the subjects who had performed the pre-treatment lever-pressing task into the SP, H1, H2, H3 and H7 condition groups. Instructions regarding the test task were also given in this phase to subjects from all groups, with subjects then performing the learning-trials section of the time-estimation test task.

In the case of a subject who had performed the lever-pressing task, the experimenter returned at the completion of the task and gave to the subject falsified information which varied in accordance with the experimental condition group to which the subject had been assigned. If a subject had been in the successful pre-treatment (SP) group he/she was informed of having performed well on the lever-pressing task, achieving a score which was above average. A subject who had performed the pre-treatment task, but who was not in the SP group, was told that he/she had performed poorly on the lever-pressing task, achieving a below-average score. He/she was then given contrived information intended to persuade him/her to ascribe to a specific set of attributions regarding his/her failure to achieve an average score. The set of attributions to which a subject was intended to ascribe depended on the "helplessness" group to which he/she had been assigned. These helplessness groups were

derived to co-incide with four of the octants of the three-dimensional framework proposed by Abramson et al (Abramson, Seligman and Teasedale, 1978). All of the experimental groups are described in the first chapter of the present paper, in the section entitled "Rationale and purpose for the Present Investigation". If a subject was assigned to the H1 group he/she was intended to ascribe to the three "neutral" attributions; a subject in the H2 group was intended to ascribe to one "negative" and two "neutral" attributions; a subject in the H3 group to two "negative" and one of the "neutral" attributions, and a subject in the H7 group to the three "negative" attributions. The instructions used in attempting to induce the varying sets of attributions are appended (see Appendices V-b, V-c, V-d and V-e); the script given to SP subjects is found in Appendix V-a.

Finally, a subject, regardless of his/her group assignment, was given information about the time-estimation task, the test task, was asked to temporarily relinquish his/her wrist watch, and was given instructions regarding the performance of the twenty learning trials of the test task. These instructions have been appended to the present study (see appendix VI). The experimenter then left the room, informing the subject that he would return at the completion of the twenty learning trials.

Phase 4:

The fourth phase of the experiment included the introduction of the subject to the expectancies booklet, and an explanation and instructions regarding the fifteen tests of the time-estimation task. Following

those instructions the probability-generator was activated, and the subject performed the fifteen replications of the test task.

At the completion of the twenty learning trials of the time-estimation task the experimenter returned to the experimental room and discussed briefly with the subject his/her performance on the learning trials. He then explained to, and instructed the subject, using a script (see appendix VII), regarding the upcoming fifteen tests of the time-estimation task. The subject was told that each of the time-estimation tests would consist of five trials, with each trial being identical to each of the trials from the learning trials just completed -- i.e. the subject was to press the lever when, according to his/her estimation, the light on the panel had shone for five seconds.

The experimenter then presented to the subject the booklet of expectancy charts, and explained, continuing with the script mentioned above (see appendix VII), how this booklet was to be used: the subject was told that, after each five-trial test of the time-estimation task, he/she must circle the number on the next page of the booklet which equalled the number of points he/she expected to achieve on the next five-trial test. The subject was then instructed to fill out the first expectancy-chart to indicate the score he/she expected to achieve on the first five-trial test. It was filled out in the presence of the experimenter, after which the experimenter dislodged it from the rest of the booklet, and left the room, telling the subject that he would return when the fifteen tests of the time-estimation task were completed. An example of the expectancy-chart has been appended to this paper (see

appendix vIII).

At this point the experimental assistant recorded the subject's first expectancy-chart, activated the probability-generator, and reactivated the time-estimation task equipment in accordance with the programme for fifteen five-trial tests. For descriptions of the time-estimation task equipment and the role of the probability-generator see the explanation given in the first chapter of this paper, in the section entitled "Rationale and Purpose for the Present Investigation". Although the probability-generator was activated throughout the fifteen tests it was engaged on an intermittent basis, affecting outcomes on seven of the fifteen, thus causing the subject's perceived scores to fluctuate from test to test.

For each subject, the seven tests for which the probability-generator was to be engaged were determined by a probability-generator schedule which was assigned to a subject by random assignment. These schedules were formulated under the following rules: the probability schedules were in effect for the first fourteen tests of the time-estimation task; the probability-generator was never engagged before the second or after the thirteenth time-estimation test; at two points between the second and thirteenth tests the generator was engaged for two consecutive tests; at one point between the first and fourteenth tests the generator was disengaged for two consecutive tests; at no time during the duration of the schedule was the generator engaged or disengaged for more than two consecutive tests. All possible schedules using this combination of rules was formulated and made available for random assignment to

subjects. Several examples of probability-generator schedules have been appended (see appendix IX).

When the time-estimation task equipment and the probability-generator had been activated the experimental assistant engaged the former and the subject began his/her first five-trial test. After each test the experimental assistant recorded the subject's real and perceived scores (which, of course, usually differed when the probability-generator was engaged), and then re-engaged the time-estimation task equipment, and, where appropriate, the probability-generator. Meanwhile, at the completion of each five-trial test the subject filled out an expectancy-chart, and turned over that page of the booklet, thus exposing the next chart and removing from view the one just filled out. This procedure continued until the fifteenth five-trial test was finished.

Phase 5:

The fifth and final phase of the experiment began with the experimenter having the subject fill out an enjoyment scale and collecting his/her booklet of expectancy-charts. The experimental assistant recorded the subject's expectancies, and then formulated his/her perceived-score/expectancy graph. Armed with this graph, and all information about the subject's real performance scores, the experimenter returned to the experimental room to conduct the post-test interview and debriefing session.

After the completion of the fifteenth test the experimenter returned to the experimental room and presented the subject with an enjoyment

scale identical to the one which had been filled out by those who performed the lever-pressing task (see appendix IV). He asked the subject to fill it out by again drawing a stroke through the line at a point which reflected his/her level of enjoyment of the time-estimation task. The subject was then asked if he/she had encountered any problems with the time-estimation task. If the subject reported no problems with either the equipment or the expectancies booklet the experimenter collected the expectancies booklet and the enjoyment scale and left the room, saying that he would return shortly.

The experimenter took those tools to the experimental assistant who recorded them, and then formulated the subject's perceived-score/expectancy graph -- a graphic demonstration of the differences between the subject's perceived test scores and the corresponding expectancies for performance on the next five-trial test (see appendix X). A description of this tool is found in this chapter, in the subsection entitled "Materials". The experimenter then, carrying the subject's perceived-performance/expectancy graph along with other information about his/her perceived scores and expectancies, and information about his/her real performances, re-entered the experimental room. There he seated himself, turned on the tape recorder, set it in the record mode, and began the post-test interview and debriefing session.

The post-test interviews and debriefing sessions took an informal format, but all sought the same information, and provided the same information to subjects, and all were conducted in a similar sequence

and fashion. A subject was first asked to report his/her feelings, both regarding his/her mood and the tasks of the experiment, and was asked if the tasks had affected his/her mood. The subject's first expectancy was then examined, with questions being asked to ascertain whether it was based on his/her lever-pressing performance, overall learning trials performance, or performance during the last five trials of the learning task. The perceived-score/expectancy graph was then revealed, and a discussion ensued regarding the distribution of expectancies, and discrepancies between expectancies and perceived scores. The subject was then asked, in light of the scores he/she had received, if he/she believed that he/she had mastered the task, and/or if he/she believed that in time the task could be mastered. The experimenter also wished to ascertain whether or not a subject felt that his/her scores were indicative of his/her ability on the time-estimation task. The final question regarding the fluctuating scores sought to find out if the subject believed that any of the task outcomes were fixed or manipulated. The experimenter then explained the purpose and method of the experiment, briefly stating findings in the learned helplessness literature, and reviewing step by step what the participant had been subjected to, recounting the significance of all events, outcomes and manipulations. During this explanation the subject was told, for the first time, how well he/she had really performed on the fifteen five-trial tests of the time-estimation task. The subject was then asked if he/she had anything to say about the experiment and research, and if there were any residual negative feelings about the experiment and the manipulations which were included in it. Finally, in the case of a

subject whose Beck Depression Inventory revealed a high level of depression, the subject was made aware of the University of Ottawa's counselling services for students.

The experimenter turned off the tape recorder only when all questions and feelings of the subject had been dealt with, and this marked the end of the interview and debriefing session, and of the experiment for that subject.

Measures

Demographic Variables:

The demographic variables most important to the present study, and which were used in statistical analyses, were those of subjects' ages and levels of depression. A subject's date of birth was recorded during the first phase of the experiment as part of the demographic information gathered just before the explanation of the depression inventory. This allowed a subject's age to be recorded in months rather than in years. A subject's level of depression was measured by his/her score on the first half of the Beck Depression Inventory (see appendix I). Scores were calculated in accordance with the procedure outlined in the section of this chapter entitled "Procedure", in the subsection "Phase 2". This Procedure allows scores to range from 14 to 126 points.

Dependent Variables:

Dependent variables in the present investigation have been placed into five categories: the pre-treatment variable, variables derived from measures of performances on the learning trials of the time-estimation

task, and three categories dealing with the fifteen five-trial tests of the time-estimation task -- those derived from measures of subjects' expectancies of performance, those examining subjects' expectancies for performance on a test-to-test basis, and those derived from examining the effects of the probability-generator on subjects' expectancies. All dependent variables were subjected to covariate analyses.

The pre-treatment task was the lever-pressing task, which was assigned to all subjects except those in the NP control group. A subject's cumulative score was recorded after the tenth ten-second trial, at which time he was afforded a twenty-second rest, with the total score being recorded after the twentieth ten-second trial. The ANACOVA for lever-pressing scores took into account both first-half and second-half scores, and compared performances of subjects in the SP group with those of subjects in the helplessness groups to ensure that the pre-treatment task added nothing to the verbal instructions to attribute, which were intended to set the groups apart from one another.

For the examination of the learning trials of the time-estimation task three measures were constructed. The variable OLT. measured the "overall learning-trials" score -- the total number of successful estimations a subject made throughout the twenty learning trials. A subject's score on the trials before criteria -- TBC. --. variable indicated the number of learning trials which preceded the first time he/she began a string of three or more consecutive successful estimations -- the criteria for having learned the task. A subject who failed to make three consecutive correct estimations, but who estimated

correctly on both the nineteenth and twentieth trials was assigned a score of 18.67 points -- his/her potential TBC. score had there been twenty-one learning trials -- 18 -- plus the proportion of occasions on which subjects who made two consecutive correct estimations added a third one to them. A subject who failed to make three consecutive correct estimations, but who estimated correctly on the twentieth trial, was assigned a score of 19.46 points -- his/her potential score had there been twenty-two learning trials -- 19 -- plus the proportion of occasions on which a subject who made a correct estimation added to it a second and third correct estimations. This variable, then, is a measure of how quickly subjects learned the time-estimation task. A subject's score on the L5. variable is a measure of how well he/she learned the time-estimation task, as it shows how many correct estimations he/she made during the last five learning trials. The sex-by-group ANACOVA analyses of the learning-trial variables was of a 2*6 design, affording a comparison of performances across all six experimental condition groups.

To examine gross overall tendencies in subjects' expectancies for performances three variables were devised -- Expc., Expt. and EPD. A subject's Expc. -- expectancy-change -- score was arrived at by calculating the differences between each expectancy and the one made before the next test, and summing the absolute values of those differences. It reflects, then, the effects of fluctuations in a subject's perceived scores upon his/her expectancy for performance on the next five-trial test. It was adapted for the larger fluctuations made possible in the present investigation, but is essentially the same

expectancy-change measure used in many previous learned helplessness studies with human subjects, and gives an indication of a subject's belief in his/her inability to control outcomes. A subject's Expt. score was obtained by calculating the total of his/her expectancies across the tests of the time-estimation task. It gives an indication of the degree to which a subject is pessimistic about his/her performance, and is again adopted from a measure common to human learned helplessness studies. A subject's EPD. score was calculated by subtracting from his/her Expt. score the sum of his/her perceived scores, and thus represents his/her expectancy/perceived-score difference. This variable was devised for the present investigation because of the range in expectancies for performance and in perceived scores allowed by the nature of the tests of the time/estimation task. Its purpose was to measure the degree to which a subject's perception of his/her performance influenced his/her expectancies.

Subjects' expectancies for performances were examined on a test-by-test basis by recording their expectancies made before the first test of the time-estimation task -- just after completion of the learning trials -- recording their expectancies for performance on their second tests -- made after completing the first test, during which the probability-generator was not engaged --, their expectancies for performances for the third test, and for the last test. This variable was examined through a 2*6*4 -- sex-by-group-by-test -- design. This method of examining expectancies is again congruent with a method used in many learned helplessness studies.

The effects of the probability-generator on expectancies for performance were examined by employing a measure wherein calculations were made of the averages of expectancies made by subjects after tests of the time-estimation task during which the probability-generator was engaged, and of expectancies made by subjects after tests during which the probability-generator was not engaged. This variable is, of course, peculiar to the present investigation, and was employed because of the potential range of expectancies. It was examined through an ANACOVA: a 2•6•2 design compared sexes and levels (probability-generator engaged and probability-generator not engaged) for all groups.

Covariate Measures

The demographic variables -- age and depression scores -- were used as covariates in the analyses of all dependent variables. For most analyses other variables were added to the list of covariates. Some of these, such as subjects' total number of correct estimations across the fifteen tests of the time-estimation task, were employed specifically for the purpose of providing relevant covariates for analyses, while others in their turns were dependent variables subject to their own analyses.

For the examination of scores on the lever-pressing task the enjoyment scale for that task was added to the demographic variables to complete the list of covariates for that analysis.

For the ANACOVAs for the dependent measures of the learning trials of the time-estimation task -- DLT., TBC. and LT. -- the only covariates

used were the demographic measures.

For the three measures analysed to study overall tendencies in subjects' expectancies for performance different lists of covariates were employed. For Expc., besides the demographic variables, subjects' expectancy totals (Expt.), totals of perceived scores across the time-estimation tests (Pert.), overall changes in perceived scores (Perc.), and total scores in the learning trials of the time-estimation task (Olt.) were used as covariates. The variable Expt.) was subject to an ANACOVA with subjects' Pert. scores and sums of real scores across the time-estimation tests (Real.), along with ages and depression scores, were used as covariate measures. The list of covariates for the analysis of the EPI. variable is the same as that used for the examination of Expc.

The four-level examination of Exp. was carried out using the three learning-trials variables -- OLT., TBC., and LS. -- as covariates, along with subjects' ratings of enjoyment of the time-estimation task and the demographic variables.

For the analyses examining the effects of the probability-generator the list of covariates includes the demographic variables, scores from the lever-pressing task (lp.), and the learning-trials variables OLT. and LS. and two other measures: ppe. (The sums of subjects perceived scores taken from performances of tests of the time-estimation task during which the probability-generator was engaged) and ppd. (The same measure taken while the probability-generator was disengaged).

Conclusion

It can be seen that many facets of the present investigation resemble previous studies of the learned helplessness phenomenon, both from before and since the presentation of the 1978 reformulated model. It is the belief of this author that variables used in earlier studies, but excluded from some of the more recent ones, such as expectancy-change, because of lack of evidence supporting their use, might best be reinstituted in this study so that their applicability, and the applicability of concepts which they seek to quantify might be examined in the light of the reformulated model. As will be demonstrated in the next chapter of the present work, future studies of this, or any reformulated model of learned helplessness, may do well to include measures of expectancy-change and expectancy totals, or other variables which seek to quantify the same concepts and characteristics, in their investigations. Some other variables used here as either covariate or dependent measures are presently, and may remain peculiar to the present investigation. This would be mostly due to the pre-treatment task -- the lever-pressing task -- used by this investigator, and to the increased ranges of perceived and real scores and expectancies for performance allowed by the nature of the test phase of the time-estimation task.

CHAPTER III:

RESULTS

Relationships Among the Variables

For the purposes of the present investigation nineteen variables were employed as dependent and/or covariate measures to examine in depth the phenomenon of learned helplessness, its role as a model of depression, and particularly the proposed framework of attributions for causality of helplessness (Abramson, Seligman and Teasedale, 1978). These variables bear, in some cases, interesting relationships, and in other cases curious lack of relationship to one another. The relationships among variables is summarized in table 2 -- the Pearson Correlation Table -- found on the next page. This table reveals many significant correlations, however a number of these are indicators of relationships which would be expected in the absence of learned helplessness treatments, and add nothing to the understanding of them. These include the relationship between the two measures of performance on the lever-pressing task, the relationships among the learning-trials variables, among measures of level of Expectancy (Expt., Exp1, Exp2, Exp3, Exp4, EP1 and EP2), artifacts of the experiment (Perc., Pert., Real., PPE. and PPD.). For a key to the list of variable names consult appendix XI.

About the Lever-Pressing Pre-Treatment Task

An analysis of covariance was carried out on scores from the lever-pressing task in order to establish that the pre-treatment task did not

exert an undue effect on performances during the learning-trials and test phases of the time-estimation task. The Pearson Correlation Table (see Table 2) shows an insignificant indication of a relationship between lever-pressing scores and condition groups, and this indication is supported by the ANACOVA summary table for the pre-treatment task (see Table 3). A possible exception to this relationship is referred to in the interaction effects line of the summary table.

Scores on the lever-pressing task point to the inconsistancy occurring among the females of the NP group who, on the average, scored higher than their female counterparts in the other groups (see Appendix 12). This author believes that that effect is an incidental one, whose failure to dissipate through random assignment is due to the small size of the NP female group. Furthermore, there is no evidence of persistent or consistent effects related to that group's higher scores.

Finally, table 3 shows a significant difference between performances of the sexes, with males obtaining higher scores. This author believes that this relationship accounts for the significant indication of covariation between the pre-treatment task and scores on the last five performances of the learning trials which appears in the Pearson Correlation Table (see Table 2). However, it is doubtful that this is a cause-effect relationship. In fact, it seems reasonable to conclude that there are no cause-effect relationships between performances on the lever-pressing task and scores on measures of performances of the learning-trials variables.

Table 2

Pearson Correlation Table

for all Variables

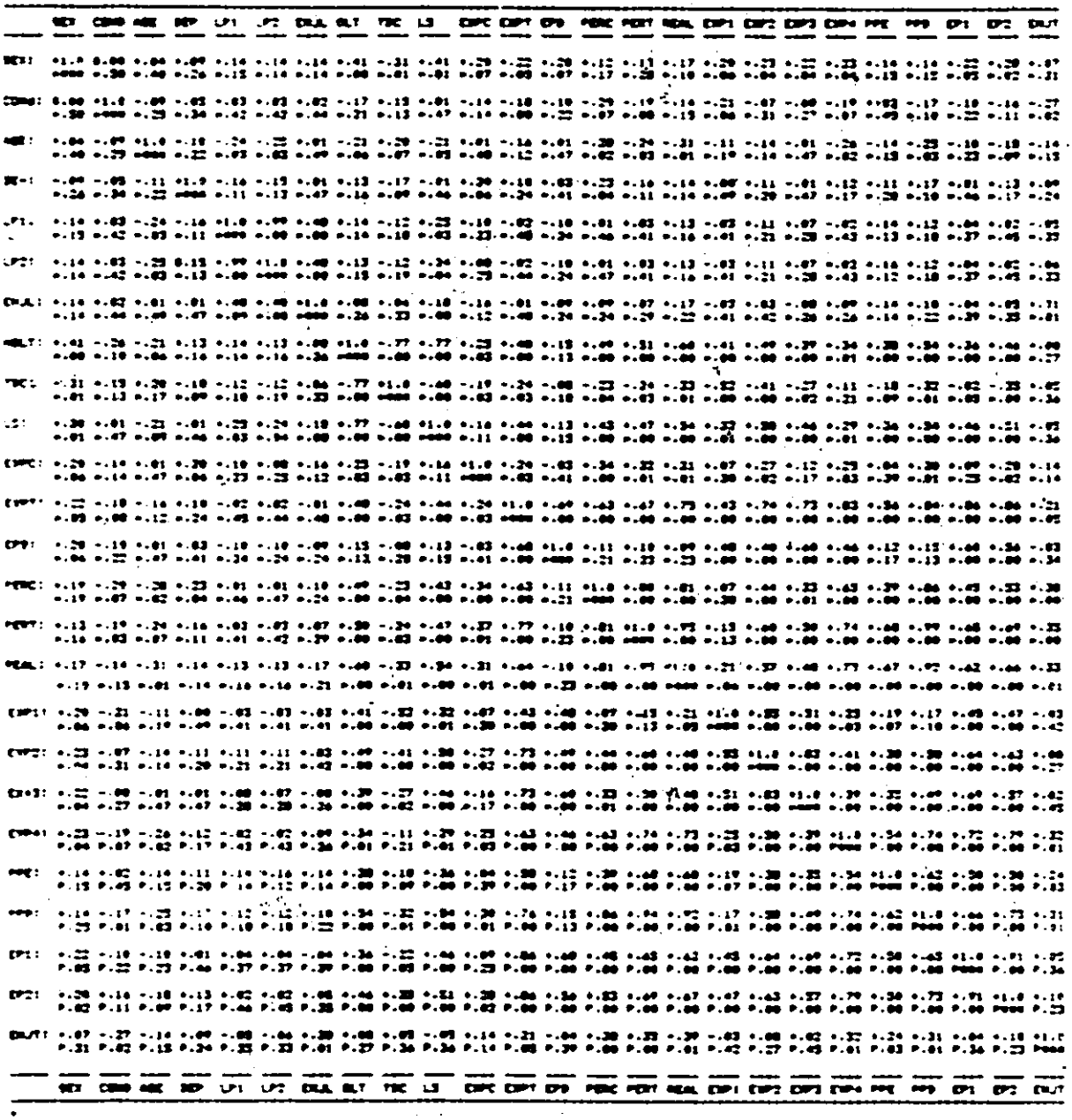

TABLE 3

SUMMARY OF THREE-WAY
ANALYSIS OF COVARIANCE
FOR THE LEVER-PRESSING TASK

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.	BETA ESTIMATE
MEAN	65888.0	1	65882.0	120.48	0.000	
SEX	4477.3	1	4477.3	8.19	0.007	
COND.	47.553	1	47.553	0.09	0.770	
SEX*COND.	15.475	1	15.475	0.03	0.867	
ENJL.	131.69	1	131.69	0.24	0.626	-0.04
AGE	105.25	1	105.25	0.19	0.663	0.04
DEP.	1293.8	1	1293.8	2.36	0.131	-0.89
COVAR.	1543.2	3	514.41	0.94	0.429	
A-ERROR	23513.0	43	546.83			
L.P.	60.840	1	60.840	1.79	0.188	
L.P.*SEX	39.690	1	39.690	1.17	0.286	
L.P.*COND.	112.36	1	112.36	3.30	0.076	
L.P.*SEX* COND.	42.250	1	42.250	1.24	0.271	
B-ERROR	1564.1	46	34.003			

About the Learning Trials of the Time-Estimation Task

Starting with the analyses of the learning-trials phase of the experiment, and in all subsequent stastical analyses, examinations of simple-main and simple effects were carried out. The tables which display these analyses have the letter "a" included in their titles. Please take note of the following denotations which are used in the "SOURCE" collumn of those tables: in many of the listed sources of variance a vertical slash -- "/" -- appears, and in such cases the term to the right of the slash is the one in which a comparison is being examined while the term to the left of the slash is the grouping in which the present examination is taking place -- EG.: "fem./cond" would denote an examination of scores for females across all conditions; often a minus sign -- "-" -- appears in the denotations of sources of variance, and in such cases two groupings are being compared, with the term to the left of the minus sign indicating the group which scored the higher or more favourable score, and the term to its right indicating the group which scored the lower or less favourable score -- EG.: "H1-H2" denotes a comparison in which group H1 achieved a higher score than H2; Often a term included in the denotation for a comparison, and which may appear either to the left or to the right of the minus sign, is composed of a set of terms which is surrounded by a set of brackets, and which are separated by plus signs -- "+" -- and such a denotation indicates that for the purposes of the present comparison several groupings have been combined to form a single grouping -- EG.: "H1-(H2+H3+H7)" denotes a comparison wherein the score for the H1

grouping is higher than the average of the scores for the H2, H3 and H7 groupings; finally, in mean difference tables which illustrate results of three-way analyses of covariance, some of the denotations for sources of variance include a colen -- ":" -- and in such cases the term to the left of the colen indicates the level of one variable at which a second variable is being examined -- EG.: "Exps:FEM./H1-(H2+H3+H7)" denotes a comparison between group H1 and the combined group H2, H3 and H7, of females' second expectancies.

The results of the investigation into the learning-trials phase of the time-estimation task may be the most informative aspect of the present investigation. As the ANACOVAs show, performances during the learning trials were subject to influences by age (see Tables 5, 6 and 7), an indication which is supported by the Pearson Correlation Table (see table 2). This influence is illustrated on the next page, in Tables 4 and 4A. which presents graphs of the relationship between condition groups, age, and scores on the TBC. and L5 measures of the learning-trials.

The ANACOVA summary tables also show differences between the sexes in the learning and performance of the time-estimation task during the learning trials, with, as the mean-difference tables and the tables of means and standard deviations show, males scoring better on both counts, and with the differences not having been eradicated by the last five of the learning trials (see Tables 5a, 6a and 7a, and Appendices XIII, XIV and XV). With regard to overall performance during the learning trials, this distinction between the sexes held, to a greater or lesser

TABLE 4

TBC*AGE*GROUP DISTRIBUTION CHART

TBC score	1	2	3	4	5	6	7	8	9	10	11
20	--	--	--	--	--	--	--	--	--	--	--
	nt	h2	h0	nt	nt			nt	h1	h1	st
	h2		h1		h0					h1	st
	h3		h3							h2	st
											h3
											h3
18/19.9	--	--	--	--	--	--	--	--	--	--	--
			nt		h3		nt	h3	h2	st	
			h1				h1				
			h3				h2				
15/17	--	--	--	--	--	--	--	--	--	--	--
					h2			h1			h1
								h3			
12/14	--	--	--	--	--	--	--	--	--	--	--
				nt		h0			st	h0	
8/11	--	--	--	--	--	--	--	--	--	--	--
	h0		nt		h3		st				
4/7	--	--	--	--	--	--	--	--	--	--	--
	st	st		h0		h0			h0		h1
		h0		h2							
		h1									
		h3									
0/3	--	--	--	--	--	--	--	--	--	--	--
				h2		st	nt	nt	h0		st
						h2					
						h2					
	--	--	--	--	--	--	--	--	--	--	--
Age-group	1	2	3	4	5	6	7	8	9	10	11

TABLE 4A

L5*AGE*GROUP DISTRIBUTION CHART

L5 score	1	2	3	4	5	6	7	8	9	10	11
5	--	--	--	--	--	--	--	--	--	--	--
		st		h2	h3	h0			h0		h1
						h2					
4	--	--	--	--	--	--	--	--	--	--	--
					h2	st	st	h1	st	h0	
						h0					
3	--	--	--	--	--	--	--	--	--	--	--
	st	h0	nt	nt				h3			h1
	h0			h0				h3			
				h2							
2	--	--	--	--	--	--	--	--	--	--	--
	h3		nt			h2	nt		h0	st	
			h1				nt			h1	
							h1			h2	
							h2				
1	--	--	--	--	--	--	--	--	--	--	--
	h2	h1	h1	nt	h3			nt	h2		h3
		h2	h3					nt			
		h3	h3								
0	--	--	--	--	--	--	--	--	--	--	--
	nt		h0		nt				h1	h1	st
					h0						st
											st
											h3
	--	--	--	--	--	--	--	--	--	--	--

TABLE 5

SUMMARY OF TWO-WAY
ANALYSIS OF COVARIANCE
FOR OVERALL LEARNING TRIALS

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.	BETA ESTIMATE
MEAN	273.49	1	273.49	18.16	0.000	
SEX	208.32	1	208.32	17.83	0.001	
COND.	232.61	5	46.32	3.14	0.016	
SEX*COND.	90.367	5	18.073	1.20	0.324	
AGE	148.02	1	148.02	9.83	0.003	-0.074
DEP.	18.161	1	18.161	1.21	0.278	0.048
COVAR.	166.26	2	83.13	5.52	0.007	
ERROR	692.94	46	15.06			

TABLE 5A

SUMMARY OF SIMPLE-MAIN
AND SIMPLE EFFECTS
FOR OVERALL LEARNING TRIALS

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
FEM./COND.	236.25	5	47.25	3.14	(P<0.08)
H1/MALE-FEM.	106.93	1	106.93	7.10	(P<0.01)
H2/MALE-FEM.	51.98	1	51.98	3.45	(P<0.07)
H3/MALE-FEM.	47.73	a	47.73	3.08	(P<0.06)
H7/MALE-FEM.	44.52	1	44.52	2.96	(P<0.10)
SP-NP	186.05	1	186.05	12.35	(P<0.001)
SP-H2	78.41	1	78.41	5.21	(P<0.03)
SP-H3	91.59	1	91.59	6.08	(P<0.02)
SP-H7	158.61	1	158.61	10.53	(P<0.005)
SP-(H1+H2+H3+H7)	135.80	1	135.80	9.02	(P<0.005)

TABLE 5A

(CONTINUED)

SUMMARY OF SIMPLE-MAIN

AND SIMPLE EFFECTS

FOR OVERALL LEARNING TRIALS

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
FEM./(SP-NP)	319.61	1	319.61	21.22	(P<0.001)
FEM./(SP-H1)	101.80	1	101.80	6.76	(P<0.02)
FEM./(SP-H2)	108.82	1	108.82	7.23	(P<0.01)
FEM./(SP/H3)	127.19	1	127.19	8.47	(P<0.01)
FEM./(SP-H7)	170.57	1	170.57	11.33	(P<0.001)
MALE/(SP-NP)	45.16	1	45.16	3.00	(P<0.10)
MALE/(H1-NP)	73.73	1	73.73	4.90	(P<0.03)
MALE/(H1-H7)	44.56	1	44.56	2.93	(P<0.10)
H1+H2+H3+H7/ MALE-FEM.	250.25	1	250.25	16.62	(P<0.001)
H2+H3+H7/ MALE-FEM.	151.40	1	151.40	10.09	(P<0.005)
ERROR	692.94	46	15.06		

TABLE 6

SUMMARY OF TWO-WAY

ANALYSIS OF COVARIANCE

FOR TRIALS BEFORE CRITERIA

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.	BETA ESTIMATE
MEAN	71.31	1	71.31	1.96	0.168	
SEX	320.78	1	320.78	8.81	0.004	
COND.	452.88	5	90.52	2.49	0.045	
SEX*COND.	352.84	5	70.57	1.94	0.106	
AGE	358.99	1	358.99	9.88	0.003	0.048
DEP.	70.50	1	70.50	1.94	0.170	0.074
COVAR.	429.75	2	214.88	5.00	0.005	
ERROR	1674	46	36.40			

TABLE 6A

SUMMARY OF SIMPLE-MAIN
AND SIMPLE EFFECTS
FOR TRIALS BEFORE CRITERIA

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
FEM./COND.	551.41	5	110.28	3.03	(P<0.09)
NP/MALE-FEM.	116.46	1	116.46	3.20	(P<0.09)
H1/MALE-FEM.	135.06	1	135.06	3.70	(P<0.07)
H2/MALE-FEM.	176.12	1	176.12	4.84	(P<0.03)
H3/MALE-FEM.	317.60	1	317.60	8.73	(P<0.005)
SP-NP	249.22	1	249.22	6.85	(P<0.01)
SP-H2	216.62	1	216.62	5.95	(P<0.02)
SP-H3	126.52	1	126.62	3.48	(P<0.07)
SP-H7	243.60	1	243.60	6.69	(P<0.01)
SP-(H1+H2+H3+H7)	270.24	1	270.24	6.67	(P<0.01)

TABLE 6A

(CONTINUED)

SUMMARY OF SIMPLE-MAIN

AND SIMPLE EFFECTS

FOR TRIALS BEFORE CRITERIA

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
FEM./SP-NP	465.12	1	465.12	12.78	(P<0.001)
FEM./SP-H1	186.72	1	186.72	5.13	(P<0.03)
FEM./SP-H2	456.35	1	456.35	12.54	(P<0.001)
FEM./SP-H3	346.33	1	346.33	9.52	(P<0.005)
FEM./SP-H7	336.98	1	336.98	9.25	(P<0.005)
MALE/H1-H7	181.05	1	181.05	4.97	(P<0.03)
MALE/ H1-(H2+H7)	126.08	1	126.08	3.45	(P<0.08)
ERROR	1674.49	46	36.40		

TABLE 7

SUMMARY OF TWO-WAY
ANALYSIS OF COVARIANCE
FOR THE LAST FIVE TRIALS
OF THE LEARNING TRIALS

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.	BETA ESTIMATE
MEAN	44.98	1	44.98	20.03	0.000	
SEX	13.83	1	13.83	6.16	0.017	
COND.	20.83	5	4.17	1.86	0.121	
SEX*COND.	10.59	5	2.12	0.94	0.462	
AGE	19.07	1	19.07	8.50	0.006	-0.078
DEP.	0.05	1	0.05	0.02	0.881	-0.002
COVAR.	19.12	2	9.56	4.26	0.020	
ERROR	103.53	46	2.25			

TABLE 7A

SUMMARY OF SIMPLE-MAIN
AND SIMPLE EFFECTS
FOR THE LAST FIVE TRIALS
OF THE LEARNING TRIALS

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
H1/MALE-FEM.	13.57	1	13.57	6.03	(P<0.02)
H2/MALE-FEM.	7.57	1	7.57	3.36	(P<0.07)
H1+H2+H3+H7/ MALE-FEM.	18.63	1	18.63	8.28	(P<0.01)
H2+H3+H7/ MALE-FEM.	8.17	1	8.17	3.57	(P<0.07)
H2+H7/ MALE-FEM.	10.66	1	10.66	4.74	(P<0.04)
SP-NP	10.51	1	10.51	4.67	(P<0.04)
SP-H7	9.34	1	9.34	4.16	(P<0.05)
SP-(H2+H3+H7)	9.24	1	9.24	4.01	(P<0.05)

TABLE 7A

(CONTINUED)

SUMMARY OF SIMPLE-MAIN
AND SIMPLE EFFECTS
FOR THE LAST FIVE TRIALS
OF THE LEARNING TRIALS

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
FEM./SP-NP	18.23	1	18.23	8.01	(P<0.01)
FEM./SP-H1	10.51	1	10.51	4.58	(P<0.03)
FEM./SP-H2	13.46	1	13.46	5.98	(P<0.02)
FEM./SP-H7	14.16	1	14.16	6.29	(P<0.02)
FEM./SP-(H1+H2+H3+H7)	16.85	1	16.85	7.47	(P<0.01)
FEM./SP-(H2+H3+H7)	15.76	1	15.76	7.00	(P<0.01)
MALE/H1-NP	13.34	1	13.34	5.93	(P<0.02)
MALE/H1-(H2+H3+H7)	6.24	1	6.24	2.77	(P<0.10)
MALE/H1-(H3+H7)	8.54	1	8.54	3.80	(P<0.06)
ERROR	103.53	46	2.25		

degree, across the helplessness conditions, but was not present in either the NP or SP groups. This difference diminished by the arrival of the last five learning trials in conditions H3 and H7; when subjects under all helplessness conditions are viewed as a single group, performances of males are still shown to be significantly superior. This finding holds as well when groups H2, H3 and H7 are viewed as a single group. The mean score for females in the successful pre-treatment condition is higher than the mean score for males in that condition for both the OLT. and L5 measures, but not to a significant degree.

Not unexpectedly, many of the aforementioned differences between the sexes hold for the TBC. variable -- the measure of speed with which the time-estimation task was learned. The mean score of females was better than that of males in the SP group, though not significantly; under all other conditions, excepting the H7 group, the mean scores and the mean-difference table show that males learned the task significantly more quickly than did females (see Table 6a and Appendix XIV).

That the differences between the sexes does not persist across all groups, and other questions as well, can be answered by examining differences across the experimental conditions. The ANACOVA summary tables for the OLT. and TBC. measures indicate considerable effects across conditions. examination of the simple effects tables for those variables, and the corresponding means and standard deviations tables in the appendices shows that, in a general way, these differences are more visible among the scores of female groupings. For each of the variables

the highest mean scores appear to be yielded by the SP group. This shows that, generally, subjects in that group achieved better overall scores, including during the last five learning trials, and learned the task more quickly than did those from the other groups. The mean score for that group was significantly higher than those of the NP and H7 group, as well as higher than the mean for the H2, H3 and H7 group combined, for each of the variables. The OLT. and TBC. measures show the SP's mean score to be higher than the H3 group, and higher than the mean for all helplessness groups combined. The differences between the SP group and the H1 group were significant in the TBC. measure, and the former is significantly higher than the mean of the H2 group on the OLT. measure.

These tendencies generally hold true for differences between the female groupings. In all cases comparisons between the female groupings show those in the SP group yielding a higher mean score than those in each of the other groups, excepting the comparison between the SP and H3 groups on the L5 measure. It appears, then, that the contrived information manipulations were successful in bringing about a reduction in the rate at which the female subjects learned the time-estimation task.

On the other hand, the distribution of mean scores for males was different across the condition groups than that of females. All three measures of the learning trials attribute the best mean score for a male grouping to the H1 group. Differences between male groupings are not as striking as those for female groupings, but significant differences

occur between the H1 and NP groups on the performance measures -- OLT. and L5 -- and between the H1 and H7 groups on the speed-of-acquisition measure -- the TBC. variable. There are indications of possible differences between the H1 and H3 male groups on the OLT. variable, and between the male SP and NP groups on the same measure with the probability of such differences being less than .09 in both cases. An examination of overall performance also shows that the H1 male grouping scored significantly higher than a composite of the other three helplessness groups of males. A similar comparison on the L5 measure yields a difference which is considerable, with an accompanying probability value of less than .09. A comparison on the same variables between males in the H1 grouping, and the H3 and H7 groupings combined yields a difference with an accompanying probability value reduced to near the .05 level. Quite similar results are uncovered when the H1 male grouping is compared to a grouping composed of males in the H2 and H7 conditions on the TBC. measure. Evidently, then, not all of the "helpless" male groupings exhibited deficits in learning the time-estimation task. Relative to the H1 male grouping -- those who were intended to make attributions regarding their failure to the three neutral ends of the attribution dimensions -- males in the H3 and H7 groupings, who were intended to attribute to two or three of the negative ends of the dimensions, may have incurred some learning deficits.

It seems, then, that there are differences across the experimental conditions. There also appear to be differences between the sexes, both with regard to performances in all of the learning-trials measures, and

in the effects had by the helplessness inductions. These suggestions are made based upon comparisons between the successful pre-treatment group and the helplessness groups. In general it seems that males in this investigation were less susceptible to the helplessness training than were the females. Furthermore, whereas females experiencing failure suffered learning deficits, regardless of the helplessness groups into which the varying scripts of contrived information placed them, only males experiencing falure and influenced to prescribe to the attributions of the H3 and H7 groupings incurred the deficits.

It is noteworthy, too, that the no pre-treatment group also achieved on the average lower performance and slower learning-speed scores than did the successful pre-treatment group, and comparisons between the former and the helplessness groups generally yield no differences. It could be hypothesised on the basis of the mean distributions yielded by the present investigation that the major effects of the experiment was to produce facilitated scores through the development of a belief in having succeeded on the part of the SP group. The present author advances two points intended to contradict such an hypothesis; firstly, the NP group, in missing the pre-treatment lever-pressing task, was deprived of the opportunigy to familiarize themselves with the lever-pressing apparatus to the extent afforded the other experimental groupings, a distinguishing factor which could account for differences between the NP and SP groups; the second point, which goes hand-in-hand with the first, is that members of neither the NP nor the H1 groups received negative attributions for failure, while members of both the H1 and SP groups performed the lever-pressing pre-treatment task, so that

the H1 group (Though its members believed they had failed on the pre-treatment task) can be seen as a control group, suitable for comparison with the SP group, wherein differences would obviously be due to helplessness induction. It is interesting to note that the male H1 group does not differ from the male SP group, and that, like the NP group, there are no differences between males and females in the H1 grouping on any of the learning-trials measures. Furthermore, this author knows of no writings in the literature which support an hypothesis that the main effect of learned helplessness investigations is that of producing facilitation in subjects succeeding on the pre-treatment task.

Because of the differences between the sexes which is in evidence across the condition groups, then, this author is led to suspect a sort of interaction effect. It is true that the interaction effects are statistically significant for none of the learning-trials variables. However, when the distribution of means for males and females are viewed separately, it appears that, whereas for females the learning deficits associated with learned helplessness may be induced simply by the experience of failure, for males the deficits are incurred only if the development of an attributional framework regarding the failure is added to the experience itself. It may be that the attributional framework required to accompany the failure experience is similar to that to which the subjects in the H7 group were intended to ascribe.

About the Testing Phase of the Time-Estimation Task

All analyses dealing with the fourteen examined five-trial tests of the time-estimation task dealt with different aspects of subjects expectancies for performance. Answers were sought for questions dealing with levels of initial and early expectancies, final expectancies, overall levels of expectancy, expectancy-change, and levels of expectancy relative to perceived scores.

The first aspect of expectancies to be discussed here is subjects' initial expectancies: to what extent will the differences between the sexes in performances and learning scores from the learning trials, and between the experimental condition groups, be present in initial expectancy scores? The Exp. ANACOVA summary table (see Table 8) indicates that the only significant main effect was across the expectancies. Analyses of simple-main effects shows no significant results of any sort in the first level -- eg.: initial expectancies. An examination of the adjusted means of this variable shows that the grouping with the highest mean-scores is the male H1 group (see Appendix XVI). The only post-hoc analysis which shows any significant result involving the initial expectancies occurs when the first three expectancies for subjects in the NP group are combined, showing females registering significantly higher expectancies than their male counterparts (see Table 8a). This effect holds, and is, in fact, increased when the scores for initial expectancies for the NP group are removed from the combination, and when it is replaced in the FORMULA BY

TABLE 8

SUMMARY OF THREE-WAY
ANALYSIS OF COVARIANCE
FOR FIRST, SECOND, THIRD
AND LAST EXPECTANCIES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.	BETA ESTIMATE
MEAN	6.26	1	6.26	4.97	0.031	
SEX	0.26	1	0.26	0.21	0.650	
COND.	9.64	5	1.93	1.53	0.202	
SEX*COND.	7.02	5	1.40	1.11	0.368	
OLT.	1.57	1	1.57	1.25	0.270	0.049
TBC.	0.00	1	0.00	0.00	0.995	0.000
L5.	1.39	1	1.39	1.10	0.301	0.002
EPD.	64.34	1	64.34	51.04	0.000	0.072
ENJT.	0.58	1	0.58	0.46	0.501	0.003
AGE	2.60	1	2.60	2.07	0.158	-0.002
DEP.	1.03	1	1.03	0.82	0.307	0.006
COVAR.	103.52	7	14.79	11.73	0.000	
A-ERROR	51.88	41	1.26			

TABLE 8

(CONTINUED)

SUMMARY OF THREE-WAY
ANALYSIS OF COVARIANCE
FOR FIRST, SECOND, THIRD
AND LAST EXPECTANCIES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.	BETA ESTIMATE
EXP.	6.38	3	2.13	2.70	0.048	
EXP.*SEX	0.01	3	0.003	0.01	0.9995	
EXP.*COND.	4.45	15	0.30	0.38	0.983	
EXP.*SEX* COND.	4.21	15	0.28	0.36	0.987	
B-ERROR	113.20	144	0.79			

TABLE 8A

SUMMARY OF SIMPLE-MAIN
AND SIMPLE EFFECTS
FOR FITST, SECOND, THIRD,
AND LAST EXPECTANCIES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
EXP2/ SEX*COND.	19.50	5	3.90	3.10	(P<0.05)
EXP2:MALE/ COND.	210.58	5	42.12	33.43	(P<0.001)
NP/FEM.-MALE	5.58	1	5.58	4.12	(P<0.05)
H1/MALE-FEM.	3.84	1	3.84	3.05	(P<0.09)
EXP2/SP-H1	4.14	1	4.14	3.29	(P<0.08)
EXP2:NP/ FEM.-MALE	5.85	1	5.85	4.14	(P<0.05)
EXP2:MALE/ SP-NP	3.84	1	3.84	3.05	(P<0.09)
EXP2:MALE/ H1-NP	11.236	1	11.236	8.90	(P<0.005)
EXP2:MALE/ H2-NP	8.99	1	8.99	7.13	(P<0.01)
EXP2:MALE/ H3-NP	5.04	1	5.04	4.00	(P<0.05)
EXP*:MALE/ (H2+H3+H7)-NP	7.88	1	7.88	6.31	(P<0.02)

TABLE 8A

(CONTINUED)

SUMMARY OF SIMPLE-MAIN

AND SIMPLE EFFECTS

FOR FITST, SECOND, THIRD

AND LAST EXPECTANCIES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
(EXP2+EXP3+ EXP4): (H1+H2+H3+H7)/ MALE-FEM.	6.73	1	6.73	5.34	(P<0.03)
(EXP2+EXP3+ EXP4): (H2+H3+H7)/ MALE-FEM.	3.80	1	3.80	3.01	(P<0.09)
(EXP2+EXP3+ EXP4): NP/FEM.-MALE	6.81	1	6.81	5.41	(P<0.03)
(EXP1+EXP2+ EXP3): NP/FEM.-MALE	5.04	1	5.04	4.00	(P<0.05)
(EXP2+EXP3): NP/FEM.-MALE	5.67	1	5.67	4.50	(P<0.04)
A-ERROR	51.88	41	1.26		

TABLE 8A

(CONTINUED)

SUMMARY OF SIMPLE-MAIN

AND SIMPLE EFFECTS

FOR FITST, SECOND, THIRD

AND LAST EXPECTANCIES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
NP/SEX•EXP.	5.62	3	1.87	2.36	(P<0.10)
NP/EXP4-EXP3	2.31	1	2.31	2.93	(P<0.10)
NP/EXP4-(EXP2+EXP3)	2.48	1	2.48	3.14	(P<0.09)
H1/EXP2-EXP4	2.45	1	2.45	3.10	(P<0.09)
H1/EXP2-EXP3	3.12	1	3.12	3.95	(P<0.05)
(NP+ST)/EXP4-EXP3	2.31	1	2.31	2.92	(P<0.10)
(H2+H3+H7)/EXP2-EXP3	2.28	1	2.28	2.89	(P<0.10)
NP;MALE/EXP4-EXP3	2.96	1	2.96	3.75	(P<0.05)
NP:MALE/EXP4-EXP2	6.05	1	6.05	7.66	(P<0.01)
H1:MALE/EXP2-EXP3	2.50	1	2.50	3.17	(P<0.09)
B-error	113.20	144	0.79		

final expectancy scores. Needless to say, in an overall comparison of the NP condition group, females registered significantly higher expectancies than did males.

The major reason for this effect is revealed in an examination of the second level -- eg.: the second expectancies -- wherein the expectancies of females on the average was two times those of males in the NP group, a difference which is shown as significant in the mean-difference table.

Subjects' second expectancies were registered at the completion of the first five-trial time-estimation test, and this is the level of expectancies from which the greatest number of significant comparisons are derived, with most of them resulting from comparisons between the experimental condition groups. In post-hoc analyses for simple-main effects a considerable effect, at a probability level less than .07, is found across male groupings. An even more statistically significant effect is that of the sex-condition interaction at this level. This difference appears to be due to the small differences between female groupings (see Appendix XVI), while among males the mean-score of the NP group is significantly lower than those of each of the other groups excepting the H7 group; when the scores of the H7 group are taken in combination with the other helplessness groups or with the H2 and H3 groups, the differences between the combined groupings and the NP group are significant in both cases. The deflated scores of the male NP. group are certainly in evidence at the Exp2 level, and to some extent, at the Exp3 and Exp4 levels as well. There seems to be little rationale for any deficit in height of expectancy on the part of NP males. A

check of the original scores for the Exp variable shows no indication of such a deficit, and for this reason the present author holds that the reduced adjusted scores are due to error resulting from a combination of the small size of the groupings and application of the covariate analysis.

Exp2 is the only level of expectancies wherein significant effects are revealed. When the levels of the expectancy variable are combined, though, some interesting effects result. Besides those discussed earlier, a significant difference is eluded to, with males making significantly higher expectancies than females, when all helplessness groups are combined across the second, third and fourth levels of Exp. The direction of this difference is consistent across the twelve cells which make up that comparison (see Appendix XVI). Though the probability level is increased to just less than .09, this effect holds when the scores of the H1 group are removed from that comparison (see Table 8a).

In the Exp. summary table (see Table 8) it is the effect across the levels of the Exp. variable which are referred to as significant. This finding is consistent with the shape of results of the learning-trials variables, and suggests that males in this study were less susceptible to the learned helplessness inductions than were the female subjects. examination of this dimension reveals some simple-main and simple effects, most of which seem to be accounted for by changes in the expectancies of male subjects in the NP and H1 groups (see Appendix XVI). For both sexes in the NP group, but to a significant degree for

males, expectancies made after the fourteenth time-estimation test are elevated compared to those registered after the second test. This rise is even more dramatic for the male NP grouping when taken from the second to the final expectancies. Again for both sexes in the H1 condition, but more dramatically for males, third expectancies were reduced relative to the second ones. With both sexes taken together, there is also a significant drop in expectancy between the second and final registrations for subjects in the H1 group. Finally, as is revealed in an examination of the adjusted means (see Appendix XVI), the mean of expectancies registered after the second test -- the third expectancies -- are significantly lower than the means for any others. This is true for the overall means, and is shown to be the case for the NP, SP, H1 and H7 groups (see Appendix XVI). The means for the third expectancies of the H2 and H3 groups were second lowest, undercut only by their means for the first expectancies.

The important result of the Exp. analysis is the indication that, across the helplessness groups males registered higher expectancies than did their female counterparts throughout the second, third and final expectancies. The most dramatic differences occur in the comparison between the sexes in the H1 group. As well as supporting evidence quoted earlier that males are less susceptible to learned helplessness than are females, this finding adds further weight to the suggestion that, unlike males, females need only experience failure to incur learned helplessness deficits. Also of interest is the decline in expectancy for performance from the second to the final expectancies for subjects in the H1 group. Considerable, too, is the revelation that the

mean-score for the third expectancies -- those made after the second time-estimation test -- were lower than other expectancy mean-scores. While no subjects experienced the effects of the probability-generator during the first five-trial test, most participants were subject to its effects during the second test. In general, though, the indication is that, by the occurrence of the final time-estimation test, effects of the helplessness induction had, for the most part, dissipated. It is not a surprising difference, then, as it refers to the effects had upon subjects expectancies by perceived changes in the test task scores.

Overall Measures of Optimism and Pessimism

Hypotheses in early learned helplessness studies with human subjects dealt with changes in expectancies, and were derived from the thinking that belief in persisting negative outcomes would be reflected in persistent and low levels of expectation (Seligman, 1972; Seligman, 1975). The expectancy-change variable -- Expc., the expectancy-total variable -- Expt. -- and the measure of the difference between expectancies and perceived scores -- EPD. -- together reflect the presence of such a belief on the part of the subjects in the present investigation.

An examination across the experimental conditions of the Expc. variable is an interesting one. The ANACOVA summary table shows that the only significant effect is the sex-by-conditions interaction (see Table 9). A glance at the adjusted means of this variable (see Appendix Xvii) clarifies this effect, as well as giving a clue as to the

TABLE 9

SUMMARY OF TWO-WAY
ANALYSIS OF COVARIANCE
FOR EXPECTANCY-CHANGE SCORES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.	BETA ESTIMATE
MEAN	0.003	1	0.003	0.00	0.989	
SEX	6.82	1	6.82	0.40	0.530	
COND.	154.94	5	30.99	1.82	0.129	
SEX*COND.	180.59	5	36.12	2.12	0.081	
OLT.	2.65	1	2.65	0.16	0.695	-0.070
PERC.	439.54	1	439.54	25.85	0.000	0.479
PERT.	7.47	1	7.47	0.44	0.511	0.003
AGE	18.79	1	18.79	1.10	0.299	0.040
DEP.	19.73	1	19.73	1.16	0.288	-0.042
COVAR.	987.33	6	164.56	9.68	0.000	
ERROR	714.27	42	17.01			

TABLE 9A

SUMMARY OF SIMPLE-MAIN

AND SIMPLE EFFECTS

FOR EXPECTANCY-CHANGE SCORES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
MALE/COND.	261.29	5	52.26	3.07	(P<0.09)
SP/MALE-FEM.	88.51	1	88.51	5.21	(P<0.03)
H1/MALE-FEM.	70.35	1	70.35	4.14	(P<0.05)
H7/FEM.-MALE	51.09	1	51.09	3.01	(P<0.09)
(NP+SP)/ MALE-FEM.	67.71	1	67.71	3.98	(P<0.05)
(H2+H3+H7)/ FEM.-MALE	124.24	1	124.24	7.31	(P<0.01)
H3-H2	61.25	1	61.25	3.60	(P<0.06)
H3-H7	52.81	1	52.81	3.11	(P<0.09)
H3-(H2+H7)	75.47	1	75.47	4.44	(P<0.04)

TABLE 9A

(CONTINUED)

SUMMARY OF SIMPLE-MAIN
AND SIMPLE EFFECTS
FOR EXPECTANCY-CHANGE SCORES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
FEM./H3-SP	105.63	1	105.63	6.21	(P<0.02)
FEM./H3-H1	77.06	1	77.06	4.53	(P<0.04)
FEM./H3-(H1+H2+H7)	60.94	1	60.94	3.59	(P<0.06)
FEM./h3-(NP+SP)	78.73	1	78.73	4.63	(P<0.04)
MALE/NP-H2	77.56	1	77.56	4.56	(P<0.04)
MALE/NP-H7	80.09	1	80.09	4.71	(P<0.04)
MALE/SP-H2	115.11	1	115.11	6.77	(P<0.01)
MALE/SP-H7	119.72	1	119.72	7.04	(P<0.01)
MALE/H1-H2	131.77	1	131.77	7.75	(P<0.01)
MALE/H1-H7	136.03	1	136.03	8.00	(P<0.01)
MALE/NP-(H2+H3+H7)	73.59	1	73.59	4.33	(P<0.05)
MALE/SP-(H2+H3+H7)	127.05	1	127.05	7.79	(P<0.01)
MALE/H1-(H2+H3+H7)	142.31	1	142.31	8.37	(P<0.01)
ERROR	714.27	42	17.01		

TABLE 10

SUMMARY OF TWO-WAY
ANALYSIS OF COVARIANCE
FOR EXPECTANCY-TOTAL SCORES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.	BETA ESTIMATE
MEAN	26.81	1	26.8a	0.26	0.061	
SEX	224.51	1	224.51	2.17	0.148	
COND.	165.84	5	33.17	0.32	0.898	
SEX*COND.	638.39	5	127.68	1.63	0.310	
PERT.	698.44	1	698.44	6.75	0.013	1.635
REALT.	60.51	1	60.51	0.58	0.449	-0.332
AGE	28.19	1	28.19	0.27	0.604	0.043
DEP.	19.60	1	19.60	0.19	0.666	-0.042
COVAR.	5066.49	4	1266.62	12.24	0.000	
ERROR	4552.31	44	103.46			

TABLE 10A

SUMMARY OF SIMPLE-MAIN

AND SIMPLE EFFECTS

FOR EXPECTANCY-CHANGE SCORES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
NP/MALE-FEM.	708.57	1	708.57	6.84	(P<0.01)
(NP+SP)/ MALE-FEM.	823.04	1	823.04	7.97	(P<0.01)
FEM./H3-NP	719.10	1	719.10	6.94	(P<0.01)
FEM./H3-SP	339.79	1	339.79	3.28	(P<0.08)
FEM./ H3-(NP+SP)	682.59	1	682.59	6.60	(P<0.02)
ERROR	4552.31	44	103.47		

TABLE 11

SUMMARY OF TWO-WAY
ANALYSIS OF COVARIANCE
FOR EXPECTANCY/PERCEIVED-SCORE
DIFFERENCE SCORES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.	BETA ESTIMATE
MEAN	3.69	1	3.69	0.08	0.783	
SEX	1.74	1	1.74	0.04	0.850	
COND.	479.85	5	95.97	1.99	0.099	
SEX*COND.	823.86	5	164.77	3.42	0.011	
OLT.	13.82	1	13.82	0.29	0.595	-0.361
EXPT.	1122.05	1	1122.05	23.31	0.000	0.586
PERC.	2557.00	1	2557.00	53.12	0.00	1.046
PERT.	883.60	1	883.60	18.40	0.000	-1.007
AGE	199.81	1	199.81	4.15	0.047	0.043
DEP.	857.85	1	857.85	17.60	0.000	-0.441
COVAR.	4279.87	6	713.31	14.80	0.000	
ERROR	2021.73	46	48.136			

TABLE 11A

SUMMARY OF SIMPLE-MAIN
AND SIMPLE EFFECTS
FOR EXPECTANCY/PERCEIVED-SCORE
DIFFERENCE SCORES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
FEM./COND.	196.48	1	196.48	4.08	(P<0.05)
MALE/COND.	142.54	1	142.54	2.96	(P<0.10)
SP/MALE-FEM.	413.45	1	413.45	8.19	(P<0.01)
H1/MALE-FEM.	228.99	1	228.99	4.76	(P<0.04)
H2/FEM.-MALE	250.00	1	250.00	5.19	(P<0.03)
(H2+H3+H7)/ FEM.-MALE	441.22	1	441.22	9.17	(P<0.005)
NP-SP	377.81	1	377.81	7.85	(P<0.01)
NP-H2	268.64	1	268.64	5.45	(P<0.03)
H1-SP	210.60	1	210.60	4.38	(P<0.05)
H1-H2	131.58	1	131.58	2.73	(P<0.10)
H3-SP	395.16	1	395.16	8.21	(P<0.01)
H3-H2	283.50	1	283.50	5.76	(P<0.02)
H3-H7	132.61	1	132.61	2.76	(P<0.10)

TABLE 11A

(CONTINUED)

SUMMARY OF SIMPLE-MAIN

AND SIMPLE EFFECTS

FOR EXPECTANCY/PERCEIVED-SCORE

DIFFERENCE SCORES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
NP-(H2+H7)	251.33	1	251.33	5.09	(P<0.03)
NP-(H1+H2+H7)	174.97	1	174.97	3.64	(P<0.06)
H3-(H2+H7)	267.97	1	267.97	5.57	(P<0.02)
H3-(H1+H2+H7)	189.76	1	189.76	3.94	(P<0.05)
FEM./NP-SP	526.35	1	526.35	10.93	(P<0.001)
FEM./NP-H1	136.16	1	136.16	2.81	(P<0.10)
FEM./H2-SP	347.51	1	347.51	7.22	(P<0.01)
FEM./H3-SP	800.13	1	800.13	16.62	(P<0.001)
FEM./H3-H1	289.44	1	289.44	6.01	(P<0.02)
FEM./H7-SP	366.03	1	366.03	7.60	(P<0.01)
FEM./(H2+H3+H7)-H1	173.40	1	173.40	3.60	(P<0.06)

TABLE 11A

(CONTINUED)

SUMMARY OF SIMPLE-MAIN

AND SIMPLE EFFECTS

FOR EXPECTANCY/PERCEIVED-SCORE

DIFFERENCE SCORES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
MALE/NP-H2	357.61	1	357.61	7.43	(P<0.01)
MALE/NP-H7	140.25	1	140.25	2.91	(P<0.10)
MALE/ NP-(H2+H3+H7)	209.25	1	209.25	4.35	(P<0.04)
MALE/SP-H2	258.02	1	258.02	5.30	(P<0.03)
MALE/ SP-(H2+H7)	204.65	1	204.65	4.25	(P<0.05)
MALE/(NP+SP)- (H2+H3+H7)	255.85	1	255.85	5.31	(P<0.03)
MALE/H1-H2	558.12	1	558.12	12.59	(P<0.001)
MALE/H1-H7	273.53	1	273.53	5.68	(P<0.02)
MALE/ H1-(H2+H3+H7)	408.73	1	408.73	8.49	(P<0.01)
ERROR	2021.73	46	48.14		

SIGNIFICANT EFFECT ACROSS male groupings shown in the mean-difference table (see Table 9a). The picture is not so clear regarding the means of the female groupings, with the lowest average changes shown by groups SP and H1, and the highest by groups H3 and H7. The only significant comparison involving means from the female groupings included the H3 mean, which was shown to be significantly higher than the SP and H1 groups, and than the NP and SP groups combined. In fact, for both female and male subjects the H3 grouping has disproportionately higher means on the Expc. measure than the H2 and H7 groupings.

Significant differences also stand out in comparisons between the sexes. Under the NP, SP and H1 groups, comparisons show that the mean change-scores for males are higher; under the H2, H3 and H7 conditions the mean change-scores for females are higher. These results add fuel and information to the findings regarding differences between the sexes revealed in the examinations of the learning-trials variables: unlike females, males who experience failure need also to make some negative attribution or attributions regarding that failure before learned helplessness induction will take effect.

Significant findings regarding total expectancy scores are few, and those which deal with the helplessness conditions involve only comparisons with the mean-score of the female H3 grouping against mean-scores of the female NP and SP groupings. All find the females in the H3 condition to have scored higher on the average. Further, when the females in all of the helplessness conditions are taken as a single grouping and compared against the NP grouping, and the NP and SP

groupings combined, they are found to have achieved a higher mean-score (see Table 10a, and Appendix Xviii). The other significant differences are revealed through comparisons between the sexes under the NP and SP conditions, wherein males scored higher. That the females in the helplessness groupings should score higher than their counterparts in the NP and SP groupings is hard to interpret in the light of learned helplessness theory, and is an outcome which will require further investigative study.

Considerably more significant effects are discovered in the analyses of the EPD. measure. The most interesting of these are revealed in the across-conditions examination, as suggested by the significant interaction effects (see Table 11). The mean-difference table also reveals significant effects across both male and female groupings (see Table 11a). The effects for the two sexes are not similar, however; rather, they are similar to those found in the analysis of the Expc. variable. Group difference-scores are shown to be higher for the NP group than for the SP. group, the H2 group, and the H2 and H7 groups combined. In fact, the difference-scores for the NP group would be higher to a significant degree than the difference scores for the helplessness groups combined were the scores in the H3 group not so much higher than those from the H2 and H7 groups, just as they were for the Expc. variable. The H3 difference-scores are significantly higher than those of the same condition-groups with which the NP group was favourably compared -- the SP, and the H2, H3 and H7 groups combined. Pairwise comparisons across male and female condition-groups show much the same results as those done in the analysis of the Expc. variable,

and are even more poignant in some cases. The same similarity holds in a general sense for within condition pairwise comparisons between the sexes, with some of the differences shown to be less poignant.

The Expc. and EPD. variables do not measure the same thing, as is evidenced by the low correlation between them (see Table 2). Although they both provide information about a "helpless" person's level of optimism they are products of different aspects of that trait. The EPD. (expectancy/perceived-score difference) variable was intended to reflect a subject's expectancy for performance relative to his/her perceived level of performance; in fact, the post-test interviews show that for most subjects, the expectancies they registered reflected the scores they hoped to receive on the next five-trial test. The EPD. variable, as it turns out, then, reflects how closely a subjects' hopes were tied to his/her perceived level of performance. The Expc. (expectancy-change) variable, it is proposed by Abramson et al, is a reflection of the placement of attributions relative to the stable/unstable axis of the reformulated model, with greater expectancy change being associated with attributions for inability to control outcomes to stable factors (Abramson, Seligman and Teasedale, 1978). In the present investigation subjects in the H3 and H7 groups were instructed to attribute to stable factors -- eg.: that scores on the lever-pressing task are consistent over time. Expectancy-change scores in the H3 group were elevated relative to those of subjects in all other groups, providing partial support for this hypothesis. Expectancy-change scores for subjects in the H7 group were low relative to those of subjects from other groups, possibly because, unlike their counterparts in the H3 group, those under

the H7 condition were instructed to the global end of the global/specific dimension -- eg.: that the lever-pressing task is a good predictor for performance on the time-estimation task.

Other evidence provided by measures dealing with subjects' expectancies for performance support the inference gathered from the learning-trials variables regarding differences between males and females in the effects of helplessness training. This difference shows up primarily in scores for the H1 grouping on the learning-trials variables, and on the Expc. and EPD. variables (see Appendices XIII, XIV, XV, XVII and XIX). The H1 grouping has the potential of being a pivotal point in the structure of the reformulated model of learned helplessness, for, though persons in this group experience failure, or an inability to control outcomes, they attribute such an experience to factors which are external, unstable, and specific to the situation wherein the experience occurred. The inference is that females who experience an inability to control outcomes will incur helplessness deficits, while males, to incur those deficits, must experience an inability to control outcomes, and, as well, attribute that experience to factors which are negative in the sense that they are thought to be difficult to personally overcome. It is these results which are reflected in the significant interaction effects in the analyses of the Expc. and EPD. variables, with probability levels of .08 and .01 respectively (see Tables 9 and 11).

About the Effects of the Probability-Generator

As a further study of the effects shown in the Expc. and EPD. variables, measures were developed to study the effects on subjects' expectancies for performance had by the probability-generator and the fluctuations in perceived scores which resulted from its random engagement and disengagement.

In this analysis there are no significant differences across groups, neither on the whole, nor for either males or females (see Tables 12 and 12a). Between the sexes, seemingly significant differences are found in examinations of the NP and SP groups, with males having registered higher expectancies in both cases. Most of this variance can be accounted for by differences between their expectancies as recorded when the probability-generator was disengaged.

Most of the considerable effects are revealed in comparisons between expectancies made after five-trial tests during which the probability-generator was engaged, and those made after tests during which it had been disengaged -- eg.: between the levels of the EP. variable (see Tables 12 and 12a, and Appendix XX). as would be expected, the latter expectancies were higher for both sexes across all groups. Such differences showing up in the NP, SP and H1 groupings are significant. For the first two of those groupings differences between mean expectancies of males account for the greater part of that variance, while differences within both sexes are seen to contribute to the

TABLE 12

SUMMARY OF THREE-WAY
ANALYSIS OF COVARIANCE FOR
EFFECTS OF THE PROBABILITY-HENERATOR
ON EXPECTANCIES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.	BETA ESTIMATE
MEAN	0.31	1	0.31	0.36	0.554	
SEX	0.81	1	0.81	0.93	0.340	
COND.	2.70	5	0.54	0.62	0.684	
SEX*COND.	6.51	5	1.30	1.50	0.211	
OLT.	0.04	1	0.04	0.04	0.893	-0.008
L5.	0.32	1	0.32	0.37	0.549	0.076
PP&.	0.57	1	0.57	0.65	0.423	0.664
PPN.	16.44	1	16.44	18.89	0.000	0.743
A-ERROR	36.53	42	0.87			
EP.	5.07	1	5.07	51.94	0.000	
EP.*SEX	0.23	1	0.23	2.35	0.132	
EP.*COND.	0.29	5	0.06	0.58	0.712	
EP.*SEX* COND.	0.23	5	0.05	0.48	0.791	
B-ERROR	4.69	48	0.10			

TABLE 12A

SUMMARY OF SIMPLE-MAIN
AND SIMPLE EFFECTS FOR
EFFECTS OF THE PROBABILITY-GENERATOR
ON EXPECTANCIES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
NP/MALE-FEM.	3.17	1	3.17	3.65	(P<0.06)
SP/MALE-FEM.	3.51	1	3.51	4.04	(P<0.05)
MALE/ NP-(H2+H3+H7)	3.13	1	3.13	3.60	(P<0.06)
EP2/ SEX*COND.	10.97	5	2.19	2.53	(P<0.10)
EP2:NP/ MALE-FEM.	2.63	1	2.63	3.03	(P<0.09)
EP2:SP/ MALE-FEM.	2.79	1	2.79	3.32	(P<0.09)
A-ERROR	36.54	42	0.87		
MALE/EP*COND.	1.11	5	0.22	2.26	(P<0.07)
NP/EP*SEX	0.28	1	0.28	2.87	(P<0.10)
SP/EP*SEX	0.27	1	0.27	2.78	(P<0.10)
FEM./EP2-EP1	7.07	5	1.41	14.30	(P<0.001)
MALE/EP2-EP1	16.04	5	3.21	32.74	(P<0.001)

TABLE 12A

(CONTINUED)

SUMMARY OF SIMPLE-MAIN

AND SIMPLE EFFECTS FOR

EFFECTS OF THE PROBABILITY-GENERATOR

ON EXPECTANCIES

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARES	F-RATIO	PROB.
NP/EP2-EP1	1.18	1	1.18	12.00	(P<0.001)
SP/EP2-EP1	1.02	1	1.02	10.38	(P<0.005)
H1/EP2-EP1	1.19	1	1.19	13.16	(P<0.001)
H2/EP2-EP1	0.36	1	0.36	3.66	(P<0.07)
H3/EP2-EP1	0.33	1	0.33	3.34	(P<0.08)
H7/EP2-EP1	0.33	1	0.43	3.35	(P<0.08)
H1:FEM./ EP2-EP1	0.59	1	0.59	6.02	(P<0.02)
H7:FEM./ EP2-EP1	0.30	1	0.30	3.02	(P<0.09)
NP:MALE/ EP2-EP1	1.27	1	1.27	13.01	(P<0.001)
SP:MALE/ EP2-EP1	1.18	1	1.18	12.07	(P<0.001)
H1:MALE/ EP2-EP1	0.70	1	0.70	7.11	(P<0.01)
B-ERROR	4.69	48	0.-98		

variance in the H1 group. To a lesser degree of significance, at probability levels of .07, .08 and .07 respectively, there are differences between the expectancies in the same direction for the H2, H3 and H7 groups. In only one of those groups, though -- the H7 group -- do either of the sexes -- in this case females -- contribute to that variance to a degree which yields a probability level of less than .10.

Except for the differences between levels of the EP. variable, attributable to the engagement and disengagement of the probability-generator, and therefore expected, and of little consequence, significant effects in this analysis are fewer than were revealed in examinations of the Expc. and EPD. variables. However, the similarities of the distributions of mean-scores of these three measures are noteworthy (see Appendices XVII,XIX and XX). This result serves further support for the suggestion that the experimental influences of this study led to evidence of differences between the sexes regarding requirements for the induction of helplessness.

Summary

analyses of scores on the lever-pressing task were carried out to provide evidence that any helplessness effects could not be linked to performances on the pre-treatment task, but were rather artifactual only to the post-pre-treatment instructions and contrived information. The ANACOVA summary table reveals a difference between the sexes, with males achieving the higher scores (see Table 3 and Appendix Xii), an effect which is not surprising, and whose presence does not detract from the hypothesised zero-effect of the pre-treatment task performances. The

other considerable effect eluded to in the ANACOVA summary table is a performance-by-conditions interaction, which carries with it a probability level of less than .08 (see Table 3). This is pin-pointed as confined to female subjects, the mean-score for whom were elevated under the SP condition during the first half of the task. Because this effect does not persist into the second half of the task, and because the relatively elevated mean was derived from the scores of only five subjects, this writer suggests that the effect occurred by chance, and does not add in any way to the designated helplessness training.

In measures of how well subjects could learn a new task (The time-estimation task) males scored better overall, including during the last five trials of the learning trials, and learned the task more quickly. This is particularly true in comparisons involving the H1 and H2 groups; throughout there was little difference between the sexes in the NP and SP groups. As well, this effect is shown to have dissipated by the last five learning trials under the H3 and H7 conditions, because of depressed scores among males in those groupings along with elevated scores in the female H3 group. This elevated L5 score for the H3 females was not reflected in the speed with which they learned the task, while H7 males also showed slowness in learning the task. In fact, only H7 males seemed to suffer learned helplessness deficits of performing, and particularly of learning the new task, while all helplessness groups of females, including the H1 group, showed evidence of learned helplessness deficits relative to the SP group. The male H1 group, on the other hand, performed and learned the task better than did any other grouping.

Subjects' first expectancies for performance, however, did not align themselves with the differences shown in the learning-trials measures, despite claims made by many subjects in the post-test interview that they had based their first expectancies on overall performances during the learning trials. Correlations between expl and all of the learning-trials measures are significant (see Table 2), with none of those relationships, however, contributing to more than 30 percent of the variance. With the exception of the low scores by males in the NP group, the distributions of means for subjects first two expectancies are quite similar to the distributions of means from the learning-trials variables. Of interest is support given to the differences revealed by the learning-trials variables by the distributions of means for the helplessness groups across the second, third and final expectancies, showing males having registered higher expectancies. By the end of the test-phase of the time-estimation task expectancies had, for the most part, cluttered together. This cluttering resulted, in large measure, from changes in scores from the NP and H1 male groupings (see Appendix XVI). This table shows that even at the end of the test phase, although differences from other groups was not significant, both males and females in the H7 group registered the lowest expectancies. That the effects of helplessness training seem to have persisted for subjects receiving the set of attributions ascribed to the H7 condition is evidence for summative effects of the negative ends of the dimensions of the attributional framework proposed in the reformulated model.

The other measures used to examine the effects of the helpless training in the present study are, in a general sense, measures of

overall optimism. Perhaps most remarkable in these analyses is the elevated scores of subjects, and particularly of females, in the H3 grouping. This finding is seen in the present study as providing evidence for partial support for the proposal by Abramson et al that persons attributing their helplessness towards the stable end of the stable/unstable dimension will exhibit greater fluctuation in expectancies for performance (Abramson, Seligman and Teasedale, 1978). However, elevated H3 scores show up not only in the expectancy-change measure, but in the expectancy/perceived-score difference variable as well. Persons placing their attributions for helplessness in the H3 octant are ascribing to internal, stable and specific factors regarding the situations wherein they experienced inabilities to control outcomes. The first two of these are "negative" ends of their respective dimensions. It seems plausible to this author that, in such cases, persons may place most emphasis on the single "neutral" end of a dimension rather than the two negative ends of dimensions in the attribution, thus overriding the symptoms of helplessness deficits which would otherwise be induced. For further investigation of this finding future studies should place an emphasis on examination of attribution sets which include stable and unstable attributions for helplessness. The presence of elevated scores among subjects in the H3 group is not the only way in which the Expc. and EPD. variables are similar; in fact, the distributions of their means are very near to congruent (see Appendices XVII and XIX). The expectancy-total variable also provides elevated scores among subjects, particularly among females, in the H3 group. These three measures are by no means independent from one

another, of course, as they are all derived from subjects registered expectancies for performance. However, the two whose distributions are most similar -- the Expc. and EPD. variables -- are shown to be unrelated (see Table 2). The only significant correlation among these variables occurs in the relationship between the EPD. and Expt. variables, the two of which are shown to account for a great deal of one another's variance.

The shape of these distributions is further illustrated in that of the EP. variable. This variable's scores also suggest that groups H3 and H7 were less influenced by manipulations of the probability-generator than were other groups with regard to changes in their expectancies for performance. The levels*conditions interaction effect, however, is shown to be far from significant (see Table 12 and Appendix XX).

In human learned helplessness studies conducted previous to 1978 the induction of helplessness deficits through manipulations experiences of task failure, or other experiences of inability to control outcomes, were not always replicated. The findings of the present investigation suggest that the three-dimensional attributional framework introduced in 1978 (Abrams, Seligman and Teasedale, 1978) accounts for much of this variance. Making attributions according to contrived information which they received, subjects in this study were differentiated according to gender and octants of the attributional framework in which their beliefs about their failures are located. Most dramatic is the evidence suggesting that the experience of failure alone is sufficient to lead to

helplessness deficits in females, while males are subject to those deficits when such an experience is supplemented by attributions for failure to internal, stable, and/or global factors in the situation in which the failure was experienced. If such is the case, it accounts for differences between males and females revealed in many earlier studies. Results of this investigation also suggest that the greater the number of negative factors to which a person attributes his/her failure -- i.e.: internal, stable and global factors -- the more profound will the helplessness deficits be: performance deficits are shown to have persisted throughout the entire test phase of the time-estimation task for subjects of the H7 group.

CHAPTER IV:

DISCUSSION

Strength of the Pre-Treatment

For the purposes of this discussion the pre-treatment phase of the experiment is viewed as all activities which took place during the experiment up to, and including the delivery of scripts giving contrived information to subjects in all groups excepting the NP group regarding their success or failure in achieving above-average scores on the lever-pressing task. It does not include those parts of the contrived information scripts which separated the helplessness groups from one another. This phase, then, gained demographic data from subjects, and served to set each participant into either the no-pre-treatment, successful-pre-treatment or one of the helplessness groups.

The most apparent effect of the pre-treatment phase seems to be the subsequent differentiation between the NP and SP groups which appeared in analyses of the learning-trials and testing phases of the time-estimation task. During the learning trials those in the NP group performed worse, and learned the task more slowly than did those in the SP group. On the other hand, their expectancy-change scores were smaller, but EPD. scores higher than were those from the SP group, a combination of differences which is hard to interpret. This picture is further complicated when the Exp. analysis, and the analysis of the probability-generator effects for these groups are put side by side: in the former the SP group registered the higher expectancies; in the

latter -- which provides more of an overall measure of expectancies -- the NP group registered the higher expectancies. Differences between the NP and SP groups are confusing. Two factors of the pre-treatment phase separate these groups: only the SP group had as much opportunigy to become familiar with the lever-pressing apparatus, and only members of the pre-treatment groups passed beyond the pre-treatment phase having received positive reinforcement. More meaningful comparisons between the control and successful pre-treatment groups will be obtained if these two groups are made more similar in future learned helplessness studies.

Other comparisons which afford statements about the strength of the pre-treatment phase would match performances of the SP group against those of the H1 group. It cannot be said that, for males, the contrived information given after performances of the lever-pressing task served to divide the SP and H1 groupings -- a statement that, at the end of the pre-treatment phase, the successful pre-treatment and helplessness male groupings were not yet differentiated. That contrived information, however, does seem to have been sufficient to separate females in the successful pre-treatment and helplessness groups from one another, apparently having debilitated the females in the helplessness groupings with respect to the learning trials of the time-estimation task (see tables 5a, 6a and 7a, and Appendices XIii, XIv and xv). On the other hand, examinations of the overall measures of expectancies show that females in the H1 group registered higher expectancy/perceived-score differences than did those in the SP group, and, though not significantly, the expectancy-change scores for the H1 females were

higher than were those of the SP females, indicating that their high EPD. scores were not due to registration of consistently high expectancies.

The pre-treatment manipulations used in the present investigation is quite different than those used in all other learned helplessness studies. In the present study success or failure was ascribed verbally, while many other studies used manipulations of direct experience of success or failure on the pre-treatment task to separate the helplessness group from the successful pre-treatment group. It is quite possible that the pre-treatment manipulations used in this investigation are weaker than some used in previous studies. The present author contends that without the dimension added to this study by the introduction of attributional sets learned helplessness would have been induced in females, but not in males. Had such been the nature of this research, it would not have been inconsistent with the findings of many other learned helplessness studies (Beaucom and Danker, 1979; Broderick, 1980; Gody, 1978; Holman, 1980; Leunes, Nation and Turley, 1980; Wilson, Seybert and Craft, 1980). For this reason it is argued here that the pre-treatment phase of this study had enough strength to validate the research. That females need only experience or be informed of failure to incur learned helplessness effects, while males need to ascribe attributions to any experience or report of failure before such effects are incurred, is a point which has been made earlier in these pages. The strength of that statement is tied quite directly to the strength of the pre-treatment phase of the experiment. Doubtless, some future research papers which might follow the basic outline of this

investigation should use more conventional pre-treatment tasks.

Strength of the Attributions

The remaining effects produced by experimental manipulations in this study are due to the introduction of the attributional framework. It is that dimension which sets the present investigation apart from many others. It is the attributional framework which induced learned helplessness effects in males: in most variables the H1 males -- those who were intended to ascribe to only "neutral" attributions -- fared better than any other male grouping. Few are the measures which indicate that the H2 males were debilitated in performance or expectancy levels relative to their H1 counterparts, but significant differences do show up in the Expc. and EPD. measures (see Tables 9a and 11a, and Appendices XVII and XIX). The analysis which showed males in the H1 grouping to be less helpless than those in the H7 grouping are more numerous, including the OLT. and TBC. variables of the learning trials (see Tables 5a and 6a, and Appendices XIii and XIv), as well as the Expc. and EPD. variables, thought to be measures of overall optimism (see Tables 9a and 11a, and Appendices XVII and XIX). Lower rates of learning are perhaps indicative of motivational deficits. Apparently, males in the H2 grouping, whose only negative attribution was to the internal end of the internal/external dimension, did not incur those deficits as did males in the H3 and H7 groupings, but they did seem to have suffered from the same pessimism as did those other helpless males.

Among female groupings, on the other hand, there were few differences among the helplessness groupings. None showed up in the learning trials variables (see Appendices XIii, XIv and xv), although H3 and H7 females appeared to be more optimistic than other helplessness groups according to the Expc., xpt. and EPD. measures (see Appendices XVII, XVIII and XIX). This is to say that, where attributions did take effect among females (presumably already made helpless by reports of their failures on the lever-pressing task), an increased number of negative beliefs seems to be correlated with increased expectancy-change. However, much of the early literature on learned helplessness suggests that small expectancy-changes are associated with "helpless" persons' beliefs that they have no control over outcomes. If this link is veritical, in the present investigation such a belief ought to show itself in expectancies registered after performances during which the probability-generator was engaged being closer to those registered after performances during which the probability-generator was disengaged. As shown in the analysis or the EP. variable, such is the case, with H2, H3 and H7 females showing smaller differences than other female groupings (see Appendix XX). The discrepandy between results of analyses on the EP. and Expc. variables provides contradictory evidence regarding the link between expectancy and helplessness beliefs.

The analysis of the EP. measure also provides contradictory evidence on a point made throughout this paper. That analysis shows that expectancies registered by Hl females when the probability-generator was engaged differ significantly from their expectancies registered when it was disengaged (see Table 12a). Other analyses have indicated that

females in all helplessness groupings could be placed into one group, not differentiated by results of the various scripts intended to induce the various attribitutional sets.

The introduction of the probability-generator was the simplest way found by this investigator to effectively have subjects' scores fluctuate consistently, and yet randomly. It is the belief of this author that the best way to examine expectancy-changes is to allow for test-scores to fluctuate by a wider margin than is allowed by a success/failure dichotomous outcome. Future investigations of learned helplessness wishing to study the expectancy-change variable as an indicator of pessimism regarding ones ability to control outcomes may wish to adapt a testing procedure which will allow for similar fluctuations. In this study the probability-generator served well the purposes for which it was employed.

Sex Differences

Although there are a number of investigations which fail to isolate differences between males and females on measures of performance, mood and motivation (Beaucom and Danker, 1979; Breen, Vulcano and Dyck, 1979; Frings-Raftery, 1980; Mamlak, 1980; Sabbeth, 1979; Stuart, 1977), many authors, including several whose studies found no differences, have speculated as to the nature and causes of such differences. The present study adds to discussion on the nature of the difference between males and females as to susceptibility to helplessness training. In summary, both males and females are vulnerable to learned helplessness training. The type of training required, ~~though,~~ differs from males to females.

In general, it seems that merely experiencing failure, or receiving information that they have failed, is enough to induce learned helplessness effects in females. Males, on the other hand, seem to be somewhat immune to experiences or information of failure insofar as learned helplessness effects are concerned. However, with the introduction of attribution sets, it seems that learned helplessness arises in males, particularly in the case of the attribution set associated with the H7 group -- internal, stable and global attributions (Abramson, Seligman and Teasedale, 1978).

Of all the analyses done in the present investigation only one -- that done on the EPD. measure -- shows a significant main sex*conditions interaction effect (see Table 11). However, while that interaction in the Expc. analysis approaches significance (see Table 9). this effect shows itself consistently throughout the simple-main and simple effects of analyses of the learning trials variables as well as the Expc. and EPD. measures. When "helpless" persons exhibit difficulty in learning a new task relative to "non-helpless" persons, this difficulty is associated with motivational deficits and cognitive distortion regarding an inappropriate belief in ones ability to control outcomes (Miller and Seligman, 1975). Relatively small changes in expectancy from one performance to another are associated with the same sort of cognitive distortion, based on the observation that "helpless" subjects learned nothing about their ability to succeed despite having experienced successful performances. This latter assertion has been contested, however (Abramson, Seligman and Teasedale, 1978). Reduced EPD. scores -- a measure used for the first time in the present investigation -- are

associated by this author with low levels of optimism regarding ones ability to gain control over outcomes.

An interesting occurrence is noted here regarding the scores of females in the H3 and H7 groupings on the Expc. and EPD. variables: females receiving those groups' attributional sets, presumably having already been made "helpless" by information that they had failed on the lever-pressing task, showed improved scores on those variables (see Tables 9a and 11a and Appendices XVII and XIX). It is difficult to account for this effect, but it might be an effect which accompanies a belief associated with another level of learned helplessness wherein a person is found to be passively controlled by outcomes. In such a case relatively high levels of expectancy-change would not reflect a belief in control over outcomes, but would indicate that the "helpless" person is merely following the flow of outcomes -- an affect which might be equivilant to continuously, passively, without questioning oneself or others, doing what one believes is indicated he/she ought to do.

The sex*condition cells or groupings in this study are small -- five sugjects were assigned to each. Authors of future investigations may wish to examine fewer helplessness groups while assigning more subjects to each cell. Statements and speculations made in this paper regarding differences in susceptibility to helplessness between males and females speak to the nature of those differences and say nothing as to their sources. That socialization factors under-lie these differences seems quite likely to this author (Bagley, 1978; Broderick, 1980; Dweck, Davidson, Nelson and Bradley, 1978). In fact, this study may add to the

understanding of those socialization factors.

The Relationships Between Depression, Performance and Expectancy

The link between learned helplessness and depression can be summarized as follows: "if learned helplessness is a model of depression, depressed subjects and non-depressed subjects made to believe they are helpless should show the same deficits relative to normal controls" (Seligman 1978). Such performance and expectancy-for-performance deficits would reflect the reduction in motivation and distortion of cognitive sets hypothesised as being common to both learned helplessness and depression (Seligman, 1972; Seligman, 1975). In many studies reduced expectancies and expectancy-change have been touted as indicators of cognitive distortions regarding ones inability to succeed even amid experiences of success; performance deficits and other examples of reduced response initiation have been pointed to as indicators of reduced motivation (Miller and Seligman, 1973; Miller and Seligman, 1975; Miller, Seligman and Kurlander, 1975; Miller and Seligman, 1976; Klein and Seligman, 1976; Klein, Fencil-Morse and Seligman, 1976; Buchwald, Coyne and Cole, 1978; Kreuger, 1978; Smolen, 1978). In the earliest papers the link related learned helplessness to "reactive" depression (Seligman, 1972; Seligman, 1975), the sort of depression said to set in as a result of a tragic life event. More recent thinking has led authors to write of learned helplessness as related with uni-polar depression (Depue and Monroe, 1978; Abramson, Garber, Edwards and Seligman, 1978; Smolen, 1978; O'Leary, Donavan, Kreuger and Cysewski, 1978; Price, Tryon and Raps, 1978). Uni-polar

depression is a type which is not complicated by other sorts of clinical disorders (Depue and Monroe, 1978), characterized by no personal or family history of mania or hypo-mania, and possibly having received treatment for depression. As Buchwald et al point out (Buchwald, Coyne and Cole, 1978), a number of studies find reduced expectancy-change across performances to be connected with uni-polar depression (Abramson, Garber, Edwards and seligman, 1978; O'Leary, Donavan, Kreuger and Cysewski, 1978). Smolen's research, however, yields results contrary to these (Smolen, 1978).

In the present investigation low expectancy-change appears to be an artifact of changes in subjects' perceived scores rather than related to any variables indicative of depression (see Table 2). However, it does seem to bear some relationship to learned helplessness, as indicated in earlier pages. Neither do subjects' overall expectancy totals, nor their single expectancies appear related to depression, but seem, rather, to be tied into perceived or actual performances during the test phase of the time-estimation task, and during the learning-trials phase as well. Overall performance during the test phase is significantly related to the level of enjoyment of the time-estimation task, but to conclude that it is therefore linked with mood or depression would be rather tenuous. Like the examination of the Expc. variable, investigation of relationships between the learning trials measures and other variables shows no indication of a link with depression, although, as has been earlier demonstrated, they are linked to learned helplessness and the various attributional sets. The Pearson Correlation Table shows no significant relationship between conditions

and any other variable. This is to be expected, however, as the conditions variable is a grouping factor, and is not scored along a continuum. Among its strongest correlations, however, are those with subjects' first and last expectancies, which are in the negative direction. If the conditions could have been appropriately weighted, and stronger relationships in the negative direction had been found, then strong evidence would have been yielded in support of the strength of the learned helplessness training and attribution instructions. Scores on the B.D.I. also appear to be little-related to any of the variables of the present investigation, a statement which is of more importance than the previous one.

No indices of mood or self-esteem -- two deficits written of as resulting from some of the attributions for failure proposed in the reformulated model (Abramson, Seligman and Teasedale, 1978) -- were used in this research. This fact notwithstanding, though, there is no evidence found in the present investigation linking learned helplessness with depression as it is measured by the first scale of the Beck Depression Inventory. Yet, the measures of motivational and cognitive interference employed in this study are, in many cases, shown to be linked in specific ways to learned helplessness. As was mentioned in the introduction to this paper, a learned-helplessness/depression link is, somehow, cognitively appealing. Why, then, is there so little evidence of such a relationship in this and other studies (Anderson, 1978; Ball, 1978; Chartier, 1978; Cole and Coyne, 1977; Dillon, 1978; Goldstein, 1980; Margolies, 1978; Smolen, 1977)?

Seligman suggests, despite all of the studies in which he has been involved which employed the Beck Depression Inventory, that elevated scores on that instrument alone are not sufficient as indication of depth or classification of depression (Seligman, 1978). Further, he suggests that learned helplessness models a type of depression which may cut across traditional classifications of the depressive disorders (Seligman, 1978). This "helplessness" depression may be most closely modelled, from among the traditionally understood classes, by reactive depression. It is characterized by the expectation that highly desired outcomes are of low probability, or that aversive outcomes are of high probability, and that their occurrence is independent of the individual's actions. The disorder resulting from such expectations may be of mild or clinical proportions, and should produce motivational, cognitive and emotional deficits as well as reduced self esteem. The symptomology of helplessness depression would include passivity and a negative cognitive set regarding the victim's belief in his/her ability to successfully control outcomes despite experiences with success. The latter of these symptoms shows itself in an "incidious attributional style" (Seligman, 1978).

In the present investigation the attributional framework employed was induced in subjects, and thereby available to examination, through contrived information and instruction intended to shape their beliefs. The present author joins others in questioning whether or not, left to develop their own thinking about any given situation, persons actually make attributions which are causally or contextually related to that situation, or what the relationship between any attributions and

behaviours might be (Wortman and Dintzer, 1978). Certainly there is evidence in the present investigation that the attributional framework proposed in the reformulated model of learned helplessness (Abramson, Seligman and Teasedale, 1978) is related to motivational and cognitive deficits in specific ways. However, this author feels that study needs to be made into the matter of what sort of attributions, if indeed there are specific ones, result from learned helplessness training.

Finally, this author finds, and the reader may, too, that personal experience still lends to the cognitive appeal of a link between the laboratory-induced style of learned helplessness as investigated here and a depressive disorder. The form of this link, it would seem, is probably an expectation of response/outcome independence under aversive circumstances. Such an expectation, Seligman points out, is a hypothetical construct, not amenable to direct measurement, but only indicated through converging evidence (Seligman, 1978). With such indirect measurement, it is less surprising that a correlational link is not found between this deficit and depression or scales measuring depression.

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First Half of the Beck Depression Inventory

Personality Questionnaire

The questions on the following pages have been designed to show where you should be placed on certain personality traits. There are no "right" or "wrong" answers to these questions. It is, therefore, impossible to get a "good" or a "bad" score on this personality scale. It is possible only to get scores which will describe your personality more or less accurately.

Fill in your name and the date on this Questionnaire. The questions are to be answered on the question sheets.

All the questions must be answered by choosing only one of the nine alternatives.

NAME _____

DATE _____

STUDENT # _____

.../2

First Half of the Beck Depression Inventory

1. I feel that life is worthwile.

(9. Absolutely
(8. Very Definitely
(7. Definitely
(6. Probably
(5. Possibly
(4. Probably Not
(3. Definitely Not
(2. Very Definitely Not
(1. Absolutely Not

2. When I wake up in the morning, I expect to have a miserable day.

(9. Always
(8. Almost always
(7. Very Frequently (or Usually)
(6. Frequently
(5. Fairly Often
(4. Occasionally
(3. Rarely
(2. Almost Never
(1. Never

3. I wish I were never born.

(9. Absolutely
(8. Very Definitely
(7. Definitely
(6. Probably
(5. Possibly
(4. Probably Not
(3. Definitely Not
(2. Very Definitely Not
(1. Absolutely Not

.../3

First Half of the Beck Depression Inventory

4. I feel that there is more disappointment in life than satisfaction.

(9. Absolutely
(8. Very Definitely
(7. Definitely
(6. Probably
(5. Possibly
(4. Probably Not
(3. Definitely Not
(2. Very Definitely Not
(1. Absolutely Not

5. I want to run away from everything.

(9. Always
(8. Almost Always
(7. Very Frequently (or Usually)
(6. Frequently
(5. Fairly Often
(4. Occasionally
(3. Rarely
(2. Almost Never
(1. Never

6. My future looks hopeful and promising.

(9. Absolutely
(8. Very Definitely
(7. Definitely
(6. Probably
(5. Possibly
(4. Probably Not
(3. Definitely Not
(2. Very Definitely Not
(1. Absolutely Not

First Half of the Beck Depression Inventory

7. When I get up in the morning, I expect to have an interesting day.

9. Always
8. Almost Always
7. Very Frequently (or Usually)
6. Frequently
5. Fairly Often
4. Occasionally
3. Rarely
2. Almost Never
1. Never

8. Living is a wonderful adventure for me.

9. Always
8. Almost Always
7. Very Frequently (or Usually)
6. Frequently
5. Fairly Often
4. Occasionally
3. Rarely
2. Almost Never
1. Never

9. I am a happy person.

9. Always
8. Almost Always
7. Very Frequently (or Usually)
6. Frequently
5. Fairly Often
4. Occasionally
3. Rarely
2. Almost Never
1. Never

First Half of the Beck Depression Inventory

10. Things have worked out well for me.

9. Absolutely
8. Very Definitely
7. Definitely
6. Probably
5. Possibly
4. Probably Not
3. Definitely Not
2. Very Definitely Not
1. Absolutely Not

11. The future looks so gloomy that I wonder if I should go on.

9. Always
8. Almost Always
7. Very Frequently or Usually
6. Frequently
5. Fairly Often
4. Occasionally
3. Rarely
2. Almost Never
1. Never

12. I feel that life is drudgery and boredom.

9. Always
8. Almost Always
7. Very Frequently or Usually
6. Frequently
5. Fairly Often
4. Occasionally
3. Rarely
2. Almost Never
1. Never

First Half of the Beck Depression Inventory

13. I feel blue and depressed.

(9. Always
(8. Almost Always
(7. Very Frequently (or Usually)
(6. Frequently
(5. Fairly Often
(4. Occasionally
(3. Rarely
(2. Almost Never
(1. Never

14. When I look back, I think that life has been good to me.

9. Absolutely
8. Very Definitely
7. Definitely
6. Probably
5. Possibly
4. Probably Not
3. Definitely Not
2. Very Definitely Not
1. Absolutely Not

APPENDIX II

SCRIPT OF INSTRUCTIONS FOR FILLING OUT THE BECK DEPRESSION INVENTORY.

This is a short personality inventory. Every one who takes part in this research will complete one. As you will see, this questionaire is made up of fourteen questions or statements, and each of these questions or statements is accompanied by nine possible responses. In answering each of the questions you choose the accompanying response which you feel is most appropriate for yourself. Now, to indicate your choice, write the number of the response which you have chosen beside the number of that response. For example, if, in answering the first question, you choose response three, you would write a number three beside the number three on the page. Do you understand what you are to do?

APPENDIX III-A

SCRIPT FOR FAMILIARIZING SUBJECTS WITH THE LEVER-PRESSING DEVICE

Now, this box is a lever pressing device. As you can see, there is a light in the middle, a counter on the left and a lever on the right. Now, this lever is spring-loaded. press it a few times to get used to its tention.

APPENDIX III-B

SCRIPT OF INSTRUCTIONS FOR PERFORMING THE LEVER-PRESSING TASK

Now, the first task I want you to do is a simple lever-pressing task. Here is how it goes: each time the light shines press the lever repeatedly until the light goes off. The light will shine for ten seconds every time it comes on. When the light is shining the counter will count your lever presses, and will keep a running total for you. There will be twenty of these ten-second periods during which the light will shine; after ten of them there will be a rest period of one minute. The aim of this task is to press the lever as many times as you can over the twenty ten-second trials.

ENJOYMENT SCALE

Please rate on the following scale the extent to which you believe the task is enjoyable. Indicate your opinion by drawing a line through the line shown below at the point which corresponds to your present feeling.

A very enjoyable task _____ A very unpleasant task

Please rate on the following scale the extent to which you believe the task is enjoyable. Indicate your opinion by drawing a line through the line shown below at the point which corresponds to your present feeling.

A very enjoyable task _____ A very unpleasant task

APPENDIX V-A

SCRIPT OF CONTRIVED INFORMATION GIVEN TO SP SUBJECTS REGARDING THEIR PERFORMANCES ON THE LEVER-PRESSING TASK

Okay, that was pretty good. Your score is well above the average for (males or females, as the subject's sex would dictate).

APPENDIX V-B

SCRIPT OF CONTRIVED INFORMATION GIVEN TO H1 SUBJECTS REGARDING THEIR PERFORMANCES ON THE LEVER-PRESSING TASK

Well, okay, the first thing I will tell you is that your score is below the average for (males or females, as the sex of the subject would dictate). However, I should also tell you that (males or females) who (This blank is filled in by referring back to the subject's demographic information so as to make inferrences about people who are like him/her in some way or ways) usually score below the average. Now, as you might imaginee, this task, because it is so easy to teach to people, has been used in many experiments, and much information has been gathered about it. For example, scores on this task are known to be quite unstable over time, so that if you were to come back tomorrow, or next week, or any other time, you might get quite a different score. Now, we have another task for you to do, and we have found that scores on the lever-pressing task are not at all good predictors of scores on this next task.

APPENDIX V-C

SCRIPT OF CONTRIVED INFORMATION GIVEN TO H2 SUBJECTS REGARDING THEIR PERFORMANCES ON THE LEVER-PRESSING TASK>

Well, okay, the first thing I will tell you is that your score is below the average for (Females or males, as the sex of the subject would dictate). Now, our data shows us that (males or females) who ..... (This blank is filled in by referring back to the subject's demographic information so as to make inferrences about people who are like him/her in some way or ways) usually achieve above-average scores. Now, as you might imaginee, this task, because it is so easy to teach to people, has been used in many experiments, and much information has been gathered about it. For example, scores on this task are known to be quite unstable over time, so that, if you were to come back tomorrow, or next week, or any other time, you might get quite a different score. Now, we have another task for you to do, and we have found that scores on the lever-pressing task are not at all good predictors of scores on this next task.

APPENDIX V-D

SCRIPT OF CONTRIVED INFORMATION GIVEN TO H3 SUBJECTS REGARDING THEIR PERFORMANCES ON THE LEVER-PRESSING TASK

Well, okay, the first thing I will tell you is that your score is below the average for (males or females, as the sex of the subject would dictate). Now, our data shows us that (males or females) who ..... (This blank is filled in by referring back to the subject's demographic information so as to make inferrences about people who are like him/her in some way or ways) usually achieve above-average scores. Now, as you might imagine, this task, because it is easy to teach to people, has been used in many experiments, and much information has been gathered about it. For example, scores on this task are known to be quite stable over time, so that if you were to come back tomorrow, or next week, or any other time, you would probably get just about the same score as you got today. Now, we have another task for you to do, and we have found that scores on the lever-pressing task are not at all good predictors of scores on this next task.

APPENDIX V-E

SCRIPT OF CONTRIVED INFORMATION GIVEN TO H7 SUBJECTS REGARDING THEIR PERFORMANCES ON THE LEVER-PRESSING TASK

Well, okay, the first thing I will tell you is that your score is below the average for (males or females, as the sex of the subject would dictate). Now, our data shows us that (males or females) who ..... (This blank is filled in by referring back to the subject's demographic information so as to make inferrences about people who are like him/her in some way or ways) usually achieve above average scores. Now, as you might imagine, this task, because it is easy to teach to people, has been used in many experiments, and much information has been gathered about it. For example, scores on this task are known to be quite stable over time, so that if you were to come back tomorrow, or next week, or any other time, you would probably get just about the same score as you got today. Now, we have another task for you to do, and we have found that scores on the lever-pressing task are pretty good predictors of scores on this next task.

APPENDIX VI

SCRIPT OF INSTRUCTIONS FOR THE LEARNING-TRIALS OF THE TIME-ESTIMATION TASK

The next task is a time-estimation task. What we want to see is how well you can estimate the passage of a short span of time. We will be using the same device as we used for the lever-pressing task, and this is how it goes: this time, each time the light comes on it will shine for about five seconds. When you estimate that the light has shone for five seconds press the lever once. If you estimate correctly to within one-quarter of a second, that is, if you press the lever between four-and-three-quarters and five-and-a-quarter seconds, after the light has begun to shine, you will gain a point, which will show up on the point counter. Do you understand? Okay, now, I am going to give you twenty trials in which to learn this task; the light will shine for the first estimation very shortly, but before I go, please give me your watch.

APPENDIX VII

SCRIPT OF INSTRUCTIONS FOR THE TIME-ESTIMATION TESTS AND USE OF THE EXPECTANCY CHART BOOKLETS

Okay, now you are going to do this task some more, but with a slightly different format. I still want you to estimate when five seconds have passed. However, the estimations will come in little groups of five trials each. There will be fourteen of these five-trial groups or tests, and you will be able to see your score out of five for each test on the point counter. Do you understand? Good. Now, I have here a little booklet. It is a booklet of expectancy charts. Using these charts, I want you to show the score which you expect you will get on the next five-trial test. Each chart is the same, with numbers from zero to five, and you fill it out as it instructs you -- by circling the number which is equal to the number of points you expect to score on the next test. After filling out a chart, you turn it over immediately, exposing the next one. Do you understand? Okay, good. Now, here is a pencil. I want you now to fill out the first chart; circle the number which equals the number of points you expect to get on the first test. (waits) Okay, good. Now, I'll take that first chart with me.

EXPECTANCY CHART

YOU ARE ABOUT TO PERFORM YOUR FIRST TEST.

PLEASE CIRCLE THE NUMBER BELOW WHICH CORRESPONDS WITH THE NUMBER OF POINTS YOU FEEL YOU WILL RECEIVE ON THIS TEST

0 1 2 3 4 5

APPENDIX IX

FOUR EXAMPLES OF SCHEDULES FOR ENGAGEMENT OF THE PROBABILITY-GENERATOR

In the sample schedules included below, the letter "p" designates the tests during which the probability-generator would be engaged.

Example 1:

Test Sequence	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
P.G. Schedule	-	-	p	-	p	-	-	-	-	p	-	-	p	-	-

Example 2:

Test Sequence	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
P.G. Schedule	-	-	p	-	-	-	p	-	-	p	-	-	p	-	-

APPENDIX IX (Continued):

FOUR EXAMPLES OF SCHEDULES
FOR ENGAGEMENT OF THE
PROBABILITY-GENERATOR

Example 3:

Test Sequence	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
P.G. Schedule	-	-	-	-	-	p	-	-	-	-	-	p	-	-	-	-	-	p	-	-	p	-	-	p	-	-	-	-	-	p	-	-	-	-	-	-	-	-	-

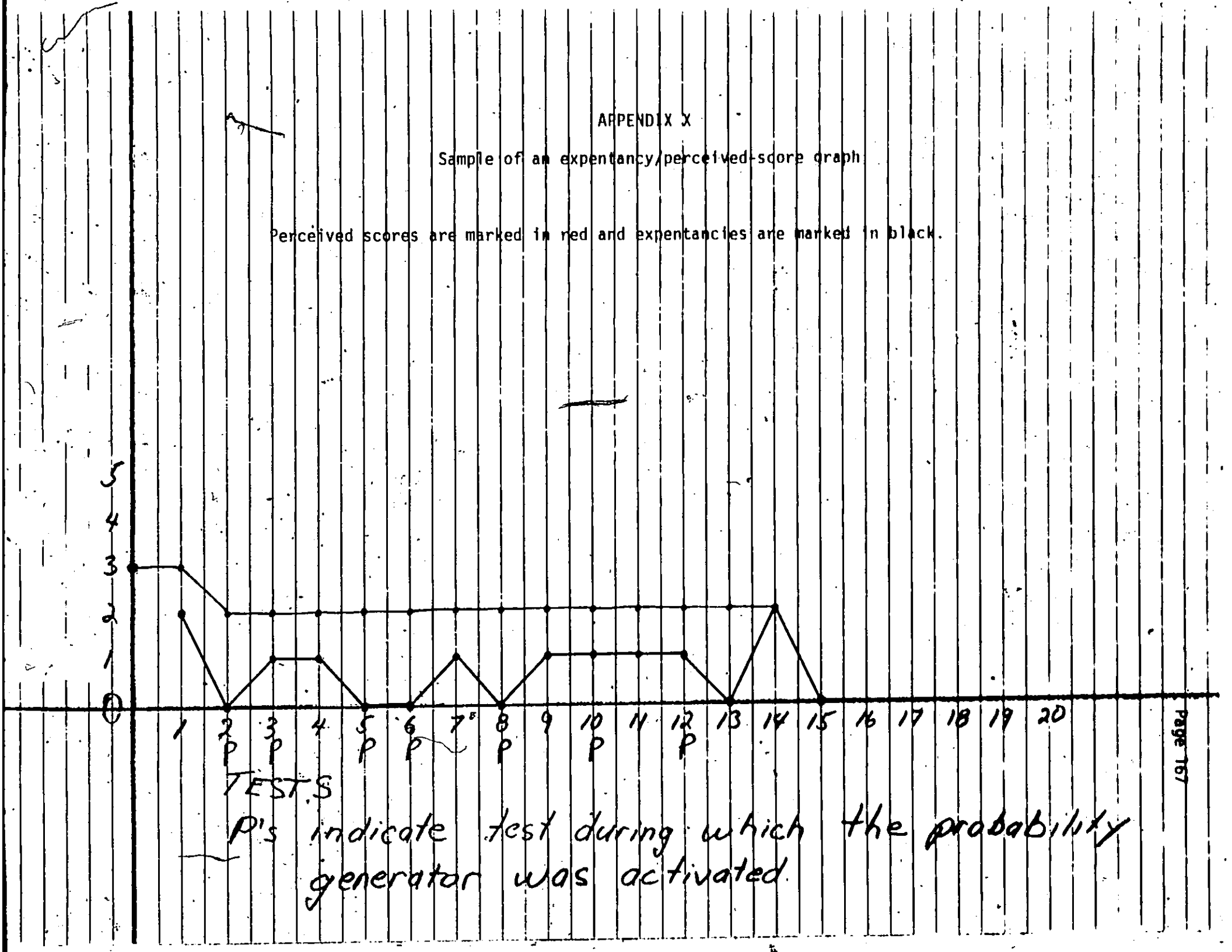
Example 4:

Test Sequence	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
P.G. Schedule	-	-	-	p	-	-	-	-	-	p	-	-	-	-	-	p	-	-	-	-	p	-	-	p	-	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX X

Sample of an expentancy/perceived-score graph

Perceived scores are marked in red and expentancies are marked in black.



APPENDIX XI
KEY OF SYMBOLS FOR VARIABLES AND GROUPINGS:

This key lists symbols found in tables and appendices, and throughout the text of this paper, used to denote variables, levels of variables, and groupings used in this investigation.

Age -- refers to the variable measuring in months subjects' ages.

Cond. -- this is thee variable referring to the experimental conditions, of which there are 6:

NP -- the no pre-treatment group,

SP -- the successful pre-treatment group,

H1 -- the first helplessness group,

H2 -- the second helplessness group,

H3 -- the third helplessness group,

H7 -- the seventh helplessness group, the fourth of the helplessness groups examined in this investigation.

Dep. -- the measurement of subjects' levels of depression according to the first half of the Beck Depression Inventory.

Enj1 -- the variable measuring subjects' levels of enjoyment on the lever-pressing task.

Enjt -- the variable measuring subjects' levels of enjoyment of the time-estimation task.

Ep. -- the variable measuring effects had on subjects' expectancies by the probability generator
$ this variable has been divided into 2 levels:

Ep1 -- subjects' expectancies as registered when the probability-generator was engaged,

Ep2 -- subjects' expectancies as registered when the probability-generator was disengaged.

APPENDIX XI (CONTINUED)

KEY OF SYMBOLS FOR

VARIABLES AND GROUPINGS:

Epd. -- the variable measuring subjects' expectancy/perceived-score differences.

Exp. -- the variable measuring subjects' expectancies for performance, of which there are 4 levels:

Exp1 -- expectancies registered before the first test of the time-estimation task,

Exp2 -- expectancies registered between the first and second tests of the time-estimation task,

Exp3 -- expectancies registered between the second and third tests of the time-estimation task,

Exp4 -- expectancies registered between the second-to-last and final tests of the time-estimation task.

Expc. -- the variable measuring subjects' changes in expectancy across the tests of the time-estimation task.

Expt. -- the variable which summed subjects expectancies to yield an expectancy total score.

LP. -- the variable measuring performances on the lever-pressing task, of which there are 2 levels:

LP1 -- subjects' lever-pressing scores after ten ten-second trials,

LP2 -- subjects' lever-pressing scores at the completion of the task.

L5 -- the variable measuring the number of correct estimations a subject made in his/her last five trials of the learning trials of the time-estimation task.

APPENDIX XI (CONTINUED)

KEY OF SYMBOLS FOR

VARIABLES AND GROUPINGS:

OLT. -- the variable measuring subjects' overall performances on the learning-trials phase of the time-estimation task.

Perc. -- the variable measuring changes in subjects' perceived scores due to engagement and disengagement of the probability-generator.

Pert. -- the variable measuring subjects' total for their perceived scores.

Ppd. -- the variable yielding the total of subjects' perceived scores when the probability-generator was disengaged.

Ppe. -- the variable yielding the total of subjects' perceived scores when the probability-generator was engaged.

Real. -- the variable measuring subjects' total for their actual or real scores.

Sex -- the variable indicating subjects' sexes.

Tbc. -- the variable indicating the numbers of trials required by subjects before reaching the criteria used to indicate that learning of the time-estimation task had been acquired.

APPENDIX XII

MEANS, STANDARD DEVIATIONS AND ADJUSTED MEANS FOR THE LEVER-PRESSING TASK

LP1

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-SP	133.40	7.70	133.32	145.80	16.25	146.00
Others	125.45	21.51	126.08	145.00	14.40	144.10

LP2

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-SP	125.60	8.38	125.52	143.40	17.39	144.60
Others	126.80	17.81	126.83	145.65	16.72	144.75

APPENDIX XIII

MEANS, STANDARD DEVIATIONS AND ADJUSTED MEANS FOR OVERALL LEARNING TRIALS

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	3.60	3.51	2.88	6.40	3.51	5.58
Group-SP	8.00	5.43	10.83	9.20	5.31	9.83
Group-H1	5.60	4.72	4.47	12.40	3.05	11.01
Group-H2	4.00	2.74	4.09	7.60	3.58	8.65
Group-H3	4.00	4.97	3.70	8.80	5.76	8.40
Group-H7	3.00	1.22	2.57	6.20	4.60	6.79

APPENDIX XIV

MEANS, STANDARD DEVIATIONS
AND ADJUSTED MEANS FOR
TRIALS BEFORE CRYTERIA

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	18.35	2.62	19.72	10.45	9.07	11.96
Group-SP	10.60	8.71	6.08	12.45	7.28	11.48
Group-H1	13.00	6.86	14.72	6.40	4.34	7.37
Group-H2	19.70	9.42	19.59	13.00	7.04	11.21
Group-H3	16.00	7.38	17.85	9.35	8.82	9.88
Group-H7	16.85	6.63	17.69	16.95	4.04	15.82

MEANS, STANDARD DEVIATIONS AND ADJUSTED MEANS FOR FIRST, SECOND, THIRD AND LAST EXPECTANCIES

EXP1

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	2.40	1.14	2.66	2.80	0.84	2.33
Group-SP	2.80	0.84	2.72	3.20	1.30	2.77
Group-H1	2.60	0.89	2.78	4.00	1.22	3.25
Group-H2	2.40	0.89	2.62	2.60	0.89	2.60
Group-H3	2.60	1.67	2.34	2.60	1.54	2.55
Group-H7	1.80	1.30	2.26	2.00	0.71	2.20

EXP2

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	2.80	0.84	3.06	2.20	1.30	1.53
Group-SP	2.40	1.44	2.92	3.20	1.64	2.77
Group-H1	2.60	1.14	2.78	4.40	0.80	3.65
Group-H2	2.60	1.14	2.82	3.40	1.34	3.40
Group-H3	2.80	1.10	2.54	3.00	1.50	2.95
Group-H7	2.00	1.00	2.46	2.40	0.89	2.60

APPENDIX XVI (Continued):

MEANS, STANDARD DEVIATIONS AND ADJUSTED MEANS FOR FIRST, SECOND, THIRD AND LAST EXPECTANCIES

EXP3

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	2.20	0.84	2.46	2.20	1.30	1.86
Group-SP	2.80	1.47	2.62	2.80	1.30	2.37
Group-H1	2.00	1.58	2.18	3.40	0.89	2.67
Group-H2	2.40	1.14	2.61	2.80	1.30	2.80
Group-H3	2.60	1.52	2.34	2.20	1.48	2.65
Group-H7	1.40	0.55	1.86	2.00	0.71	2.20

EXP4

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	2.80	0.84	3.06	3.00	1.00	2.63
Group-SP	2.80	1.40	2.72	3.20	1.92	2.77
Group-H1	2.80	1.10	2.18	3.60	1.14	2.85
Group-H2	3.00	1.73	2.62	3.20	0.45	3.20
Group-H3	2.40	1.67	2.34	3.00	0.71	2.65
Group-H7	1.80	0.84	1.86	2.20	0.45	2.40

APPENDIX XV

MEANS, STANDARD DEVIATIONS
AND ADJUSTED MEANS FOR
THE LAST FIVE TRIALS
OF THE LEARNING TRIALS

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	1.20	1.30	0.90	1.80	0.84	1.57
Group-SP	2.40	2.30	3.60	2.80	1.79	3.05
Group-H1	2.00	1.87	1.55	3.70	1.40	3.88
Group-H2	1.20	1.10	1.28	2.80	1.79	3.02
Group-H3	2.40	1.05	2.14	2.60	1.52	2.35
Group-H7	1.20	0.45	1.22	2.40	1.95	2.40

MEANS, STANDARD DEVIATIONS
AND ADJUSTED MEANS FOR
EXPECTANCY-CHANGE SCORES

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	13.40	15.50	6.99	6.40	1.58	8.40
Group-SP	6.20	1.09	3.71	8.80	4.49	9.66
Group-H1	5.40	3.97	4.64	8.40	4.22	10.13
Group-H2	5.60	2.97	6.64	5.40	3.21	2.87
Group-H3	6.40	5.55	10.21	8.40	6.30	6.30
Group-H7	5.80	4.27	7.26	3.00	2.74	2.74

APPENDIX XVIII

MEANS, STANDARD DEVIATIONS AND ADJUSTED MEANS FOR EXPECTANCY-TOTAL SCORES

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	32.80	19.87	25.07	36.20	12.03	41.90
Group-SP	30.20	15.74	30.37	42.80	19.74	39.20
Group-H1	35.00	18.40	34.06	45.60	5.71	39.86
Group-H2	36.00	20.04	35.50	40.00	13.38	34.30
Group-H3	32.60	10.90	42.03	37.80	8.96	35.00
Group-H7	26.20	7.33	33.85	31.00	4.74	34.66

APPENDIX XIX

MEANS, STANDARD DEVIATIONS AND ADJUSTED MEANS FOR EXPECTANCY/CHANGE-SCORES DIFFERENCE SCORES

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	22.00	27.00	16.22	15.60	8.17	15.44
Group-SP	6.20	6.53	1.71	14.60	9.79	13.57
Group-H1	8.40	10.41	8.84	15.80	8.44	18.41
Group-H2	10.60	12.26	13.50	10.30	10.18	3.50
Group-H3	14.60	8.26	19.60	10.00	4.06	12.45
Group-H7	7.80	7.46	13.81	9.40	8.08	7.95

APPENDIX XX

MEANS, STANDARD DEVIATIONS
AND ADJUSTED MEANS FOR
EFFECTS OF THE PROBABILITY-GENERATOR
ON EXPECTANCIES

EP1

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	2.29	0.78	2.23	2.23	0.67	2.80
Group-SP	2.00	1.10	1.77	2.71	1.28	2.37
Group-H1	2.26	1.30	2.02	2.94	0.50	2.66
Group-H2	2.46	1.41	2.53	2.69	1.06	2.16
Group-H3	2.17	0.67	2.85	2.60	0.44	2,43
Group-H7	1.74	0.53	2.45	2.03	0.36	2.08

EP2

GROUPINGS	FEMALE			MALE		
	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS	MEANS	STANDARD DEVIATIONS	ADJUSTED MEANS
Group-NP	2.54	0.75	2.48	2.94	1.07	2.80
Group-SP	2.41	1.23	1.98	3.40	1.58	3.06
Group-H1	2.74	1.35	2.50	3.51	0.42	3.29
Group-H2	2.69	1.45	2.76	3.00	0.93	2.46
Group-H3	2.49	0.94	3.16	3.00	0.69	2.63
Group-H7	2.06	0.51	2.79	2.43	0.26	2.40