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MUSICALLY INDUCED MOODS: EFFECTS ON JUDGMENTS OF SELF-EFFICACY

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ABSTRACT

MUSICALLY INDUCED MOODS: EFFECTS
ON JUDGMENTS OF SELF-EFFICACY

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The present study examined the effects of mood on judgments of self-efficacy. Seventy-two male and female undergraduates were randomly assigned to three treatment conditions. Pretreatment measures of mood levels and self-efficacy expectations were obtained from each subject. Elated, neutral and depressed moods were induced by having subjects listen to taped musical selections. Alternate forms of the mood and self-efficacy measures were administered posttreatment together with a performance task. The results showed that music induced differences in mood. Subjects in the depressed condition experienced higher levels of depressed mood than did subjects in both the neutral and elated conditions. No differences were found between groups on measures of self-efficacy expectations or for task performance. Implications for self-efficacy theory and practical applications are discussed.

I dedicate this dissertation to those who made it possible through their care and support, my loving wife, Lyn, and my parents Clayton and Marian Straseske.

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LIST OF ABBREVIATIONS

ANCOVA: Analysis of Covariance

ANOVA: Analysis of Variance

BDI: Beck Depression Inventory

DACL: Depression Adjective Check List(s)

DQ: Debriefing Questionnaire

MBQ: Music Background Questionnaire

SEQ: Self-Efficacy Questionnaire

VMIP: Velten Mood Induction Procedure

CHAPTER I

THE PROBLEM

INTRODUCTION

The science of psychology holds as primary goals understanding and explaining human behavior, and within its short history numerous and varied theories have been proposed to account for human functioning. During the early years two opposing views dominated the field. Rigid adherents of psychoanalytic theories maintained that human behavior is the external manifestation of internal drives, needs, and conflicts operating at the unconscious level of awareness. At the opposite end of the spectrum radical behaviorists viewed human behavior as controlled and determined by external environmental forces impinging upon the person. To a large extent these extreme positions are giving way to a blending of ideas and perspectives as represented by the current cognitive behavioral and social cognitive theories of human behavior. From these perspectives human action is not the result of either internal forces or external influences but rather represents reciprocal interactions between personal determinants such

as thoughts and feelings (internal forces) and environmental factors (external forces).

Since the publication of Bandura's (1977a) seminal work on social learning theory and the presentation of the model of reciprocal determinism there has been a steady growth in interest and research on the interrelationships between personal factors, behavior, and environmental influences as interacting determinants of human action. Over the years much work focused on selected pairs of the triadic determinants such as environment and behavior, personal factors and environment, and behavior and personal factors. From these efforts arose the realization that behavior is also determined in part by the interactions between components of the primary determinants environment, behavior and personal factors. As a result, increased attention is being paid to the processes that operate between elements within each of the primary determinants. Representative of this increased interest are studies extending the model of reciprocal determinism to investigations of the interrelationships between self or personal factors. Within this particular area of study the personal factor of perceived self-efficacy plays a role of central importance. Perceived self-efficacy is an individual's judgment of his or her capability of using the skills he or she possesses to perform a designated behavior.

"Among the different aspects of self-knowledge, perhaps

none is more influential in people's everyday lives than conceptions of personal efficacy" (Bandura, 1986, pp. 390). Despite this emphasis and the considerable body of theory and research which has grown around the construct of self-efficacy, much remains to be discovered regarding the interrelationships between self-efficacy and other personal factors. Most notably there is a paucity of empirical data pertaining to the influence of mood on perceptions and judgments of self-efficacy. Findings presented from prior work are equivocal and have been challenged on the basis of methodological issues (Wright & Mischel, 1982; Kavanagh & Bower, 1985). One concern revolves around the use of mood induction procedures which have been criticized for their demand characteristics and inconsistency in producing mood change (Polivy & Doyle 1980; Buchwald, Strack and Coyne, 1981; Clark, 1983; Kenealy,1986)

NEED

The present study of the effects of mood on judgments of self-efficacy was of both theoretical and practical importance. Direct evidence of the impact of mood on self-efficacy expectations would provide support for Bandura's (1977a) model of reciprocal determinism and enhance its application in predicting and explaining behavior. If mood affects judgments of self-efficacy there is the potential for using mood elevating processes to promote positive

perceptions of self-efficacy and, according to social learning theory, subsequently influence the effort and persistence applied to learning new behaviors. Given the equivocal findings of previous investigations there remained a need for continued efforts to clarify the nature of the relationship between percepts of efficacy and affect.

The ongoing controversy regarding commonly used mood induction procedures in the study of effects of mood on cognition and behavior pointed to the need for continued investigations of alternative techniques. Documentation of effective alternatives would increase the options available to future researchers.

PURPOSE

The purpose of this research was two-fold. The first purpose was to determine the differential effect of varying mood states on individual judgments of personal efficacy regarding a range of activities. Do individuals' moods determine whether they view themselves as efficacious or nonefficacious? When happy or elated are they more likely to see themselves as competent than when they are feeling sad or down? If so, what are the implications for applying social learning theory to endeavors such as the treatment of depression or the design of training programs. The second purpose of the study was to provide additional validation of

a musical, nonverbal mood induction technique (Pignatiello, Camp & Rasar, 1986). Analogue studies of mood have been consistently criticized because of demand characteristics associated with commonly used mood induction procedures. A method of mood induction devoid of demand characteristics would provide a valuable tool in future analogue studies of mood and enhance the credibility of reported findings.

OVERVIEW OF THE THEORY

Bandura (1977b) hypothesized that psychological and behavioral changes arising from different modes of treatment could be accounted for as a result of alterations in the common cognitive mechanism, self-efficacy expectations, i.e., "... the conviction that one can successfully execute the behavior required to produce the outcomes" (pp. 193). Expectations of personal efficacy determine whether a behavior will be started, how much effort will be put into the behavior, and how persistent the effort will be. He proposed four sources of efficacy information: performance accomplishments, vicarious experience, verbal persuasion and physiological arousal. Moods and affective states are included as determinants of self-efficacy expectations under the category of physiological arousal. Of the many relationships existing between personal factors which contribute to human action, that between self-efficacy expectations and mood has begun to receive increased

attention from researchers interested in the application of social learning theory as a means of explaining human behavior. Bandura (1986) states that the impact of mood on percepts of self-efficacy is widespread. Depressive affect can lower perceptions of efficacy which give rise to inferior performance that in turn creates even greater despondency. On the other hand a positive mood can enhance perceptions of self-efficacy thus improving performance and leading to an even more positive emotional state.

Early research on the interrelationships between personal factors has provided strong support for the contention that mood influences judgments of self-efficacy. Yet this research has failed clearly to separate the relative impact of cognitive and emotional factors. Wright and Mischel (1982) examined the influence of affective states on efficacy expectations, estimates of past success, and self-evaluation subsequent to positive and negative (success and failure) performance outcomes. Subjects generated neutral, negative, or positive moods by imagining situations in which they had previously experienced the desired affect. A self-evaluation questionnaire was administered immediately after the mood induction. Subjects then performed a series of perceptual tasks requiring them to determine whether pairs of 3-dimensional figures, shown in various angles of rotation, were the same or different. They received bogus feedback regarding the success or

failure of their performance depending on the condition to which they had been assigned. Following each of five sets of items, subjects rated past performance and predicted their performance for the next set of items. After completion of all sets subjects estimated their overall performance. As the authors hypothesized, subjects in the success/positive mood condition reported higher estimates of success, more positive self-evaluations and higher expectancies of future success than did subjects in the failure/negative mood condition. Of more interest however, were the differences in expectancy levels between positive and negative affect conditions when mood and outcome feedback were mismatched. Subjects in the success/ negative mood condition reduced their expectancies of success to a level below actual performance outcomes while subjects in the failure/ positive mood condition raised their expectancies of future success above actual performance outcomes. Wright and Mischel (1982) concluded that as hypothesized immediate feeling states exert a strong influence on expectations about performance. However, they also noted a possible alternative explanation for the results. Subjects' beliefs about how positive or negative moods should influence behavior may have been activated by the mood induction procedures and biased the judgments of subsequent performances. Subjects believing a negative mood should interfere with future performance may have lowered their efficacy expectations and subjects believing a

positive mood should enhance performance may have raised their efficacy expectations thus accounting for the differences between the groups. The process of requesting subjects to imagine a situation and reproduce the associated mood may have contributed as much to the differences in post-manipulation measurements of performance expectations as the mood itself. Employment of a mood induction technique circumventing possible demand characteristics would have enhanced the credibility of the authors' conclusions.

Kavanagh and Bower (1985) reviewed Wright and Mischel's work and criticized it for the failure to adequately distinguish the relative contributions of mood and cognition as determinants of efficacy expectations. They suggested that a person's prevailing mood may interact with feedback about success or failure at a task and thereby alter efficacy expectations regarding future performance of the task. This contributes further to the difficulty of discerning the relative contributions of cognitive versus emotional factors in the determination of perceptions of self-efficacy. Kavanagh and Bower (1985) reasoned that outcome experiences have the greatest impact on judgments of efficacy for the same task and decreasing influence on ratings made for tasks that are increasingly dissimilar. They proposed that the impacts of emotional and cognitive elements influencing efficacy expectations could be

separated by inducing positive and negative moods through recall of highly emotional success or failure experiences in one area of activity and then examining efficacy expectations for activities which are similar and dissimilar to the recalled activities. They hypothesized that increases or decreases in perceived efficacy for dissimilar activities would reflect the influence of mood. Kavanagh and Bower (1985) induced positive, negative, and neutral moods by having subjects, while hypnotized, recall feelings associated with romantic success or failure experiences or a neutral experience. All subjects experienced each manipulation. After each mood manipulation, subjects completed one of three parallel forms of a questionnaire designed to assess self-efficacy expectations for romantic activities, interpersonal activities, and athletic/other activities. Analysis of the efficacy scores revealed significant effects for mood on judgments of self-efficacy for all areas of activity. As subjects' moods changed from sad through neutral to happy, perceptions of self-efficacy increased and generalized from similar activities to dissimilar activities. While these findings do offer evidence of the influence of mood on judgments of self-efficacy and corroborate the conclusions of Wright and Mischel (1982) they remain open to a common criticism. Cognitive factors produced as artifacts of the mood induction procedure employed may account for the differences between groups. The mood induction procedure may have

induced cognitive sets within the subjects leading to the increases and decreases in judgments of self-efficacy (Rholes, Riskind, & Lane, 1987). Of particular importance is the fact that subjects were specifically requested to recall success and failure experiences. Focusing on one's ability or inability to perform is likely to have greater impact on judgments of efficacy in future activities than if one were to focus on a sad or happy event unrelated to personal performance.

Despite the contributions Wright and Mischel (1982) and Kavanagh and Bower (1985) made to understanding the influence of mood on judgments of self-efficacy, they have failed to disentangle the relative contributions of emotional factors and cognitive factors in the determination of those judgments. This author suggests that the use of the nonverbal musical mood induction procedure in this investigation of the relationship between mood and percepts of efficacy surmounts the criticisms to which earlier studies are subjected. The nonverbal nature of the induction procedure mitigates against the formation of cognitive biases which derive from reading self-referent statements or recalling past success and failure experiences. Not informing subjects that a change in their mood is expected, significantly reduces the likelihood that responses to posttreatment measures reflect personal beliefs about how a depressed or elated person should respond.

Differences in posttreatment responses then reflect the influences of varying mood states as opposed to cognitive sets elicited by manipulation procedures.

With a growth of interest in cognitive and cognitive-behavioral therapies (Ellis, 1973; Mahoney, 1974; Beck, 1976; Meichenbaum, 1977) came a corresponding interest in developing laboratory analogues of affective disorders, especially depression. Goodwin and Williams (1982) reviewed the literature on four techniques used to produce depressed moods: reading depressing self-referent statements; remembering past unpleasant events; listening to a taped depressing story; and failure on a task. Although they concluded that these procedures appear to be viable means of producing depressed moods, great differences are found in the reported effects on behavior, memory, cognition and related variables. Kenealy's (1986) review of experimental findings regarding the effectiveness of the Velten Mood Induction Procedure (VMIP; Velten,1968), used to induce depressed, elated and neutral moods, is no more encouraging. She concluded the reported findings relevant to the procedure's effectiveness are generally inconsistent and equivocal. On a more positive note, in a study comparing a musical mood induction procedure and the VMIP, Clark (1983) found that the musical procedure induced moods comparable to those generated by the VMIP and to do so more reliably for nearly all subjects. Albersnagel (1988) also reported

results supporting the superiority of a musical mood induction procedure over the VMIP.

Pigntiello, Camp, and Rasar (1986) developed a nonverbal musical mood induction procedure as an alternative to the widely used VMIP (Velten, 1968). They reasoned that a nonverbal musical mood induction procedure would provide a means for circumventing the criticisms to which the VMIP and other cognitive techniques are frequently subjected. By not telling subjects of the purpose of the music, the demand characteristics inherent in other techniques were avoided. The nonverbal nature of the procedure mitigated against the formation of a cognitive bias or cognitive priming. Employment of this manipulation in the current examination of the relationship between mood and self-efficacy expectations provided a means to more clearly assess the contribution of mood in the determination of efficacy expectations apart from the contribution of cognitive biasing or cognitive priming.

Clarification of the relationship between mood and percepts of efficacy has both theoretical and practical implications. The predictive power of social learning theory is enhanced through an increased understanding of the role affect plays as a determinant of self-efficacy expectations. According to social learning theory, knowledge of whether elated affect increases perceptions of

self-efficacy or depressed affect reduces those perceptions should facilitate predicting whether behavior will be initiated, how much effort may be expended, and how long efforts might be sustained. Knowledge of this nature is especially pertinent to behavioral and cognitive/behavioral treatments of psychological disorders. The ability to gauge the effect of mood on efficacy expectations can provide a basis for making clinical judgments regarding which facet of personal functioning, i.e., cognitive, behavioral, or affective might first be targeted in treatment to most expeditiously alleviate behavioral and emotional problems. Similarly knowledge of this nature would also be pertinent to the design and implementation of training programs. Producing an elated mood and concomitantly strengthening percepts of self-efficacy may increase the likelihood that an individual will attempt a new skill, try harder to master it, and persevere in his or her attempts.

RESEARCH HYPOTHESES

The research hypotheses for the present study correspond to the purposes of validating a nonverbal, musical mood induction procedure (Pignatiello, Camp & Rasar, 1986) and examining the differential effects of varying mood states on judgments of self-efficacy.

It was hypothesized that subjects exposed to music selected for its mood depressing characteristics would report higher levels of depressed affect than subjects exposed to music selected for its mood elating characteristics or subjects exposed to music selected for its neutral characteristics. Subjects exposed to elating musical selections were expected to report lower levels of depressed affect than subjects exposed to neutral musical selections. Additionally subjects exposed to depressing music were expected to write fewer numbers during a number writing task than subjects hearing neutral music who, in turn, would write fewer numbers than subjects hearing elating music.

On the basis of prior research (Wright & Mischel, 1982; Kavanagh & Bower, 1985) it was predicted that subjects in the depressed affect condition would exhibit lower self-efficacy expectations than subjects in the neutral condition and subjects in the elated affect condition. Subjects in the elated affect condition were expected to exhibit higher self-efficacy expectations than subjects in the neutral condition.

OVERVIEW OF THE THESIS

The remainder of the research is presented as follows: in Chapter 2 relevant research on the relationship between

mood and self-efficacy expectations is reviewed, in Chapter 3 the methodology, design, measures, procedures, and data analysis are described, in Chapter 4 results of the data analysis are presented and in Chapter 5 results are discussed together with their implications for research and application.

CHAPTER II

REVIEW OF LITERATURE

SELF-EFFICACY AND MOOD

Bandura (1977b) hypothesized that psychological changes arising from diverse modes of treatment may be accounted for by a common cognitive mechanism. He suggested that psychological procedures, regardless of their form, alter the level and strength of self-efficacy expectations. An efficacy expectation is the belief that one can successfully perform a behavior. It was hypothesized "... that expectations of personal efficacy determine whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experiences." (Bandura, 1977b, p. 191). Within the model four sources of information were identified as contributing to efficacy expectations: performance accomplishments, vicarious experience, verbal persuasion, and physiological states. Using this model researchers began to explore the relationship between perceived self-efficacy and behavioral change.

Assessments of individuals' personal judgments regarding their ability to perform behaviors necessitates

the use of a self-report format. Whether behaviors in question are athletic performances (Barling & Abel, 1983; Feltz, 1982), intellectual tasks (Davis & Yates, 1982) or approaching a feared object (Bandura & Adams, 1977; Bandura, Reese, & Adams, 1982), measurement of self-percepts of efficacy is straightforward and uncomplicated. Subjects are provided lists of performance tasks and asked to rate the strength of their beliefs regarding their ability to accomplish those tasks. A certainty scale, reflecting probabilistic judgments, is employed. For each task a subject rates his or her expectations of success in performing the behavior. The range of the scale is usually from 0 (certain they cannot do it) to 100 (certain they can do it). Despite the simplicity of this approach it has been found to be a reliable means for assessing self-efficacy (Bandura, 1984) and proves to be a useful tool in furthering the understanding of the interplay between judgments of self-efficacy and behavior.

As noted by Wilson (1978), Rosenthal (1978), Bandura (1978) and Borkevec (1978), one of the most promising uses of self-efficacy theory is in the prediction of behavioral change and, indeed, much early research focused on self-efficacy estimates as predictors of treatment outcome. Bandura and Adams (1977) reported the results of two studies designed to test the self-efficacy theory of behavioral change as it applied to treatment of snake phobias. With

the first study they found that systematic desensitization created and strengthened expectations of personal efficacy and in turn self-efficacy was a highly accurate predictor of behavioral change following complete desensitization. In a second study they investigated the relationship between self-efficacy and behavioral change as a function of a participant modeling treatment course. Again, increases in self-efficacy, effected by the treatment, proved to be a reliable predictor of behavioral improvement. Expanding on the original work Bandura, Adams, Hardy, and Howells (1980) tested the generalization of self-efficacy theory across additional treatment modalities and different behavioral domains. A cognitive modeling procedure, used in the treatment of snake phobias, resulted in increased efficacy expectations which in turn predicted subsequent improvement in performance on behavioral tasks. Similar results were obtained in a study of an enactive mastery treatment program for agoraphobia (Bandura et al., 1980). Self-efficacy expectations have continued to be investigated as predictors of performance across a wide range of activities including athletics (Barling & Abel, 1983; Feltz, 1982), smoking cessation (Condiotte & Lichenstein, 1981; Godding, Glasgow, & Klesges, 1985), assertiveness (Lee, 1983) pain tolerance (Manning & Wright, 1983), and salesmanship (Barling & Beattie, 1983).

Along with the continued attention paid to self-efficacy as a predictor of performance there has been an expanding interest in the interaction between emotions and personal percepts of efficacy. Although emotional arousal has always held a place in self-efficacy theory, early expositions and research focused almost exclusively on the affects fear and anxiety (Bandura, 1977a, 1977b: Bandura & Adams, 1977; Bandura et al., 1980). More recent investigations have widened the study of emotion and self-efficacy to include the affects sadness and happiness. The growing body of knowledge regarding the interplay between affect and cognition, developing from the work on the etiology and treatment of depression, lends impetus to this line of inquiry. While the first study to be reviewed deals with the syndrome of depression as opposed to depressed affect or mood, per se, the findings are relevant to understanding the relationship between mood and percepts of efficacy and points to the need for elucidation of the contribution of mood in the determination of those percepts. For the purpose of this manuscript the terms "depression" or "depressed" will be used to indicate the clinical syndrome and the terms "depressed mood" or "depressed affect" will be used when referring to the emotional state.

Zeiss, Lewisohn, and Munoz (1979) noted in a review of studies of diverse approaches to the treatment of depression, all of which were found effective, that a common

assumption was made, i.e., therapeutic effects were obtained because the specific target behaviors had been influenced. Unfortunately, it was not shown within the studies that the target behaviors were selectively affected but only that depression level changed in the predicted direction. Zeiss et al. (1979) suggested, "An equally plausible explanation is that the treatments work because they elevate the client's sense of self-competence" (p. 428). They conducted a study to examine the relative efficacy of three approaches to treating depression and the degree to which the treatments were target specific. Depressed outpatients were randomly assigned to one of three treatments: (a) a treatment designed to increase the frequency of the client's pleasant, mood-related activities; (b) a treatment aimed at increasing assertiveness, social interaction, and positive social impact; (c) a treatment aimed at changing a client's cognitions. Subjects in each condition were assessed on pleasant activities variables, interpersonal skill variables, cognitive variables and change in depression level. Zeiss et al. (1979) found the treatments to be equally effective in alleviating depression but nonspecific in their effects on target behaviors. They hypothesized that the effectiveness of the treatments was unrelated to the particular skills taught in each program but rather due to an increase in positive experiences which clients attributed to their increased self-efficacy.

Further indications of a potentially significant relationship between mood and self-efficacy were provided by Kanfer and Zeiss (1983) in a study investigating the relationship between standard setting and judgments of self-efficacy in depressed and nondepressed individuals. Kanfer and Zeiss (1983) noted that depending on the theoretical model of depression adopted, lowered levels of self-efficacy expectations are explained in different ways. According to Beck (1967, 1976) depressed individuals set unrealistically high standards of performance and as a result view themselves as unable to perform efficaciously regardless of actual behavioral skills or abilities, i.e., distorted performance standards yield low levels of perceived self-efficacy. If, however, one subscribes to the model of depression proposed by Lewinsohn (1974; Lewinsohn & Hoberman, 1982), the low levels of perceived self-efficacy associated with depression are accurate assessments of an individual's behavioral deficiencies which lead to low levels of positive reinforcement and subsequent depression. Both theories suggest that depressed persons would be expected to exhibit larger discrepancies between personal behavioral standards and perceived self-efficacy than would nondepressed individuals. For Lewinsohn (1974) the discrepancy is the result of a lowering of efficacy expectations for a depressed person as compared to a nondepressed person. From Beck's (1976) perspective the discrepancy is due to the higher, unrealistic performance

standards held by the depressed person as compared to the nondepressed person.

Kanfer and Zeiss (1983) tested Beck's (1976) and Lewinsohn's (1974) formulations by comparing depressed and nondepressed students' ratings of what they believed constituted adequate personal performance for behavioral tasks and their ratings of self-efficacy for the same tasks. Subjects were 78 undergraduate psychology students assigned to a depressed condition or nondepressed condition on the basis of scores obtained on the Beck Depression Inventory (BDI; Beck, 1967). Experimenters presented subjects with a questionnaire consisting of a total of 161 items identifying overt and covert behaviors related to three situational contexts: home, social and work settings. To determine their minimal performance standards experimenters asked subjects what behaviors they should be able to perform in order to feel satisfied and then had them rate how well they should be able to perform those behaviors. As a measure of self-efficacy subjects identified all items they could presently perform and then rated how well they could perform each task. Depressed subjects were found to express a lower level of self-efficacy compared to nondepressed subjects. However, depressed and nondepressed subjects did not differ on their ratings of standards of performance. Depressed subjects were found to have significantly higher performance standard scores than perceived self-efficacy scores

indicating that the depressed subjects held higher standards than they believed themselves capable of achieving. Performance standards and perceived self-efficacy did not differ for the nondepressed group. In the discussion of their study Kanfer and Zeiss (1983) concluded that their findings partially supported Lewinsohn's (1974) position in that depressed individuals held performance standards similar to nondepressed individuals rather than exaggerated standards as hypothesized by Beck (1976). At the same time they noted data was lacking regarding the cause of the discrepancy between behavioral standards and percepts of efficacy. While it is clear depressed individuals view themselves as inefficacious it remains unknown whether this condition precedes the depressive syndrome, is caused by the depressive syndrome, or is more directly related to a third variable. A possible causative factor for the lowered levels of self-efficacy expectations may be the sad, blue, or depressed affect which is a ubiquitous feature of clinical depression.

In a study of self-efficacy and mood Davis and Yates (1982) approached the issue by manipulating levels of self-efficacy and outcome expectations and then measuring changes in affect. College students were assigned to one of nine groups corresponding to a 3x3 experimental design. High, low and no manipulation levels were included for both efficacy expectancies and outcome expectancies regarding an

anagram solving performance task. Researchers assessed depressive affect before and immediately after manipulations and again at the end of treatment sessions. They measured efficacy expectations and outcome expectations separately before, during and after manipulations. According to self-efficacy theory Davis and Yates (1982) hypothesized that the combination of low self-efficacy expectations and high outcome expectations would result in subjects experiencing depressive affect as measured by the Depression Adjective Check Lists (DACL; Lubin, 1967). This hypothesis was supported in their findings but only for males. When male subjects had been presented with graphs suggesting anagrams were easily solved by other students (high outcome expectancy manipulation) and then presented with very difficult anagrams to solve (low self-efficacy manipulation) the combination resulted in significantly higher depressive affect and performance deficits as compared to other manipulation combinations and women. Males within this cell took longer to solve anagrams, solved fewer anagrams, and scored in the clinically depressed range on the DACL. Interestingly, while not hypothesized by the authors, males experiencing the low self-efficacy manipulation with no manipulation of outcome expectancies also reported depressed affect but did not exhibit performance deficits. Although the authors could only speculate as to the cause of differences in results related to gender, their findings, for males at least, clearly support the hypothesis that

lowered expectations of self-efficacy contribute to the formation of depressed affect.

Following social learning theory and in accordance with the concept of reciprocal determinism Kavanagh and Bower (1985) examined the impact of mood on judgments of self-efficacy concerning a variety of activities. Their approach was directly opposite that of Davis and Yates (1982) in that they manipulated mood and then measured the effects on percepts of self-efficacy. With consideration of recent knowledge about the impact of emotions on memory (Bower, 1981) they hypothesized that mood was instrumental in determining how individuals evaluate and interpret efficacy information. According to a mood dependent theory of memory (Bower, 1981) emotions aroused by a recalled success or failure experience would bias the retrieval of other success and failure experiences and in part determine whether an individual would feel efficacious or inefficacious. Kavanagh and Bower (1985) hypothesized that the mood accompanying the recall of a romantic success or failure experience would influence judgments of self-efficacy for other romantic situations and also generalize to dissimilar situations such as social interactions and athletic activities. It was expected that sad subjects would perceive themselves as least efficacious and happy subjects view themselves as most efficacious across all activities. Under hypnosis, subjects were instructed to

recall success and failure experiences together with the happy and sad feelings respectively associated with them. A neutral mood induction treatment was also included in which subjects imagined themselves reading a textbook and feeling neutral. Sixteen subjects were randomly assigned to varying orders of mood inductions with all subjects experiencing each manipulation. Following each mood induction subjects rated their perceived self-efficacy on one of three equivalent forms of a self-efficacy questionnaire. Two subjects were allotted to each mood order and each form of the questionnaire was completed by equal numbers of happy, sad, and neutral subjects. The self-efficacy questionnaires consisted of fifteen items with five items per questionnaire reflecting activities in the areas of romantic situations, social skills/assertion activities, and athletic/other activities. Experimenters informed subjects that the experiment was designed to test the effects of hypnosis on handwriting. After completion of all manipulations experimenters assessed the subjects' levels of awareness of the true purpose of the experiment. Four of the sixteen subjects reported some level of awareness of the true purpose and their data was subsequently withdrawn from the analysis of the results. Kavanagh and Bower (1985) applied contrasts to the data from their within subjects design and found that as the subject's mood varied from sad through neutral to happy, ratings of perceived self-efficacy increased for all situations. Further analysis revealed

efficacy expectations were significantly reduced for the sadness condition compared to the neutral condition and increased for the happiness condition compared to neutral condition. The authors concluded "Inducing a happy or sad mood through recollecting a romantic success or failure greatly influenced our subjects perceived self-efficacy not only for a wide range of specific romantic activities but equally strongly for a range of specific interpersonal skills and physical-athletic competencies" (Kavanagh & Bower, 1985, p. 517).

While the study by Kavanagh and Bower (1985) lends considerable support to the idea that perceptions of self-efficacy are directly influenced by an individual's mood two issues must be taken into consideration. First, and perhaps most importantly, no objective independent measures of the subject's mood were provided. Upon completion of the hypnotic mood induction procedures the subject's indication that he or she had reached the requested mood was taken as evidence of its existence. Secondly, a plausible alternative explanation exists that may account for the findings. It could be argued that the decreases and increases in self-efficacy expectations found were not due to the subject's affective state but rather were the result of cognitive priming, an artifact of the procedure employed to induce the moods. Kavanagh and Bower (1985) address this issue in the discussion of their results but dismiss

cognitive priming as a causative factor. This dismissal appears premature.

In studies of mood and memory (Riskind & Rholes, 1983; Riskind, Rholes, & Eggers, 1982) it was found that different mood induction techniques had equivalent effects in generating moods and levels of mood. It was suspected however, that the techniques resulted in different cognitive sets and therefore varied in their impact on the recall of life experiences. Rholes, Riskind, and Lane (1987) conducted a study to examine the effects of emotional states and cognitive priming on recall. The purpose of the study was to determine whether the impact of mood states on memory varied as a function of the cognitive mediators used to induce the moods. Following the administration of a mood questionnaire ninety-six undergraduate psychology students were exposed to one of five mood induction procedures (two positive, two negative and a neutral). The procedures were derived from the Velten Mood Induction Procedure (VMIP; Velten, 1968) and supplemented with items written by the authors. Under the positive condition half the subjects read statements that expressed positive self-evaluative thoughts and half read statements that described positive somatic states. In the negative condition half the subjects read self-devaluating statements and half read statements describing negative somatic states. All subjects in the neutral condition read nonaffective statements. Following

the mood inductions the affect rating scale was again administered. Subjects next recalled both positive and negative life experiences and recall latencies were measured. Recalled experiences were recorded and after completion of the experiment raters, blind to the treatment conditions, rated them on a positive/negative scale to assess mood content. The authors did not indicate whether experimenters were blind to the treatments administered or if any attempt was made to evaluate the potential influence of demand characteristics. While attention to these issues would bolster the confidence to be placed in the reported results they nevertheless warrant consideration.

As hypothesized Rholes et al. (1987) found that under the positive self-evaluative condition subjects recalled positive memories significantly faster than negative memories and under the negative self-evaluative condition they recalled negative memories significantly faster than positive memories. The authors found these effects regardless of the strength of the mood generated by the induction procedure. This was not the case for the negative somatic condition in which the recall latencies for negative memories were dependent on the level of mood generated. Rholes et al. had hypothesized that the somatic conditions would have little impact on memory retrieval relative to the self-evaluative conditions, predicting positive memories would be recalled faster than negative memories for both

somatic conditions. They found instead that when large changes in mood occurred in response to reading somatic statements subjects recalled negative memories faster than positive memories.

Rholes et al.'s (1987) demonstration of an interaction effect between mood and cognitive set in determining recall of positive and negative memories supports this author's contention that Kavanagh and Bower (1985) were premature in dismissing cognitive priming as a factor influencing their findings. Rholes et al.'s (1987) work substantiates the likelihood that the mood induction procedures employed by Kavanagh and Bower (1985) produced varying cognitive sets which subsequently influenced subjects' ratings of perceived self-efficacy. It seems reasonable to assume that the production of cognitions pertaining to self-efficacy are as vulnerable to the influence of cognitive priming as are the cognitions pertaining to recalled life experiences. At the same time the Rholes et al. (1987) study provides support for the hypothesis that mood is a determinant of cognitions be they recollections of life experiences or perceptions of self-efficacy.

The literature provides considerable evidence for the existence of a significant relationship between the personal factors of mood and percepts of self-efficacy yet much remains to be learned. In discussing the concept of

reciprocal determinism as it pertains to environment, behavior and personal factors Bandura states "It should be noted in passing that reciprocal processes also operate within each of the three constituent factors ... In the personal realm of affect and thought there exist reciprocal processes, as when frightening thoughts arouse internal turmoil that, in turn, breeds even more frightening thoughts." (Bandura, 1986, p. 26). It is not enough merely to note this in passing. Studies of depression (Beck, Rush, Shaw & Emery, 1979; Abramson, Seligman & Teasdale, 1978; Lewinsohn, Munoz, Youngren & Zeiss, 1978) show that the relationships which exist between affect and cognition are of profound importance. The bulk of the research to date has focused on the impact of cognitions on mood. For a more complete understanding of the relationship between affect and cognition it is equally important to explore the relationship from the opposite perspective. The study detailed in the following chapters was designed to accomplish that aim.

MOOD INDUCTION PROCEDURES

As evidenced by the Rholes, Riskind, and Lane (1987) study, when mood induction procedures are employed in analogue studies of the effects of affect on behavior and cognition it is often difficult to separate out the influence of the moods on dependent variables from the

effects due to the manipulation processes. This has long been an issue within the mood induction literature.

The most widely used mood induction technique, introduced by Velten (1968), is also the most researched and criticized (Polivy & Doyle, 1980; Buchwald, Strack, & Coyne, 1981; Goodwin & Williams, 1982; Clark, 1983; Kenealy, 1986; Berkowitz & Troccoli, 1986; Pignatiello, Camp, & Rasar, 1986; Albersnagel, 1988). The Velten Mood Induction Procedure (VMIP) consists of three similar components employed to produce elated or depressed moods or no change in mood. Each treatment is made up of 60 statements which subjects read aloud. The elation treatment consists of positive self-referent statements, eg., "This is great - I really do feel good - I am elated about things"; the depression treatment consists of negative self-referent statements, eg., "I have too many bad things in my life"; and the neutral treatment consists of statements that are neither self-referent nor pertaining to mood, eg., "Utah is the Beehive State" (Velten, 1968, p. 475). Velten (1968) randomly assigned subjects to five treatment conditions. Three groups received the mood manipulation treatments: elating, depressing, and neutral. Subjects read the sets of statements corresponding to the mood conditions and were asked to feel the mood described. To control for demand characteristics two groups of subjects were asked to act elated or depressed. Following manipulations, seven

measures of mood relevant behavior were made including assessments of affect, writing speed, distance approximation, decision time, perceptual ambiguity, word association, and spontaneous verbalizations. Results largely confirmed predictions and significant differences were found between elation and depression treatment means for five of the seven measures with neutral treatment means falling between those of the elation and depression groups for six of the measures. On the basis of his findings the author concluded the procedure was effective in inducing elated and depressed affect and provided a method for studying elation and depression within the laboratory. Since that time the VMIP has been extensively employed in the study of effects of particular moods on cognition and behavior but not without criticism. (For comprehensive reviews of the literature see Clark, 1983; Kenealy, 1986).

The VMIP has been most vehemently attacked for its demand characteristics. Polivy and Doyle (1980) replicated Velten's (1968) original work with the addition of two counter-demand groups in which subjects read the elation or depression statements but were told they would experience the opposite feelings of what the statements implied. The authors found that informing subjects they would experience the opposite of what the sentences suggest resulted in a disappearance of the significant moodlike behavior. There were no significant differences between the treatment means

of the counter-demand groups for any of the seven measures of mood-relevant behavior. Thus, the information pertaining to what the subject was likely to feel appeared to negate the effects of the induction procedure. Polivy and Doyle (1980) did not, however, completely dismiss the VMIP. They noted that although demand characteristics were present it did not mean that real emotional arousal was lacking but rather that demand characteristics contribute to the effects and inflate the measurements of them.

In another investigation, Buchwald, Strack, and Coyne (1981) concluded that apparent effects of the mood inductions may be entirely due to demand characteristics and the use of the VMIP to test relationships between mood and behavior or to experimentally manipulate mood is unwarranted. The authors argued that Velten's (1968) failure to provide equivalent instructions to control and experimental groups rendered the conclusions drawn from the comparisons invalid. Buchwald, et al. replicated Velten's (1968) study with modifications to control group instructions to correct for the inadequacy of the earlier investigation. They reported there was no evidence that the effects of the elation and depression procedures differed from those of the demand characteristics placed on the control groups.

Given the ongoing controversy surrounding the validity and use of the VMIP it is not surprising that alternative mood induction techniques have been sought. Goodwin and Williams (1982) reviewed the use of several depressogenic mood induction procedures. Three methods, in addition to the VMIP, were described: listening to a tape-recorded depressing story; manipulation of failure feedback; and recalling personal, unpleasant, mood-evoking experiences. Each was designed to affect mood through the manipulation of cognitions. Although concluding all procedures affected mood they also noted that demand characteristics inherent in the procedures obfuscate the true nature of the effects and confound the experimental findings regarding the impact of mood on behavior and cognition.

In addition to the aforementioned forms of cognitive manipulations several investigations have employed musical mood induction procedures. A review by Clark (1983) compared and evaluated the VMIP and one such musical procedure. The musical procedure, introduced by Sutherland, Newman, & Rachman (1982) involves playing mood suggestive music to subjects and asking them to use the music as a background to personal strategies for producing the desired affect (depressed, neutral or elated). Clark reviewed over thirty studies employing the Velten procedure and five employing the musical procedure. He reported that on measures of self-reported mood the musical induction

procedure produced results equivalent or superior to those obtained with use of the VMIP. Clark (1983) was able to directly compare the results of two studies which came from the same laboratory, drew on the same population for subjects, and employed the same self-report measures of mood but used different induction procedures, i.e., the VMIP and the musical. Using pre-induction mood ratings as the covariate, separate analyses of covariance were performed on subject's post-induction ratings of depressed and happy moods. Clark (1983) found the musical procedure had a significantly greater effect than the Velten procedure on depressed affect and on happiness. On the basis of other comparisons he found the musical procedure to have impacts similar to the VMIP on such variables as the accessibility of positive and negative cognitions, psychomotor retardation and activity preferences. The musical procedure was also found to affect estimates of past success, levels of incentive and estimates of the likelihood of future successes. Additionally, the comparisons revealed the musical manipulation affected larger numbers of subjects than did the Velten procedure with greater percentages of subjects reporting genuine mood changes in response to the musical procedure than the Velten procedure. Clark (1983) concluded the musical procedure induces moods similar to those generated by the VMIP with the advantage of affecting nearly all subjects exposed to it.

Albersnagel (1988), in an investigation of the effects of mood on thought association, compared the effectiveness of a musical mood induction procedure and a modified version of the Velten Mood Induction Procedure. One-hundred-eighty-four subjects were randomly assigned to either the musical or Velten induction procedure and within that condition were randomly assigned to one of four treatment levels: anxious, depressive, elated or neutral. Mood ratings were obtained from each group on four affects: anxiety, hostility, depression and elation. Using visual analogue scales, two measurements of mood were taken prior to administration of the treatments and two following treatments. The scales consisted of lines 10cm long labeled from 0 to 100% and anchored on each end with statements describing opposing moods, e.g. "At this moment I feel completely relaxed" and "At this moment I feel very tensed" (Albersnagel, 1988, p. 81). Subjects reported their mood by placing a vertical line on the scale corresponding to how they felt at the moment. Scales were scored by measuring line length in mm from zero point to the vertical line. Albersnagel (1988) found partial support for the hypothesized superiority of the musical procedure over the VMIP. The VMIP produced mood changes in the predicted direction for the anxious condition while the musical procedure did so for the anxious and depressed conditions. Analysis of mood change at an individual level also provided some support of the

hypothesized superiority of the musical mood induction procedure. More of the subjects in the depressed and elated conditions of the musical procedure showed appropriate mood change than did subjects in the comparable conditions for the Velten procedure. However, Albersnagel (1988) also reported that with respect to mood change indices for comparable conditions, a direct comparison of the procedures did not result in any significant differences, e.g., levels of anxiety generated with the VMIP did not differ significantly from those generated with the musical procedure. While not definitive, Albersnagel's (1988) findings, in conjunction with those of Clark (1983), enhance the feasibility of employing musical mood induction procedures in investigations of the effects of mood on behaviors and cognitions.

Pigntiello, Camp, and Rasar (1986) developed a nonverbal musical mood induction procedure as an alternative to the widely used Velten Mood Induction Procedure (Velten, 1968). Although the VMIP is frequently used in analogue studies of the effects of mood on behavior and cognition (Hale & Strickland, 1976; Riskind, Rholes, & Eggers, 1982; Madigan & Bollenbach, 1986; Cash, Rimm, & MacKinnon, 1986; Rholes, Riskind, & Lane, 1987) it is criticized for demand characteristics (Polivy & Doyle, 1980; Buchwald, Strack, & Coyne, 1981; Kenealy, 1986) and a lack of validation with male subjects (Pignatiello, et al, 1986). In view of this

Pignatiello, et al. created three, twenty minute audio tapes composed of musical selections chosen on the basis of musical characteristics. Each tape was designed to induce either elated affect or depressed affect or no change in affect. Two initial studies, conducted to examine the impact of the tapes on subjects' moods provided encouraging results. A total of 32 men and 48 women recruited from introductory psychology classes were randomly assigned to three treatment conditions corresponding to the expected effects of the tapes. The Beck Depression Inventory (BDI: Beck, 1967) was administered to assess pre-treatment levels of depression and to screen subjects. Prior to presentation of the tapes subjects were told they would be asked questions about music after hearing the tapes and then instructed to listen carefully. Subjects were not informed that the tapes were designed to alter affect. Immediately following the manipulations mood was assessed with the Depression Adjective Check List (DACL; Lubin, 1967). Subjects then performed a psychomotor task to provide a behavioral correlate of affect (writing numbers by 1's backwards from 100). As hypothesized, significant mood condition effects were found for the DACL scores in both experiments with the depressed condition subjects having higher scores than the neutral condition participants who in turn had higher scores than the elated condition participants. In the second experiment when pretest scores obtained on the psychomotor task were used as covariates in

an analysis of covariance significant differences between mood conditions were found. Subjects in the depressed affect condition wrote significantly fewer numbers than subjects in the elated affect condition and the neutral condition. On the basis of these findings the authors concluded that the musical mood induction technique appears to alter affect and offers a reasonable alternative to use of the VMIP in analogue studies. The importance of this manipulation lies in its ability to influence moods without subjects having to be instructed to create the moods. Therefore, when used in the study of the effects of moods on behaviors or cognitions it reduces the likelihood that experimental findings are confounded by demand characteristics.

SUMMARY

Research examining the relative efficacy of diverse approaches to the treatment of clinical depression and the degree to which the treatment effects were target specific led to the speculation that a common underlying factor may account for the similarity of success between them. The hypothesized common element is an increase in personal perceptions of self-efficacy; however, empirical evidence supporting this contention was not provided. This argument is indirectly supported through research which revealed that depressed subjects express significantly lower levels of

self-efficacy expectations than do nondepressed subjects. There remain, however, questions as to causal relationships between depression and self-efficacy expectations. Do low levels of self-efficacy precede the development of depression? Are they the result of a clinical depression? Or are they due to some other factor such as the sad or blue mood common to the syndrome? Several analogue studies have addressed the issue of the relationship between mood and self-efficacy expectations. Although results have been encouraging and authors conclude support for the hypothesis that depressed affect lowers percepts of self-efficacy, methodological concerns have limited the confidence which may be placed in their findings. The main drawback to the studies has been the use of mood induction procedures which fail to allow for a clear distinction between the effects of mood and the effects of demand characteristics and cognitive priming.

With the rise in popularity of cognitive behavioral and social cognitive theories came a corresponding increase in interest in examining the interrelations between mood, behavior and cognition and a need to develop procedures for producing laboratory analogues of naturally occurring affective states. Numerous analogue studies have been conducted studying the impact of mood on a plethora of variables despite the fact that the mood induction literature continues to abound with controversy regarding

the effectiveness of commonly employed procedures. Cognitive mood induction procedures are also soundly criticized for demand characteristics which confound the reported experimental findings. Efforts have been directed towards developing mood induction procedures which dispose of these criticisms. A particular focus is the development of nonverbal musical mood induction procedures. The research has demonstrated that musical mood induction procedures achieve effects similar to the cognitive techniques, but have fewer demand characteristics, affect greater numbers of individuals, and may be more generalizable in that they could be used with low-verbal or nonverbal populations. There is, however, a need for further evaluation and validation of these alternative procedures.

The between groups experiment, described in the next chapter, was designed to test a musical mood induction procedure and examine the affect of mood on judgments of self-efficacy. It was hypothesized that groups would differ in mood with subjects in the elated affect condition reporting more positive or happier moods than subjects in the depressed affect condition or neutral condition. Subjects in the depressed affect condition were expected to report more negative or sadder moods than subjects in the neutral condition. It was also hypothesized that subjects in the elation group would report the highest levels of

self-efficacy expectations while subjects in the depression group would report the lowest levels of self-efficacy expectations and the neutral group would fall in between. Groups were also expected to differ on performance of a number writing task with subjects in the elation group writing more numbers than subjects in the depressed condition or neutral condition and subjects in the depressed condition writing fewer numbers than subjects in the neutral condition.

CHAPTER III

METHODOLOGY

SAMPLE

Subjects were recruited from the population of students enrolled in introductory psychology classes at Michigan State University. All subjects were volunteers and received class credit for their participation in the study.

Table 1. Demographic Data for Treatment Groups

	Groups			
	Elation	Neutral	Depression	Total
Sex				
Females	16	14	16	46
Males	8	10	8	26
Total	24	24	24	72
Class				
Senior	3	1	5	9
Junior	5	7	4	16
Sophomore	5	5	6	16
Freshmen	11	11	9	31
Total	24	24	24	72
Mean age	19.46	19.25	19.71	19.47

The sample consisted of 72 undergraduates with an age range of 18 to 22 years old. Twelve potential subjects had pretest mood scores in the depressed range on the Depression Adjective Check List, Form E. These individuals were excluded from further participation in the study to avoid the possibility of exacerbating an existent depression. Demographic data is presented in Table 1.

EXPERIMENTERS

All subjects were run by the author and a female, masters' level psychologist who volunteered to serve as an experimenter. The experimenters familiarized themselves with the operation of the audio cassette recorder and the administration and scoring of instruments. Friends and acquaintances were recruited, and practice experimental sessions were run to establish timing and rehearse procedures. Practice sessions included the following: presentation of the initial explanation, administration of treatments and measures, scoring the instruments, and presentation of the concluding explanation. Experimenters were not blind to the specific mood induction treatments subjects experienced, nor were experimenters unaware of the research hypotheses.

MEASURES

Two primary measures were employed in the study. The Depression Adjective Check Lists (DACL; Lubin, 1967) and the Self-efficacy Questionnaire (SEQ; Kavanagh, 1983).

The DACL was chosen for the following reasons: First, having been designed as a state oriented measure of subjective mood (Lubin, 1981), it is well suited to the task of assessing the transient affective effects produced via the experimental manipulations. Second, the DACL is easily and quickly administered and scored. The instructions are clear and direct and the procedure for recording responses is simple and straightforward. Third, extensive literature exists providing evidence of the reliability and validity of the DACL as a measure of mood. As a brief state oriented measure of subjective mood it has been extensively employed in a wide variety of research contexts including studies of self-efficacy and mood (Davis & Yates, 1982) and the development of a nonverbal musical mood induction technique (Pignatiello, Camp & Rasar, 1986). Seven alternate forms of the DACL are available, three of which were employed in the current research. Each list consists of 34 adjectives which subjects check to indicate how they are feeling at the time of administration. Twenty-two adjectives reflect depressed or negative mood and twelve adjectives reflect positive or

elated mood. One point is scored for each negative adjective marked and each positive adjective left unmarked for a possible total score of 34 points. Higher scores indicate a more depressed or negative mood.

DACL forms E, F and G were selected for use in the study (Appendix A). Lubin (1981) reported split-half reliability coefficients for forms E, F and G of .89, .91 and .92 respectively. Correlation between forms range from .82 to .89 for females, from .86 to .89 for males and from .86 to .89 for males and females combined. As is desired of state oriented measures, the DACL was found to be sensitive to fluctuations in mood. Test-retest reliabilities were found to be .19 for form E, .24 for form F and .22 for form G following a one week test-retest interval (Lubin & Himelstein, 1976). In a study of the factors underlying the DACL (Roth & Lubin, 1982) analysis indicated the positive and negative adjectives constituted different dimensions, "depressed mood" and "elated mood", rather than bipolar positions on a single dimension. Given the above attributes, the DACL was an appropriate instrument for gathering the data on manipulation effects.

Alpha reliability coefficients for forms E and F for the present sample of scores were .73 and .83, respectively. The correlation between forms E and F was .32.

The dependent variable, self-efficacy expectations, was measured using the Self-Efficacy Questionnaire constructed by Kavanagh (1983) for use in a study of the impact of mood on judgments of self-efficacy. This instrument was selected because it (a) takes only a few minutes to administer, (b) is constructed according to the generally accepted procedure used to assess percepts of self-efficacy, (c) is available in three equivalent forms and (d) was developed for use and tested on an undergraduate student population. Two alternate forms of the questionnaire were employed, SEQ-A and SEQ-B (Appendix B). Each form consists of fifteen items describing behaviors associated with romantic situations, assertiveness, interpersonal interactions, athletics and other activities. For each item subjects rated their ability to perform the specified behavior. They answered the question "Can you do this now?" with a number from 0 (certain they cannot do it) to 100 (certain they can do it). The overall score for the instrument is arrived at by taking the average of the efficacy ratings across the 15 items. Kavanagh (1983) reported correlations between total scores on the forms ranging from .84 to .88 and alpha reliability coefficients for individual forms ranging from .74 to .94. For the current study the correlation between SEQ-A and SEQ-B was .68 and alpha reliability coefficients were .77 and .85, respectively. While the specific items differ, having subjects estimate their expected level of performance on behavioral tasks is the accepted means of assessing self-

efficacy expectations which has been successfully used in a number of studies (Bandura & Adams, 1977; Bandura, Adams, Hardy & Howells, 1980; Bandura, Reese & Adams, 1982; Davis & Yates, 1982).

A number writing task was employed as a behavioral correlate in the measurement of mood. This was selected on the basis of prior research, Velten (1968) and Pignatiello, Camp and Rasar (1986), in which it was demonstrated that mood had a significant affect on writing speed. Subjects were asked to write out numbers, by 1's, in descending order from 100, and are given one minute to do so (Velten, 1968). The score for the task is the total of numbers written during the one minute time period.

In addition to the primary instruments two additional forms were used. A form entitled Music Background Questionnaire (MBQ; Appendix C) was constructed by the author and used to obtain demographic data. Information gathered on the subjects' musical experience, training and preferences served to support the initial explanation of the study and distract subjects from the true purpose and hypotheses. The second form, developed by the author and labeled Debriefing Questionnaire (DQ; Appendix D), consisted of five items. Items 1 and 2 were designed to assess the subject's level of awareness regarding the true intent of the research and manipulations. For items 1 and 2

subjects' narrative responses to open-ended questions were rated and scored as either aware or unaware. The third item was used to determine whether subjects deliberately altered responses based on guesses about research hypotheses and were scored as either a "yes" or "no". The final two items, both 10-point Likert scales, were administered after subjects were debriefed. Item 4 was a reassessment of subject awareness in light of having been provided with an explanation of the true purpose of the study. Item 5 was designed to assess the subject's perception of his or her mood at the end of the experiment in comparison to their mood prior to being exposed to the mood manipulation procedures.

EQUIPMENT AND MATERIALS

The three audio tapes of musical selections produced by Pignatiello, Camp and Rasar (1986) were employed to manipulate mood. Each of the tapes, prepared and provided by the authors, is 20 minutes in length, begins with the same neutral selection and then proceeds through selections that become more elating, depressing or remain neutral. In developing the tapes, musical selections were chosen according to the consistency with which they were rated as depressing, elating or neutral on a 7-point Likert Scale. Interrater reliability coefficients for the final musical selections ranged from .84 to .91 (Pignatiello et al.,

1986). In two studies of this mood induction procedure Pignatiello et al. (1986) found a significant mood condition effect as measured by a self-report mood inventory.

The mood induction stimuli, musical selections, were recorded on Maxell UR cassettes and presented to the subjects on Wollensak audio cassette recorders (Model 2550) operated by the experimenters.

DESIGN

The study employed a between groups experimental design. Subjects were randomly assigned to one of three treatment groups corresponding to levels of the independent variable, mood induction treatment: elation tape, depression tape or neutral tape. The dependent variable, mood, was measured pre- and posttreatment. The second dependent variable, self-efficacy expectations, was also measured pre- and post-manipulation. A single postmanipulation measure was taken on the third dependent variable, writing speed. A manipulation check instrument was administered last.

PROCEDURE

Subjects were recruited from the Department of Psychology Subject Pool. Subject sign-up sheets were posted in classrooms just prior to the meeting times of

introductory psychology classes. Dates, times and the site of the experiment were listed on the sheets. Subjects volunteered to participate by selecting a date and time and placing their name and phone number in the appropriate spaces. Subjects were phoned the evening prior to their scheduled session to confirm the appointment.

Subjects were randomly assigned to mood induction conditions and run individually. The experimenter greeted the subject and then escorted him or her to a treatment room containing a table, two side chairs, a lounge chair and a cassette recorder. Subjects were then provided an explanation of the study according to a prepared script (Appendix E). Briefly, subjects were informed that music is playing an increasingly important role in several areas of psychology such as relaxation training, stress reduction and music therapy. They were told the researchers were interested in investigating the influence of personal factors on an individual's responses to varying types of musical selections. They were informed that several specific patterns of personal variables were previously identified and that the first series of instruments administered were used to screen for the presence of the patterns of interest. Subjects exhibiting the patterns of interest would listen to tape recorded music and answer questions about it afterwards. Subjects not exhibiting the pattern of interest would be excused following screening and

given credit for their participation. These conditions were presented so that subjects scoring greater than or equal to 13 on the initial administration of the Depression Adjective Check List (DACL) could be excluded from the mood manipulation. This was done in order to avoid exacerbating the existent dysphoric mood, indicated by the DACL score, without unduly alarming the subject about his or her mood state.

Subjects agreeing to participate at this point were given a copy of the Research Consent Form (Appendix F), had it explained to them and were asked to sign it. Subjects were then presented with a copy of the DACL-E. The experimenter went over the instructions with the subject and then had them complete the instrument. The experimenter next presented the subject with Form A of the Self-Efficacy Questionnaire, (SEQ-A) and then the Music Background Questionnaire (MBQ). For each instrument the experimenter went over the directions with the subject before they completed it. While the subject completed the SEQ-A and the MBQ the experimenter scored the DACL-E. Subjects scoring greater than 13 on the DACL-E were excused and given credit for participation. Subjects with scores of 13 or less proceeded with the experiment.

Experimental subjects were seated in the lounge chair and given the following instructions:

> "Your task is a simple one. You are to listen to a series of musical selections. Attend closely to the music. After listening to the entire set, which takes about 20 minutes, you will be asked some questions about it. Do you have any questions? Fine, then let's begin."

Depending on the random assignment the subject was then presented with one of the three audio tapes designed to alter affect. Experimenters turned on the tape, set a timer, and left the room for the duration of the tape.

At the end of twenty minutes the experimenter returned to the room and seated the subject at the table. Following procedures identical to the initial assessments the experimenter presented alternate forms of the mood and self-efficacy measures, the DACL-F and the SEQ-B, respectively. The presentation of the measures was alternated to control for order effects. Upon completion of these instruments the experimenter presented the number writing task. The subject was provided with a blank sheet of typing paper and given the following instructions:

> "On this sheet of paper I would like you to begin with the number 100 and write numbers in descending order, by 1's, until I have enough. I will tell you when to stop. Do you have any questions? Fine, please begin."

The experimenter surreptitiously started a timer and at the end of one minute asked the subject to stop.

The subject was then informed that the experiment was over but there was one last form to be completed. He or she was presented with the Debriefing Questionnaire (DQ) and completed the first three items. The subject was then asked to wait while the experimenter called in the primary researcher. The primary researcher provided an explanation of the true nature and purpose of the experiment and administered the last two items of the DQ. The subject was thanked, given credit for his or her participation and dismissed.

HYPOTHESES

It was expected that the groups would differ significantly on measures of both mood and self-efficacy. It was predicted that subjects in the depressed affect treatment group would experience a negative mood and score higher on the DACL-F than subjects in the neutral and elated affect treatment groups. Subjects in the neutral treatment group were predicted to score higher on the DACL-F than subjects in the elation treatment group. Differences in mood states were also expected to be reflected in subjects' performances on the number writing task. It was predicted that subjects exposed to the depressed mood induction treatment would

write significantly fewer numbers than subjects exposed to either the neutral induction treatment or the elated mood induction treatment. Subjects in the neutral treatment group were predicted to write fewer numbers than subjects in the elated mood group. For measures of self-efficacy expectations, it was predicted that subjects in the depressed mood treatment group would score lower than subjects in the neutral group and subjects in the elated mood group. Subjects in the neutral group were predicted to score lower than subjects in elated mood group.

ANALYSIS

Analysis of the data proceeded in two steps, each described in the following section.

Preliminary Analyses

Several analyses of pre- and post-manipulation data were conducted to test for potential effects due to subject gender, experimenter gender, subject gender x experimenter gender interaction, and order of instrument presentation. Separate, 2x2, analyses of variances were conducted on pre-manipulation data from the DACL-E and the SEQ-A using subject gender and experimenter gender as the variables. One-way analyses of variances were performed on post-manipulation data from the DACL-F and the SEQ-B employing order of presentation as the variable. Tests of the pre-

manipulation equality of groups on measures of mood (DACL-E) and self-efficacy expectations (SEQ-A) were performed with separate one-way analyses of variances.

Primary Analyses

Two models were used in the analyses of the primary hypotheses, i.e., those predicting the effects of mood on judgments of self-efficacy and on writing speed and those predicting the effects of the induction manipulations on mood. The hypotheses relating to the affects of mood on self-efficacy expectations, and those regarding the effectiveness of the mood induction manipulations, were analyzed using the method of analysis of covariance (ANCOVA) with pretreatment measures on self-efficacy expectations and mood serving as covariates, respectively. Assumptions underlying ANCOVA, identical to those underlying the analysis of variance (ANOVA), are that residuals are normally distributed with equal variance and are independent of each other. Additional assumptions are made about regression effects. It is assumed the separate regression lines for the groups each have the same slope and the relationships between the dependent variables and covariates are linear.

The hypotheses relating to the writing speed task were analyzed using a one-way analysis of variance.

SUMMARY

In Chapter 3 the sample, experimenters, materials and equipment were described. The nature of the measures used, their scoring procedures and prior validation work done on them was reviewed. Subject assignment to groups and the application of experimental manipulations were summarized and described along with the procedures for administering instruments. Three sets of hypotheses were presented, one set pertaining to the effects of mood on judgments of self-efficacy, a second set pertaining to the effects of mood induction procedures and a third set pertaining to the effects of mood on writing speed. Preliminary and primary methods of analysis were reviewed. In Chapter 4 the results of the analyses are presented.

CHAPTER IV

RESULTS

The primary questions of this research concern the differential effects of varying moods on judgments of self-efficacy. Does an elated mood strengthen percepts of self-efficacy? Does a depressed mood weaken personal expectations of self-efficacy? Secondary to the main line of inquiry were questions regarding the validity and effectiveness of a nonverbal, musical mood induction procedure. Does this procedure produce analogues of elated and depressed affect with the consistency and reliability necessary to warrant its continued use in the experimental manipulation of mood?

The results of this study, on which answers to the above questions were based, are presented in the following chapter starting with preliminary analyses followed by the primary analyses and tests of the hypotheses at the .05 level of significance.

PRELIMINARY ANALYSES AND MANIPULATION CHECKS

Preliminary analyses were conducted to determine if groups differed in mood or self-efficacy at pretest. Means and standard deviations for pretest measurements are

provided in Table 2. A one-way analysis of variance, performed on DACL-E scores of the three groups indicated that no pretest differences existed, $F(2,69) = 2.46$, $p < .09$. A separate analysis of variance conducted on SEQ-A scores for the three conditions revealed no significant differences between groups, $F(2,69) = .096$, $p < .91$. While no significant differences in mood or self-efficacy expectations existed between groups at pretest, analysis of the data as a function of subject gender revealed that females scored significantly lower than males on the measure of self-efficacy, $F(1,69) = 8.89$, $p < .004$. Consequently gender is included as an independent variable in the final analysis of self-efficacy expectations. No differences were found to exist between the mean mood scores of males and females at the time of the pretest, $F(1,69) = 2.57$, $p < .11$. ANOVA tables are presented in Appendix G.

Tests for homogeneity of variances among treatment populations were conducted on prettest data for the mood and self-efficacy measures. No significant differences were found to exist among the groups. Cochran's Test for Homogeneity of Variance yielded the following test statistics, for the DACL-E, $C(3,23) = .4$, $p < .59$ and for the SEQ-A, $C(3,23) = .39$, $p < .72$.

Table 2. Pretest Means and Standard Deviations for the SEQ-A and DACL-E

	Measures			
	SEQ-A		DACL-E	
Group	M	SD	M	SD
Elation				
Males (n=8)	68.67	10.37	7.25	3.61
Females (n=16)	55.73	15.27	7.12	3.18
Combined (n=24)	60.04	14.95	7.16	3.25
Neutral				
Males (n=10)	66.33	9.56	4.70	2.83
Females (n=14)	53.86	10.27	9.00	3.16
Combined (n=24)	59.06	11.63	7.20	3.67
Depression				
Males (n=8)	64.66	19.51	5.87	3.72
Females (n=16)	58.89	12.65	5.06	2.81
Combined (n=24)	60.82	15.09	5.33	3.08
Overall				
Males (n=26)	66.53	13.12	5.85	3.40
Females (n=46)	56.26	12.88	6.98	3.39
Total (n=72)	59.97	13.80	6.56	3.41

Note. DACL-E = Depression Adjective Check List, Form E. SEQ-A = Self-Efficacy Questionnaire, Form A.

Prior to analysis of experimental findings data from the third item of the Debriefing Questionnaire (DQ: 3. Did

you deliberately alter behavior ratings or mood descriptions based on guesses about our hypotheses? If so how?) was examined to determine whether any of the subjects had completed the DACL-F or SEQ-B to meet what they believed were the experimenter's expectations. Two subjects, one each from the elated affect and neutral conditions, answered yes to the question. Inspection of their narrative answers in conjunction with their scores on the posttest mood measure led to several conclusions. First, neither subject had correctly identified the research hypotheses. Second, their responses on the instruments were not attempts to meet perceived experimenter demands. Third, the scores on the DACL-F were not in the direction of that predicted for their respective treatment conditions. Therefore, the data from these subjects did not bias overall results in favor of alternative hypotheses but rather served to create a more conservative estimate of effects and it was decided to retain the data in the final analyses. Examination and analysis of responses to DQ items 1, 2 and 4, listed in Figure 1, revealed no differences between groups regarding awareness of the purpose of the experiment, the purpose of the musical exposure or the true research hypotheses.

A one-way analysis of variance performed on subjects' ratings of their mood at the end of the experiment compared to their mood prior to listening to the musical selections (DQ, Item 5; Figure 2), revealed significant differences

among the groups, $F(2,68) = 4.97$, $p < .009$. A multiple comparison of the group means, presented in Table 3, showed a significant difference between the elated affect condition and the depressed affect condition, $p < .05$. Subjects in the elated affect condition reported feeling happier after participating in the study than they had felt before their participation while subjects in the depressed affect condition reported they felt the same, relative to happiness and sadness, before and after participation. While the original purpose of DQ item 5 was to ensure that the depressed affect condition subjects were not dismissed from the experiment without having returned to at least their premanipulation mood level, the findings reported above have implications pertinent to the evaluation of the effectiveness of the mood induction procedures.

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1. What do you believe was the purpose of this experiment?

2. What do you believe was the purpose of having you listen to the musical selections?

4. What we were really interested in is whether people's moods cause differences in their beliefs about what they are able to do. Did you suspect this all along or is this a genuine surprise to you? Please circle the number on the scale below that best represents your level of awareness of our true intent.

1	2	3	4	5	6	7	8	9	10
No awareness at all				Some awareness					Knew all along

Figure 1. Debriefing Questionnaire Items 1, 2 and 4

5. Compared to when you began the experiment, that is before listening to the tape, how are you feeling now? Please circle the number on the scale below which best represents this comparison.

1	2	3	4	5	6	7	8	9	10
Down/Unhappy				Same					Up/Happy

Figure 2. Debriefing Questionnaire Item 5

Table 3. Mean Ratings and Standard Deviations for Debriefing Questionnaire Item 5

	Groups		
	Elation	Neutral	Depression
Mean	6.96[a]	6.09	5.37[a]
SD	1.30	1.59	2.20

Note. Means sharing a common superscript are significantly different, $p < .05$.

PRIMARY ANALYSES

Major questions of the present study concern the differential effects of varying mood states on judgments of self-efficacy and the effectiveness of a nonverbal musical mood induction procedure. Data analyses and hypothesis testing pertinent to those questions is presented in this section. Posttest means and standard deviations are presented in Table 4.

Table 4. Posttest Means and Standard Deviations for the SEQ-B and DACL-F

	Measures			
	SEQ-B		DACL-F	
Group	M	SD	M	SD
Elation				
Males (n=8)	65.50	12.49	7.75	3.15
Females (n=16)	62.69	16.53	6.37	3.77
Combined (n=24)	63.63	15.09	6.83	3.57
Neutral				
Males (n=10)	66.33	10.55	6.10	3.07
Females (n=14)	53.86	10.27	8.79	3.38
Combined (n=24)	59.06	14.86	7.66	3.46
Depression				
Males (n=8)	60.83	13.15	10.12	4.32
Females (n=16)	55.47	15.62	10.31	4.77
Combined (n=24)	57.26	14.78	10.25	4.53
Overall				
Males (n=26)	64.38	11.75	7.85	3.78
Females (n=46)	57.49	16.06	8.47	4.29
Total (n=72)	59.97	13.80	8.25	4.10

The following hypotheses relate to the effects of mood on judgments of self-efficacy:

Hypothesis 1

> The mean SEQ-B score of the elated affect condition will be greater than the mean SEQ-B score of the neutral condition.

Hypothesis 2

> The mean SEQ-B score of the elated affect condition will be greater than the mean SEQ-B score of the depressed affect condition.

Hypothesis 3

> The mean SEQ-B score of the depressed affect condition will be less than the mean SEQ-B score of the neutral condition.

Table 5. Adjusted Means for the Postinduction SEQ-B Scores

	Groups		
	Elation	Neutral	Depression
SEQ-B	63.57	59.70	56.66

Note. The higher the scores, the greater the strength of self-efficacy expectations.

A two-factor analysis of covariance, group by sex, was applied to the posttreatment SEQ-B scores with the pretreatment SEQ-A scores serving as the covariate (Appendix H). Main effects for group membership and sex were nonsignificant, $F(2,65) = 2.24$, $p < .11$ and $F(1,65) = .02$, $p < .90$, respectively. The group by sex interaction was nonsignificant, $p > .05$. A significant effect was found

for the covariate, $F(1,65) = 52.02$, $p < .0001$. In other words, postmanipulation values of self-efficacy expectations appear to depend more premanipulation levels of self-efficacy than affective states and the research hypotheses are not supported. Inspection of the adjusted treatment means in Table 5 shows that although differences were not significant, they were in the hypothesized directions with mean SEQ-B scores being highest in the elated affect condition and lowest in the depressed affect condition with the neutral falling in between.

The following hypotheses pertain to the effects of mood manipulation treatments employed in the present research:

Hypothesis 4

> The mean DACL-F score of the elated affect condition will be less than the mean DACL-F score of neutral condition.

Hypothesis 5

> The mean DACL-F score of the elated affect condition will be less than the mean DACL-F score of depressed affect condition.

Hypothesis 6

> The mean DACL-F score of the depressed affect condition will be greater than the mean DACL-F score of neutral condition.

Pretest DACL-E scores were used as the covariate in a two-factor analysis of covariance, group by sex, of posttest DACL-F scores (Appendix H). The main effect for sex and the

interaction effect for sex by group were nonsignificant, $p > .05$. Significant effects were found for both the covariate and groups, $F(1,65) = 9.44$, $p < .003$ and $F(2,65) = 9.61$, $p < .0001$, respectively. A multiple comparison of the adjusted DACL-F means, listed in Table 6, revealed that the depressed affect group differed significantly from both the elated affect and neutral groups, $p < .05$. Examination of the data for the groups suggested that the significant differences between groups were mainly the result of the effectiveness of the depressed affect induction procedure. The depression group subjects reported higher DACL-F scores than subjects in either the neutral or elation groups. The DACL-F scores, for elated affect condition subjects, did not reflect an increase in positive affect in comparison to the scores of neutral condition subjects. These results provided support for Hypotheses 5 and 6. Hypothesis 4 is not supported.

Table 6. Adjusted Means for the Postinduction DACL-F Scores

	Elation	Neutral	Depression
DACL-F	6.52[a]	7.33[b]	10.25[a b]

Note. The higher the scores, the more dysphoric the mood. Means sharing a common superscript are significantly different, $p < .05$.

In relation to questions regarding the efficacy of the mood induction procedure a third set of hypotheses was put forth pertaining to the effects of mood states on a number writing task.

Hypothesis 7

> The mean of numbers written by the elated affect group will be greater than the mean of numbers written by the neutral group.

Hypothesis 8

> The mean of numbers written by the elated affect group will be greater than the mean of numbers written by the depressed affect group.

Hypothesis 9

> The mean of numbers written by the depressed affect group will be less than the mean of numbers written by the neutral group.

A one-way analysis of variance was applied to the data from the three conditions. No significant differences existed between groups on the number writing task, $F(2, 69) = .039$, $p < .96$. Despite the apparent effectiveness of the depressed mood induction procedure in altering affect, the prediction of a consequent effect on a psychomotor task was not supported and Hypotheses 7, 8 and 9 are not supported.

In summary, in this chapter the results of the study and tests of the hypotheses have been presented. In addition, the results of preliminary analyses, conducted to

assess pretreatment equality of groups, were presented along with analyses of manipulations checks. The study is summarized, results are discussed and conclusions are drawn in the next chapter.

CHAPTER V

SUMMARY AND DISCUSSION

SUMMARY

The purpose of this study was two-fold. The first was to examine the impact of mood on personal judgements of self-efficacy. The second was to evaluate the effectiveness of Pignatiello, Camp and Rasar's (1986) nonverbal, musical mood induction procedure.

A between groups experimental design was used. Seventy-two undergraduates, recruited from introductory psychology classes, were randomly assigned to one of three mood induction conditions (elated, neutral, depressed). Sixty-five percent of the subjects were female.

Subjects were run individually. After subjects were given a brief explanation of the experiment they completed a series of instruments. A self-report mood inventory was followed by a self-efficacy questionnaire and then a demographics and background questionnaire. Experimenters immediately scored the instruments. Subjects scoring in the depressed range on the mood assessment instrument were excluded from the remainder of the experiment. Twelve potential subjects were excluded on this basis. Acceptable

subjects were exposed to a musical mood manipulation procedure. Depending on their group assignment they listened to audio tapes of music designed to elicit elated or depressed affect or cause no change in affect. Each tape was approximately 20 minutes in length. When the tape ended experimenters administered parallel forms of the mood inventory and self-efficacy questionnaire. The order of presentation was alternated with half of the total sample completing the mood assessment first and the other half completing the self-efficacy assessment first. Following this, subjects performed a number writing task and, finally, filled out a debriefing questionnaire. When it was determined that a subject had surpassed or returned to at least their premanipulation mood level they were dismissed.

A series of analyses were applied to the data generated in the study. Preliminary analysis revealed that there were no differences among groups on the pretest measures of mood and self-efficacy expectations. It was found that females viewed themselves as less efficacious prior to treatment than did males, however, this difference did not exist for posttest results. Results from the debriefing questionnaire indicated that levels of awareness regarding the purpose of the music, the overall purpose of the study and the research hypotheses were not significantly different among the groups. At debriefing there was a significant difference among the groups on ratings comparing pretreatment mood

levels with posttreatment mood levels. Elation condition subjects reported feeling happier at the end of the experiment then when it began compared to the depression condition subjects who viewed themselves as feeling the same.

Significant differences were found to exist among the groups on the mood inventory scores. The depressed affect induction condition subjects scored significantly higher than subjects in either the elated or neutral conditions. There was no difference between the mean scores for the elated affect group and the neutral group. No differences were found among groups on the self-efficacy measure. Additionally, no significant differences existed among the groups on the number writing task.

DISCUSSION

The major finding of this study supports the effectiveness of the musical mood induction technique, at least for the depressed mood induction. As hypothesized, subjects exposed to depressing music reported experiencing more dysphoric feelings than subjects exposed to elating or neutral music. Given that the subjects were unaware of the purpose of the music, the results cannot be explained on the basis of demand characteristics and are considered to reflect true affective states. The emotional state induced

appears to have been both mild and brief. On the positive side, this suggests the technique is suitable for use in controlled laboratory investigations of mood with little risk to subjects. On the other hand, this increases the possibility that expected or predicted effects of mood on behavior and cognition may be so weak as to escape detection and measurement.

It must be noted, however, that the elated mood induction, when compared to the neutral mood induction, did not produce an increase in subjects' positive feelings as measured by the affect adjective check list. This failure to produce the expected result may have several explanations. One, is that the elating musical selections employed were not a powerful enough stimulus to elicit the desired changes in affect. A second possibility is that the subject population (young, apparently healthy, students) may have begun the study with relatively high levels of elated mood thus making it difficult to further raise mood levels. A third possibility is that the Depression Adjective Check Lists are not an adequate measure of elated mood. Although research has shown the positive and negative adjectives to constitute different dimensions, "depressed mood" and "elated mood", the instrument is scored to reflect depressed mood. The existence of an elated mood is inferred from the absence of a significant depression score. Of particular relevance in this regard are the results from the debriefing

questionnaire item on which subjects rated how they felt at the end of the experimental session compared to how they felt at the beginning of the session. Subjects in the elated condition rated themselves as happier after the experimental session than before it. These ratings differed significantly from those of the subjects in the depressed condition who reported they felt the same at the conclusion of their participation as they did prior to it. This finding contradicts the DACL results for which there were no significant differences between the elation and depression groups and suggests that an elated mood was in fact produced. As with the results for the depression group, the subjects' responses cannot be attributed to demand characteristics in that the subjects were not aware of the purpose of the music nor the expected effects.

The apparent effectiveness of the mood induction procedure, indicated by the results from the self-report measure of mood, was not corroborated by the results from the number writing task. Depressed affect is frequently accompanied by some degree of psychomotor retardation which was expected to be revealed in the results of the number writing task as has been the case in several prior studies (Velten, 1968; Hale & Strickland, 1976; Pignatiello, Camp & Rasar, 1986). It was hypothesized that subjects in the depressed mood condition would write fewer numbers compared to subjects in the elated and neutral conditions and that

subjects in the elated condition would write more numbers than subjects in the neutral condition. Groups were not distinguishable from each other on the basis of amount of numbers written. Considering the nature of the task, it is possible that any group differences which might have existed were obscured as a result of individual variations in writing speed which were not taken into account in the analysis of the data, or controlled for in the design of the experiment. In future studies, this problem could be eliminated by employing a pre-posttest design and performing an analysis of covariance with pretest scores as the covariate. Additionally, other tasks known to be sensitive to fluctuations in mood, such as word association reaction time (Velten, 1968; Hale & Strickland, 1976) or counting time (Teasdale, Taylor & Fogarty, 1980) might be employed as behavioral correlates of elated and depressed moods.

The ambiguous results obtained from the present study regarding the experimental induction of affect indicate a need for a more in depth consideration of several issues. The first to be considered is the measurement of mood. As noted above, the Depression Adjective Check Lists (Lubin, 1967, 1981) do not appear to provide an adequate measure of elated affect. A possible remedy for the problem would be to devise a reverse scoring procedure so that subjects may be assigned both an elation score and a depression score.

Differences among groups could be analyzed for both dimensions. It would also be beneficial to include additional measures of mood such as the Multiple Affect Adjective Check List (Zuckerman, Lubin & Robins, 1965) or the Elation versus Depression Scale (Wessman & Ricks, 1966). A second useful procedure would be to establish criteria for deciding whether mood induction procedures were in fact successful, operationally define these criteria and measure them as dependent variables, i.e., employ mood change scores. Another procedure that could help to illuminate the effects of mood induction procedures would be to include analyses of mood change at an individual level in addition to analyses at the group level. Subsequently only those subjects identified as experiencing a measurable change in mood would be included in the sample for analyses of the impact of moods on cognitions and behaviors.

Despite the lack of clear answers to questions regarding the overall effectiveness of the musical mood induction procedure there remains some promise in the technique. The evidence of its effectiveness in producing a depressed mood in conjunction with the contradictory findings regarding the production of an elated mood, suggest the procedure warrants further investigation.

The findings of this study do not support the hypothesized relationship between mood and percepts of self-

efficacy. It was hypothesized that varying mood states would have differential effects on judgments of self-efficacy. It was predicted that individuals experiencing a depressed or sad mood would judge themselves as less efficacious than those experiencing an elated mood or no change in mood. Although the depression induction treatment was effective in producing depressed affect, the expected differences between groups on judgements of self-efficacy were not found. Individuals experiencing depressed affect did not judge themselves to be less efficacious than their cohorts in the neutral and elation groups. It was not demonstrated, as contended by Bandura (1986), that depressive affect can lower perceptions of self-efficacy or elated affect can raise perceptions of self-efficacy. This finding conflicts with the results of earlier studies by Kavanagh and Bower (1985) and Wright and Mischel (1982) in which elated and depressed moods were associated with increases and decreases in efficacy expectations, respectively. It is of interest to note that a criticism of those studies is that the apparent effects of mood on judgements of self-efficacy were confounded with the effects of cognitive biasing and demand characteristics produced by the mood induction procedures. While the results of the present study may be interpreted as support for those criticisms, they may also be construed as providing evidence of the importance of reciprocal processes in the determination efficacy expectations. It may be that

a relatively mild change in mood is insufficient to affect changes in self-efficacy expectations and that, in fact, percepts of self-efficacy are more strongly influenced by ongoing interactions between affect, cognition and behavior. A possible explanation for the lack of results in this study is that the depressed mood which was induced was not strong enough to influence percepts of self-efficacy as expected. Rholes, Riskind and Lane (1987) found that reading negative somatic statements produced the predicted depressive mood, but only when the effect was large was there a concomitant impact on memory processes. A similar situation may exist regarding the effects of mood on judgements of self-efficacy, i.e., the impact of affect on efficacy expectations may be directly related to the intensity of the emotion. While nonsignificant, the differences between the adjusted treatment means in this study were in the predicted directions with expectations of self-efficacy being highest for the elated group and lowest for the depressed group with the neutral group falling in the middle. Investigations employing a more powerful mood induction procedure or comparing naturally depressed and nondepressed subjects may reveal intensity of mood to be an important factor in the determination of percepts of self-efficacy.

The lack of significant differences between groups on self-efficacy expectations may be related to the method

employed in measuring the dependent variable. At issue here is the exact nature of self-efficacy expectations. Bandura (1977) defined an efficacy expectation as "... the conviction that one can successfully execute the behavior required to produce the outcomes." (pp. 193). Judgments of self-efficacy are likely to be most accurate and meaningful when the behavior under consideration is clearly specified, delimited and meaningful to the individual. The Self-Efficacy Questionnaires employed in this study contained some items of a very general nature (eg., Live alone in an urban slum. Know how to respond when your boyfriend/girlfriend says he/she wants to break of the relationship.) as well as items that may have been outside of the experience of many subjects (eg., Hit a softball 120 feet. Make 40% of 100 basketball free throws.). Responses to these items may not represent true judgments of self-efficacy but rather reflect more general constructs such as self-confidence and self-esteem or be simple guesses. The lack of findings from this study does not detract from the potential usefulness of the construct of self-efficacy for understanding human behavior but only points to the need for increased precision in its measurement. In future investigations it would be best to apply the construct as originally conceived, as an estimate of one's ability to perform a specific behavior, rather than as a general estimate of ability.

Although unanticipated, an interesting finding of the present study was a significant difference between males and females on the pretest measurement of self-efficacy expectations. The females presented themselves as less efficacious than did the males. While a clear explanation requires further exploration and examination one possible reason comes to mind. The discrepancy may reflect differences in socialization between the sexes. Historically, men have been reinforced for and are expected to present themselves as competent and self-confident. Women, on the other hand, were likely to be characterized as unfeminine and aggressive when presenting themselves in the same manner. The difference between men and women on the initial measure of self-efficacy may be a reflection of these societal values.

In general, it may be said that although the results of the study to do not provide support for the direct relationship which was hypothesized to exist between mood and self-efficacy expectations, neither do they refute the general concept of reciprocal determinism or social learning theory. Bandura (1977b) suggested that four sources of information were important in the determination of efficacy expectations, i.e., performance accomplishments, vicarious experience, verbal persuasion and physiological arousal. It is logical to conclude that each element may contribute to the formation of any given percept of self-efficacy but that

the influence of any single determinant takes precedence only if there are substantial, or perhaps even drastic, alterations in its quality or character. Implications for both research and practice may be derived from this conclusion.

LIMITATIONS OF THE STUDY

A major limitation of this study is the use of university students as subjects. One result of this is a very restricted age range, spanning only the ages from 18 to 22 years old. This limitation precludes drawing any conclusions regarding the potential effects of the mood induction procedures relative to older or younger populations. Additionally, this particular sample may represent a homogeneous subgroup with regard to other factors that may operate as confounding variables. Most obvious is educational level. The effects of the mood induction technique and the impact on self-efficacy expectations may be very different for less educated individuals. Socioeconomic status may be quite similar across the present sample and, therefore, results may not be generalized to populations lower or higher in socioeconomic status. The study is also limited in that individuals scoring in the depressed range on the DACL were excluded from the sample. While this was deemed necessary to protect

individuals from having an existing dysphoric mood exacerbated, it does inhibit the identification of any effects that may have resulted from interactions between treatments and pretreatment mood levels.

SUGGESTIONS FOR FUTURE RESEARCH

The equivocal results of the present study suggest several lines of inquiry for future research. The effectiveness of a musical mood induction procedure remains in question. Additional validation studies employing more heterogeneous samples are warranted. Those studies should include a variety of mood measures including self-report inventories, performance tasks, and experimenter ratings. Criteria for identifying alterations in mood should be established and operationalized. Researchers would then be able to examine the effects of mood on behavior and cognition relative to the intensity of the mood induced. Further examination of the manipulation itself would also be fruitful. Individual and group administration procedures could be compared together with variations in musical selections and length of stimulus presentation.

Future investigations of self-efficacy expectations should address the differential effects of the four sources of information pertinent to the formation of percepts of self-efficacy. After subjects' self-efficacy expectations

for a specific, clearly defined task were assessed, they could be randomly assigned to treatment groups corresponding to the sources of efficacy information, i.e., performance accomplishments, vicarious experience, verbal persuasion and physiological arousal. Different levels of the determinants could be administered such as successful accomplishments versus failure, efficacious models versus inept models, positive exhortations regarding skills versus belittling comments and arousing stimuli versus tranquilizing stimuli. Postmanipulation assessment could include measures of both self-efficacy and task performance. Analyses could include examination of the differences among groups and correlations between efficacy and performance measures. A study of this nature would provide an opportunity to examine the impact of varying sources of efficacy information on judgments of self-efficacy and the effects of those judgements on performance.

Another area of investigation which deserves consideration is the interrelationships which appear to exist among the sources of efficacy information. Examining varying combinations of the sources would provide valuable information regarding these interactions and their role in the determination of self-efficacy expectations.

SPECULATIONS

If one accepts the premise that behavioral and psychological changes arising from diverse modes of treatment can be accounted for by alterations in self-efficacy expectations, then knowledge pertaining to the formation of those expectations should play an important role in the design and implementation of treatments. The effectiveness of therapy could be enhanced through taking care to ensure that a treatment approach includes each element important in the determination of healthy percepts of self-efficacy. Homework activities, designed to ensure success, could serve as a source of positive information regarding performance accomplishments. Another source of this information might be to have clients watch video tapes of themselves successfully performing relevant behaviors. Positive vicarious experiences could be provided with live or taped models demonstrating successful and/or appropriate behaviors. Verbal persuasion could be provided through direct encouragement from a therapist, a significant other or a group member. And the fourth determinant of self-efficacy expectations, physiological arousal, could be addressed with relaxation training to reduce arousal or exercise to promote arousal depending on the identified need.

Assessing a client's self-efficacy expectations in regard to tasks or activities that constitute a treatment program may provide a basis for predicting therapeutic success or determining the appropriateness of a given treatment for a particular client. For example, The Coping with Depression Course (Lewinsohn, Antonuccio, Steinmetz & Teri, 1984) requires that subjects read a chapter of text per week, fill out daily mood rating forms, attend weekly meetings and complete a variety of homework assignments. Clients' expectations regarding their ability to perform these activities would provide valuable information pertaining to the likelihood of their successfully completing the course. Individuals reporting low levels of self-efficacy for the activities might best be referred to alternative forms of treatment.

Assessments of self-efficacy expectations could be similarly applied in educational and training programs. After skills or tasks to be taught were adequately described and specified, students' percepts of efficacy pertaining to their performance of them could be assessed. In programs in which a hierarchy of behaviors are to be taught, the assessments might be employed to determine appropriate starting levels for individual students. The assessments might also point to deficits in skills or abilities that underlay the primary instructional objectives and thus be of use in identifying needs for remedial training. Attention

could also be given to designing programs to include all sources of information that contribute to the formation of positive self-efficacy expectations, i.e., successful performance accomplishments, direct encouragement and adequate models. If affect does indeed play a role in the determination of efficacy expectations it would be wise to provide a pleasant environment and supportive atmosphere to promote positive moods and allay anxiety and fear. Additionally, it might be beneficial to include exercises which are not directly related to the educational objectives but serve only to enhance personal expectations of self-efficacy that may generalize across activities.

Clarifying the nature of the complex relationships existing among percepts of self-efficacy, mood, behavior and cognition will promote an understanding of the processes through which an individual determines whether to initiate a behavior, how much effort to put into it and how long to persist at it. Ultimately, this will contribute to achieving the primary goals of psychology, the explanation and control of human behavior.

APPENDICES

APPENDIX A

DEPRESSION ADJECTIVE CHECK LISTS

APPENDIX A

CHECK LIST

DACL FORM E

By Bernard Lubin

Name_____ Age_____ Sex_____

Date_____ Highest grade completed in school_____

DIRECTIONS: Below you will find words which describe different kinds of moods and feelings. Check the words which describe How You Feel Now - - Today. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly and check all of the words which describe how you feel today.

1. ☐	Unhappy	18. ☐	Well
2. ☐	Active	19. ☐	Apathetic
3. ☐	Blue	20. ☐	Chained
4. ☐	Downcast	21. ☐	Strong
5. ☐	Dispirited	22. ☐	Dejected
6. ☐	Composed	23. ☐	Awful
7. ☐	Distressed	24. ☐	Glum
8. ☐	Cheerless	25. ☐	Great
9. ☐	Lonely	26. ☐	Finished
10. ☐	Free	27. ☐	Hopeless
11. ☐	Lost	28. ☐	Lucky
12. ☐	Broken	29. ☐	Tortured
13. ☐	Good	30. ☐	Listless
14. ☐	Burdened	31. ☐	Safe
15. ☐	Forlorn	32. ☐	Wilted
16. ☐	Vigorous	33. ☐	Criticized
17. ☐	Peaceful	34. ☐	Fit

CHECK LIST

DACL FORM F

By Bernard Lubin

Name_____ Age_____ Sex_____

Date_____ Highest grade completed in school_____

DIRECTIONS: Below you will find words which describe different kinds of moods and feelings. Check the words which describe How You Feel Now - - Today. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly and check all of the words which describe how you feel today.

1. ☐	Sorrowful	18. ☐	Successful
2. ☐	Lively	19. ☐	Rejected
3. ☐	Uneasy	20. ☐	Crestfallen
4. ☐	Tormented	21. ☐	Jolly
5. ☐	Low - spirited	22. ☐	Deserted
6. ☐	Clean	23. ☐	Grieved
7. ☐	Discouraged	24. ☐	Low
8. ☐	Suffering	25. ☐	Steady
9. ☐	Broken - hearted	26. ☐	Wretched
10. ☐	Easy - going	27. ☐	Terrible
11. ☐	Downhearted	28. ☐	Inspired
12. ☐	Washed Out	29. ☐	Woeful
13. ☐	Playful	30. ☐	Unworthy
14. ☐	Joyless	31. ☐	Joyous
15. ☐	Despairing	32. ☐	Destroyed
16. ☐	Gay	33. ☐	Somber
17. ☐	Friendly	34. ☐	Unconcerned

CHECK LIST

DACL FORM G

By Bernard Lubin

Name_____ Age_____ Sex_____

Date_____ Highest grade completed in school_____

DIRECTIONS: Below you will find words which describe different kinds of moods and feelings. Check the words which describe How You Feel Now - - Today. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly and check all of the words which describe how you feel today.

1. ☐	Heartsick	18. ☐	Enthusiastic
2. ☐	Healthy	19. ☐	Bleak
3. ☐	Sad	20. ☐	Griefstricken
4. ☐	Afflicted	21. ☐	Eager
5. ☐	Lonesome	22. ☐	Drained
6. ☐	Fine	23. ☐	Desolate
7. ☐	Alone	24. ☐	Miserable
8. ☐	Gloomy	25. ☐	Merry
9. ☐	Depressed	26. ☐	Dull
10. ☐	Alive	27. ☐	Melancholy
11. ☐	Heavy-hearted	28. ☐	Interested
12. ☐	Failure	29. ☐	Unwanted
13. ☐	Glad	30. ☐	Gruesome
14. ☐	Despondent	31. ☐	Whole
15. ☐	Sunk	32. ☐	Oppressed
16. ☐	Optimistic	33. ☐	Lifeless
17. ☐	Jovial	34. ☐	Elated

APPENDIX B

SELF-EFFICACY QUESTIONNAIRES

APPENDIX B

SELF-EFFICACY QUESTIONNAIRE INSTRUCTIONS

The attached form describes a variety of activities. Under the column CAN DO record how confident you are you can do them now. Rate your degree of confidence by recording a number from 0 to 100 using the scale given below.

Can you do this now?

0	10	20	30	40	50	60	70	80	90	100
certain can't do it									certain can do it	

Try this sample item. Write the number next to the question describing your confidence that you can do this now.

	Can do?
Cheer your favorite team at a sporting event when you are sitting among supporters of the opposing team.	_____

SELF-EFFICACY QUESTIONNAIRE - FORM A

Can you do this now?

0	10	20	30	40	50	60	70	80	90	100
certain can't do it									certain can do it	

		Can do?
1.	Swim 1/4 mile free-style at a moderately fast pace (say 1 stroke every 2 seconds).	_____
2.	Hit a softball 120 feet.	_____
3.	Challenge a popular viewpoint in a class discussion and insist that your ideas be heard.	_____
4.	Tell your boyfriend/girlfriend you still want to see them but want to date others.	_____
5.	Talk for 3 hours with someone you're very attracted to but don't know well and share the conversation equally.	_____
6.	Insist on seeing the manager of a shop, restaurant or repair center if the staff is uncooperative.	_____
7.	Argue with another student who keeps interrupting, ignores your comments or is sarcastic.	_____
8.	At a social gathering approach a group of strangers, introduce yourself, and join in the conversation.	_____
9.	Know how to respond when your boyfriend/ girlfriend says he/she wants to break off the relationship.	_____
10.	Do 6 chin-ups (at 1 every 6 seconds) on an elevated bar right now.	_____
11.	Speak before a large lecture class in soliciting support for campus project.	_____

Can you do this now?

0	10	20	30	40	50	60	70	80	90	100
certain can't do it									certain can do it	

Can do?

12. Get someone of the opposite sex to go out with you even though he/she initially showed disinterest. _____

13. Walk through an urban slum after dark. _____

14. Tell someone you're very attracted to how you feel about him/her. _____

15. Pick up a "friendly" black snake and let it crawl over your chest and arms. _____

SELF-EFFICACY QUESTIONNAIRE - FORM B

Can you do this now?

0	10	20	30	40	50	60	70	80	90	100
certain can't do it									certain can do it	

		Can do?
1.	Make 40% of 100 basketball free throws (from the foul line).	_____
2.	Give a report in a class before a professor in which you challenge the professor's views.	_____
3.	Tell your boyfriend/girlfriend that your relationship is over	_____
4.	Raise your hand during a lecture to say you do not understand what the professor just said.	_____
5.	Live alone in an urban slum.	_____
6.	Run a mile in six minutes.	_____
7.	Tell your girlfriend/boyfriend that you've been dating another person.	_____
8.	Do 30 push-ups (at 1 every 4 seconds).	_____
9.	If your professor has been unfair, privately confront him or her and demand fair treatment.	_____
10.	Go out one evening with someone you are very attracted to and would like to impress very much, and not commit any major social blunder the whole evening.	_____

Can you do this now?

0	10	20	30	40	50	60	70	80	90	100
certain can't do it										certain can do it

		Can do?
11.	Maintain a close platonic relationship with someone who wants a sexual one.	_____
12.	Gain the interest of someone to whom you are attracted but who is ignoring you.	_____
13.	Go for a job interview with senior executives and field their questions without making major mistakes.	_____
14.	Tell your roommate that you're going out with a group of his/her friends but that they did not invite him/her.	_____
15.	Lose 6 pounds in 2 weeks and retain the loss for 6 months.	_____

APPENDIX C

MUSIC BACKGROUND QUESTIONNAIRE

APPENDIX C

MUSIC BACKGROUND QUESTIONNAIRE

AGE_____ SEX: Male Female (circle)

Class: Freshman Sophomore Junior Senior (circle)

Have you had formal training in music? ____Yes ____No

If yes: How many years of training? ____years

What type? ____Vocal ___Instrumental

Do you still play or sing? ____Yes ____No

How often do you attend concerts?

_____ more than one per month

_____ one per month

_____ one every 3 months

_____ one every 6 months

_____ one or less per year

Please rank order your musical preferences, 1 through 9, with 1 being your most preferred and 9 your least preferred

_____Classical	_____Easy listening	_____Black
_____Hard rock	_____Light rock	_____Opera
_____Blue grass	_____Country	_____Jazz

APPENDIX D

DEBRIEFING QUESTIONNAIRE

APPENDIX D

DEBRIEFING QUESTIONNAIRE

1. What do you believe was the purpose of this experiment?

_____

_____

_____

_____

2. What do you believe was the purpose of having you listen to the musical selections?

_____

_____

_____

_____

3. Did you deliberately alter behavior ratings or mood descriptions based on guesses about our hypotheses? If so how?

_____

_____

_____

_____

4. What we were really interested in is whether people's moods cause differences in their beliefs about what they are able to do. Did you suspect this all along or is this a genuine surprise to you? Please circle the number on the scale below that best represents your level of awareness or our true intent.

1 2 3 4 5 6 7 8 9 10

No awareness at all — Some awareness — Knew all along

5. Compared to when you began the experiment, that is before listening to the tape, how are you feeling now? Please circle the number on the scale below which best represents this comparison.

1 2 3 4 5 6 7 8 9 10

Down/Unhappy Same Up/Happy

APPENDIX E

TREATMENT SCRIPT

APPENDIX E

TREATMENT SCRIPT

The experimenter meets the subject in the waiting area, introduce him/herself, and accompanies the subject to the room in which the experiment will be conducted.

> "Hello, I'm (gives name) and I'll be working with you during your participation in our research. Thank you for taking the time to help us in our work. Please come with me."

Experimenter seats subject at the table, provides explanation of study, and obtains the subject's signature on the consent form.

> "Please have a seat at this table. Before we begin I would like to tell you a little about our work. Music is playing an increasingly important role in many areas of psychology. It is used in relaxation training and stress reduction programs and in the field of music therapy. We are interested in how personal characteristics and prior musical experience influence a person's perception of varying types of musical selections. From earlier work we have identified specific patterns of characteristics and experiences that seem most important in this regard and about which we would like to know more.
>
> Our research has two phases. The first is a screening procedure used to determine whether a subject meets the criteria for the patterns of interest. Subjects exhibiting the patterns we wish to study will proceed to phase two of the experiment. They will listen to audio tapes of musical selections and answer questions about them afterwards. Subjects not meeting our criteria will complete their participation with the screening process. All subjects will receive credit for their participation and be given an explanation of the purpose and nature of the

> experiment before they are dismissed. Does this sound like something you are willing to do? Good. In that case I would like you to read this form. (Present consent form) Do you have any questions about the form or the experiment? (Explain as needed) Fine, please sign here. Thanks.
>
> Let's begin.

The experimenter presents the DACl-E, SEQ-A and the Musical Background Questionnaire (MBQ), one at a time. He/she reads the directions for the instruments with the subject and ensures they understand what is expected. When the subject has completed the instruments the experimenter scores them. If the subject's score on the DACL is less than 13 the experimenter continues from PROCEED (see below). If the subject scores greater than or equal to 13 on the DACL the experimenter continues from EXCLUDE (see below).

PROCEED (DACL < 13):

> "Your responses to the questionnaires indicate that your musical experience and personal characteristics fit the patterns we are interested in so we will go on to phase two.
>
> Please have a seat in this lounge chair (lounge chair), get comfortable, and relax. Your task is a simple one. You are to listen to a series of musical selections. Attend closely to the music. After listening to the entire set, which takes about 20 minutes, you will be asked some questions about the music. Do you have any questions?"

The experimenter determines that the subject is ready. He/she then plays the tape assigned per the subject data sheet and starts a timer set for the length of the tape, and leaves the room. At the end of the time period the experimenter returns, turns off the tape player, reseats the

subject at the table and administers the alternate forms of the DACL and SEQ, in the order given on the subject data sheet. Next the subject is presented with the writing task and then the debriefing questionnaire.

> "Please have a seat at the table again. Before proceeding to questions about the music we would like you to complete two inventories similar to those you filled out earlier and perform a simple task. Here is the first questionnaire. (presents the instrument and reviews directions) Good. Here is the second. (presents the instrument and reviews directions)
>
> Now, on this piece of paper (presents a sheet of typing paper) I want you to write out numbers, by 1's in descending order, from 100, until I have as many as I need. You may begin. (experimenter surreptitiously begins timing for one minute). Ok, that's fine. (removes paper) We are in fact actually done with the experiment. There is however one more form we would like you to complete. This is to help the researcher find out how much you might have guessed about what he is trying to discover. (presents debriefing questionnaire) Please complete the first three questions and let me know hen you've finished. As you know you are entitled to an explanation of the experiment. Mr. Straseske, the primary researcher, will provide this and see that you get credit for your participation. Please wait here a moment while I get him.

The primary researcher explains the purpose and objectives of the study and answers any questions the subject may have.

> "Hello, I'm Tony Straseske and I would first like to thank you for taking part in my study. As you may have already guessed it wasn't actually about how personal characteristics and prior musical experience influence perceptions of music, seeing as how we didn't ask you for yours. What I am really interested in is how different moods affect people's beliefs about their ability to perform a variety of activities. The music you listened to was designed to induce either an

> elated or depressed mood or cause no change in mood. The questionnaires you completed both before and after hearing the music were measures of mood and self-efficacy expectations. Self-efficacy expectations are a person's beliefs about their ability to perform behaviors and the concept is part of Albert Bandura's social learning theory. You may have learned of this theory in your introductory psychology class. I believe that if a person is feeling down or depressed they will see themselves as less capable of doing things than if they feel up or elated. When all the data has been collected I will analyze it and compare three different groups, elated, depressed and neutral, to see if there are differences in self-efficacy expectations as a result of their varying moods. Do you have any questions? (Questions are answered as need.) Now, before we end I would like you to complete the last two more items on this form.

After the subject has finished the final debriefing items the experimenter examines the response to item 5. Subjects reporting a more positive mood or no change in mood compared to how they felt at the beginning of their participation will be dismissed at this time. Subjects reporting negative mood in comparison to how they felt when the experiment began will be asked to listen to the elated affect induction tape, after which form G of the DACL will be administered. When it has been determined that the subject has returned to or surpassed their premanipulation mood level they will be dismissed. Prior to departure all subjects will be given credit for their participation. Subjects will be cautioned against discussing the experiment with others so as not to inadvertently give information to subjects yet to be run.

EXCLUDE (DACL $\geq$ 13)

> "I have finished scoring your questionnaires. Unfortunately your responses do not match the preselected patterns of musical experience and personal characteristics in which we are interested. That means you have completed your participation in this experiment.
>
> As you know you are entitled to an explanation of the experiment. Mr. Straseske, the primary researcher will provide this and see that you receive your credits for participating. Please wait here while I get him."

The researcher will be provided with the subject's data sheet and completed instruments. He will explain the nature and purpose of the experiment to the subject and discuss the rationale for the exclusion. The subject will be informed that one of the personal variables on which the experiment focuses is current mood. They will be told that their score on a mood inventory did not fall within the range of experimental interest. To avoid alarming the subject and prevent giving the impression that they have a problem no further explanation will be provided unless requested by the subject. Should the subject inquire as to the exact nature of the mood criterion their responses to the DACL will be discussed with them. The discussion will emphasize the day to day variability of mood and the inappropriateness of drawing conclusions about a person's emotional state or functioning on the basis of a single test score. Ethically the researcher has the responsibility to inform the subject that if an individual feels down and

unhappy most of the time and has felt that way over a period of several weeks or more they could be experiencing a problem with depression. If a subject believes that to be true of him/herself they may want to consider talking with a therapist or counselor about the problem. Any subject expressing such a desire will be provided information on treatment resources available through the university and within the community.

APPENDIX F

RESEARCH CONSENT FORM

APPENDIX F

MICHIGAN STATE UNIVERSITY

RESEARCH CONSENT FORM

1. I have freely consented to take part in a scientific study being conducted by Clayton Straseske under the supervision of Dozier Thornton, PhD..

   Academic Title: Professor of Clinical Psychology

2. The study has been explained to me. I understand that I will complete a checklist and questionnaires, listen to an audio tape, perform a psychomotor task, and complete final questionnaires. This will take approximately one hour.

3. I understand that my participation is voluntary and that I am free to discontinue my participation in the study at any time without penalty.

4. I understand that the results of the study will be treated in strict confidence and that I will remain anonymous. Within these restrictions, results will be made available to me at my request.

5. I understand that, at my request, I can receive additional explanation of the study after my participation is completed.

Signed:_____

Date:_____

APPENDIX G

ANALYSIS OF VARIANCE TABLES

APPENDIX G

ANALYSIS OF VARIANCE TABLES

Table 7. Analysis of Variance for SEQ-A Scores by Groups

Results	df	SS	MS	F
Between groups	2	37.51	18.75	.096
Within groups	69	13487.99	195.48	

Table 8. Analysis of Variance for DACL-E Scores by Groups

Results	df	SS	MS	F
Between groups	2	55.03	27.51	2.45
Within groups	69	772.63	11.20	

Table 9. Analysis of Variance for SEQ-A Scores by Subject Sex

Results	df	SS	MS	F
Sex	1	1469.75	1469.75	8.93
Residual	69	11403.51	165.27	

Table 10. Analysis of Variance for DACL-E Scores by Subject Sex

Results	df	SS	MS	F
Sex	1	29.08	29.08	2.57
Residual	69	778.74	11.28	

Table 11. Analysis of Variance for Ratings on Debriefing Questionnaire Item 5 by Groups

Results	df	SS	MS	F
Between groups	2	30.18	15.09	4.97
Within groups	68	206.40	3.04	

Table 12. Analysis of Variance for Count of Numbers Written by Groups

Results	df	SS	MS	F
Between groups	2	6.08	3.04	.04
Within groups	69	5365.92	77.77	

APPENDIX H

ANALYSIS OF COVARIANCE TABLES

APPENDIX H

ANALYSIS OF COVARIANCE TABLES

Table 13. Analysis of Covariance for SEQ-B Scores by Groups and Subject Sex with SEQ-A Scores as the Covariate

Results	df	SS	MS	F
Covariate	1	6658.18	6658.18	52.02
Groups	2	575.68	287.84	2.25
Sex	1	2.07	2.07	.02
Group x sex	2	299.64	149.82	1.17
Residual	65	8319.86	127.99	

Table 14. Analysis of Covariance for DACL-F Scores by Groups and Subject Sex with DACL-E Scores as the Covariate

Results	df	SS	MS	F
Covariate	1	118.94	118.94	9.44
Groups	2	242.28	121.14	9.61
Sex	1	.08	.08	.01
Group x sex	2	12.36	6.18	.49
Residual	65	819.22	12.60	

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