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THE UNIVERSITY OF ALBERTA

Vulnerability to Depressive Mood Change under Experimentally Induced Stress

by

 Justin T. K. Wong

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Vulnerability to Depressive Mood Change under Experimentally Induced Stress submitted by Justin T. K. Wong in partial fulfilment of the requirements for the degree of Master of Science.

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Abstract

The Reformulated Learned Helplessness Model (RLHM) of depression predicts that people with depressive attributional style are more vulnerable to post-stress depression than are people with nondepressive attributional style. After a review of its historical development, three unresolved issues concerning the RLHM were raised. They were: (1) possible gender differences in attributional style, (2) the relationship between attributional style, self-esteem and hopeless expectation, and (3) the discrepancy between attributional style for real and hypothetical events.

An experiment was designed as a preliminary study on these issues. Using percentile feedback concerning a bogus achievement test as an experimental stressor, we investigated the possibility of gender differences in how attributional style influences the vulnerability to post-feedback depressive mood reaction. Participants' performance expectation and their post-feedback attribution concerning their test results were also measured, and the degree to which they reflected participants' attributional style were assessed.

We found that attributional style did not predict the intensity of depressive mood reaction after negative feedback. This result remained unchanged when males and females were assessed separately. When given a mildly positive feedback, only females with depressive

attributional style underwent a significant positive mood change. Sex-role conventionalism was put forth as a possible explanation.

Finally, neither performance expectation nor actual attribution concerning test outcome were predicted by participants' attributional style based on hypothetical events. Two possible explanations, construct invalidity of the Attributional Style Questionnaire and inaccurate measurement of people's real life attribution, were discussed.

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A. Historical Development

Learned Helplessness

Animal Research

In a series of studies on avoidance learning, Seligman and his colleagues (e.g., Overmier & Seligman, 1967; Seligman and Maier, 1967) found that dogs exposed to uncontrollable and painful electrical shocks exhibited helpless behaviors. Instead of learning to escape shocks in later situations where escapes were possible, these dogs lay down, whined, and accepted the shocks passively. Similar behavioral patterns were also found in laboratory rats (Maier, Albin, & Testa, 1973; Seligman & Beagley, 1975), cats, and goldfish (see Seligman, 1975 for a comprehensive review). Researchers called this phenomenon "learned helplessness" (Overmier & Seligman, 1967).

Learned helplessness was neither an inevitable nor a all-or-nothing phenomenon. For example, dogs that had experienced escapable shocks before learned helpless conditioning did not develop helpless behaviors (Seligman & Maier, 1967). In other studies (Anderson, Cole, & McVaugh, 1968; Looney & Cohen, 1972), rats failed to develop learned helplessness even without initial escapable training. Seligman, Maier, and Solomon

1971) found impaired (slower) but not complete failure in escape response acquisition in goldfish after exposure to inescapable shocks.

In trying to explain why some but not other animals develop learned helplessness after exposure to inescapable shocks, Seligman (1975) found that the acquisition of learned helplessness depends both on prior experience and on the complexity of the required escape response. Frequent successful escape experience in the past lessens the likelihood of developing learned helplessness. Also, animals that were required to produce a simple escape response (such as fleeing to ther other side of a shuttle box) after learned helplessness training escaped effectively, whereas learned helplessness became dominant as the required escape response was made more complex (such as pressing a bar for 3 times).

Learned helplessness was explained via a motivational model (Seligman et al., 1971). According to this interpretation, animals subjected to inescapable shocks soon learn that response and reinforcement (i.e. termination of shocks) are independent. Such learning leads to the reduction of motivation to initiate any instrumental response (i.e. become helpless). Low motivational level also means that the learned helpless animals are less likely to experiment with complex responses in situations when such responses could

actually lead to negative reinforcement. Prior successful escapes should protect animals from learned helplessness because response-reinforcement dependence expectancy has already been developed.

Human Research

The general experimental paradigm for human learned helplessness research was very similar to that of animal studies. Typically, human subjects were given pretreatments of either inescapable, escapable, or no unpleasant stimuli (usually shocks or loud, high-pitch tones). Afterwards subjects in the different pretreatments were tested for learned helplessness by performing certain tasks during escape-avoidance trials.

For example, Thornton and Jacob (1971) used unpleasant electrical shock as an aversive stimulus and randomly assigned human subjects to one of four pretreatment conditions: an avoidable shock condition, a yoked inescapable shock condition, and two control conditions. Participants in the avoidable shock condition were told that shocks could be prevented by button pressing. Those in the yoked inescapable shock (learned helpless) condition were told that button pressing and shocks were not related. Yoked inescapable shocks but no button pressing task were given to participants in the first control condition, whereas button pressing task but no shocks was administered to the second control group.

After thirty pretreatment conditioning trials, all participants were given a series of 10 escape-avoidance tests during which they had to press certain buttons to stop or prevent shocks. The fact that button pressing could in some way lead to negative reinforcement (i.e. stopping or preventing shocks) was not mentioned to any of the participants.

Similar to the animal findings, subjects who had undergone learned helpless pretreatment tended to sit and accept the shocks whereas subjects in the avoidable shock pretreatment condition escaped successfully. Subjects in the two control conditions, however, were no more successful in avoiding or escaping shocks than those in the inescapable condition.

Because participants in the two control conditions did not receive any learned helpless pretreatment, their failure in avoiding or escaping shocks during the 10 test trials must be explained by reasons other than prior experience of response-reinforcement independence. In response, Thornton and Jacob (1971) suggested that participants in the two control conditions must have assumed, for some unknown reasons, that button pressing and the termination of shocks were independent of one another.

Regardless of the validity of Thornton and Jacob's (1971) explanation concerning the poor performance by the two control groups, its implication is very

significant: It assumed that expectation of reinforcement uncontrollability in a situation need not be based on prior helpless experience concerning that situation, and that belief in reinforcement uncontrollability alone is enough to cause learned helplessness.

The importance of reinforcement controllability expectation on people's behavior was demonstrated by Joe (1971) and Rotter (1966), who found that people with external locus of control (that is, people who perceive that they do not have control over environmental reinforcements) were slower in learning various potentially reinforcing tasks than people with internal locus of control (that is, people who perceive that environmental reinforcements are under their control).

Hiroto (1974) assigned two groups of subjects, one with external locus of control and the other with internal locus of control, to three pretreatment conditions: an escape condition, a yoked inescapable condition, or a control condition. A loud, high pitch tone was used as aversive stimulus. Subjects in the escape condition could stop the tone for both themselves and the subjects in the yoked inescapable condition by button pressing. Subjects in the yoked inescapable condition, on the other hand, had no independent way of terminating the tone. No aversive pretreatment was administered to subjects in the control condition.

Afterwards, all subjects were given 18 escape avoidance trials to test for learned helplessness. As predicted, subjects in the yoked inescapable group displayed learned helpless behaviors whereas subjects in the other two conditions escaped readily. Equally important, subjects with external locus of control were more helpless than subjects with internal locus of control, regardless of pretreatment conditions. No interaction between the two variables were found. Clearly, both actual and perceived controllibility of reinforcement are important in accounting for learned helplessness.

A Model of Depression

Even before the existence of research in human learned helplessness, some clinical psychologists had begun to view a certain subtype of clinical depression as a result of cognitive distortion concerning one's own ability to secure environmental reinforcement (e.g., Beck, 1967; Melges & Bowlby, 1969). Combining clinical speculations and experimental findings in human learned helplessness, Seligman (1972) proposed a learned helplessness model of depression.

According to the model, repeated helpless and stressful experiences can lead to generalized learned helplessness in which people come to expect reinforcement uncontrollability concerning the future and other stressful situations (Cole & Coyne, 1977; Klein & Seligman, 1976). Such generalization of

helplessness constitutes the major cause of clinical depression (Seligman, 1975).

The learned helplessness model was not intended to account for all clinically depressed people. Using the endogenous-reactive depression dichotomy prevalent at the time (Carney, Roth & Garside, 1965; Mendels, 1968), Seligman (1975) claimed that the learned helplessness model was more applicable to reactive depression (i.e., depression that is caused by some external stressful events) than to endogenous depression (i.e. depression that is caused by neurochemical imbalance).

Deficiences in the Model

If reactive depression is indeed caused by generalized learned helplessness, which is in turn caused by repeated helpless and stressful experiences, then: (1) depressives should have experienced more uncontrollable life stress than normals, (2) depressives, relative to normals, should display cognitive distortion toward perception of behavior reinforcement noncontingence, (3) behavioral and emotional deficiencies experienced by depressives should be very similar to those experienced by normal people who have undergone learned helpless conditioning, and (4) learned helplessness should quite easily generalize from one situation to another.

It is true that depressives, compared to normals, have experienced more uncontrollable stress (Brown,

1972; Holmes & Rahe, 1967; Leff, Roatch, & Bunney, 1970; Paykel, 1973). Paykel (1973), for expample, found that depressives experienced three times the amount of stress than normals during the six months prior to their depression onset. However, the fact that only a minority of people who have experienced significant stress actually became depressed points to the inadequacy of stress as a sufficient cause for depression. Also, most research concerning the relationship between stress and depression are retrospective in nature. Since researh on depression and memory have repeatedly demonstrated the tendency of depressives to selectively recall negative events over positive ones (Bower, 1981; Ellis, Thomas, McFarland, & Lane, 1985; Roth & Rehm, 1980), the possibility that depressives had systematically distorted the amount of life stress experienced in the past cannot be ignored.

A second problem is that whether depressives distort reinforcement controllability is unclear. Initial support for distortion toward reinforcement uncontrollability in depressives was demonstrated by Miller and Seligman (1973) and Miller, Seligman, and Kurlander (1975), who found that subclinically depressed students perceived outcomes of a set of skill tasks as more response independent than nondepressed students. Similar results were obtained by by Abramson, Garber, Edwards, and Seligman (1978) using a group of clinically

depressed patients as subjects.

These studies shared one important flaw. Although subjects were told that reinforcements in the skill tasks were contingent on their performance, in reality the level of reinforcement was set by the experimenters. It could therefore be argued that it was the normal subjects who displayed cognitive biases toward reinforcement contingency. In fact, a series of studies conducted by Alloy and his collegues (Abramson, Alloy, & Rosoff, 1981; Alloy & Abramson, 1979; Alloy & Abramson, 1982; Martin, Abramson, & Alloy, 1984) have consistently shown that subclinically depressed people are more capable than nondepressed people to perceive contingency in a nonbiased way (see Ruehlman, West, & Pasahow, 1985 for a comprehensive review). If these findings can be generalized to the clinically depressed population, then cognitive distortion toward reinforcement noncontingency as a possible cause of depression will have to be ruled out.

Moreover, symptoms of learned helplessness and depression are not the same. For example, learned helpless subjects typically do not exhibit the depressed mood experienced by depressed people. Cole and Coyne (1977) exposed subjects to inescapable or escapable noise. Subjects in the former condition developed learned helpless behaviors, but the two groups did not differ in terms of pre- and post-noise change in

depression, hostility, or anxiety measures. Miller and Seligman (1975) found that induced helplessness heightened subject's anxiety and hostility but did not make them more depressed. Gatchel, Paulus, and Maples (1975) and Roth and Kubal (1975) obtained heightened feelings of anxiety, depression and hostility in subjects exposed to uncontrollable aversive stimuli. Unlike that of depressives, however, the negative affect of these subjects was quite transient, dissipating shortly after they had solved some anagram problems (Gatchel et al., 1975).

Furthermore, although learned helpless subjects do display a few behavioral symptoms commonly found in depressives (e.g., lowered initiation of voluntary responses and retarded learning capacity), many other depressives symptoms are simply foreign to them. For example, crying spells and suicidal ideations, two behavioral symptoms frequently found in clinically depressed people, are rarely observed in learned helpless subjects. As pointed out by Depue and Monroe (1978), behavioral symtoms of reactive depression are highly heterogeneous, and the fact that a few of these symptoms are found in learned helpless people should not automatically make learned helplessness a valid model for reactive depression.

Finally, findings concerning the generalizability of learned helplessness are controversial. Hiroto and

Seligman (1975) pretreated subjects with inescapable noise or unsolvable discrimination problems and tested them for helplessness in anagram tasks or shuttlebox escape testing, presented in counterbalanced order. No subject participated in more than one pretreatment order. Learned helplessness was found across all four conditions, demonstrating the generalizability of learned helplessness.

Roth and Kubal (1975) used noncontingent reinforcement in a problem solving task as pretraining and tested subjects for helplessness by mearsuring their performande in a later puzzle solving task. The puzzle solving task was presented under the guise of a second experiment' carried out in a different room. As expected, subjects exposed to more noncontingent reinforcement during pretreatment were more helpless than subjects who received fewer noncontingent reinforcements. This finding, in addition to demonstrating the generalizability of learned helplessness across situations, showe that uncontrollable reinforcement could lead to learned helplessness even when the reinforcement was a positive one.

Other studies yielded results that disconfirmed the learned helplessness hypothesis. Thornton and Jacobs (1972) found that subjects' scores on a mental ability test actually increased after exposure to inescaple

shocks, whereas scores of subjects who received avoidable shocks remained relatively unchanged. Similarly, Roth and Bootzin (1974) found that subjects who were exposed to noncontingent reinforcement during concept learning tasks initiated more controlling behaviors in a later problem-solving situation that control subjects.

Cole and Coyne (1977) exposed subjects to inescapable noise. Half of the subjects were then tested for helplessness by anagram tests in the same experimental setting, and the other half were led to a very different experimental setting, were convinced that they were participating in a different experiment (verbal learning experiment), and were tested for helplessness by anagram tests. In line with their prediction, subjects who remained in the same experimental setting were helpless during the anagram task, but those transferred to a different experimental setting showed no helplessness. The authors concluded that situational generalizability of learned helplessness was not supported.

Judging from these inconsistent data, it is safe to conclude that learned helplessness is generalizable for some but not all people, and the quest is to find the factor(s) that affects the generalizability of learned helplessness depression.

The Missing Factor: Belief in Personal Uncontrollability

Through his study in self-efficacy, Bandura (1977) discovered that reinforcement uncontrollability can be attributed to two sources. The first is the situation itself, in which no known action by anyone would lead to reinforcement (situational uncontrollability). The second is the person him/herself, who lacks the ability to carry out certain behaviors which could lead to reinforcement (personal uncontrollability). Bandura (1977) claimed that whereas attribution of situational uncontrollability causes temporary and situationally specific depressive reaction, attribution of personal uncontrollability could lead to lowered self-esteem, resulting in a more prolonged and severe depressive reaction.

Bandura's prediction was supported by Klein, Fencil Morse, and Seligman (1976), who found that after exposure to failures in problem solving, subclinically depressed subjects, more so than nondepressed subjects, attributed their failures to a lack of ability. The former also developed subsequent performance deficiency in anagram solving tasks. Similarly, Kuiper (1978) found that depressed people tend to make attributions that were personal and internal when they experienced failure, and Rizley (1978) found that subclinically depressed students considered internal causes (e and ability) to be more important determinants o

failure than did nondepressed students.

These and other similar studies (Dweck, 1975; Dweck & Reppucci, 1973) demonstrated convincingly the importance of personal uncontrollability attribution to the development of depressive symptoms; this could be the depressogenic factor the learned helplessness theorists were looking for.

The Reformulated Learned Helplessness Model

The Attributional Dimensions

Adopting and expanding on Bandura's (1977) notion of self-efficacy, Abramson et al. (1978) put forth a reformulated learned helplessness model of depression (henceforth called RLHM). The model states that after experiencing a helpless situation, people will ask why the situation has occurred. The causal attribution given can be divided into 3 dimensions: 1) an internal-external dimension, 2) a stable-unstable dimension, and 3) a global-specific dimension. These three dimensions are orthogonal to one another, giving rise to eight possible combinations (see Table 1 for an example).

Table 1

Possible Dimensional Combinations of Attributions and Some Examples: A male student failed a mathematic exam.

	Internal		External	
	Stable	Unstable	Stable	Unstable
Global	Lack of intelligence	Sick	Tests are never fair	That was an bad day
Specific	No ability in mathematics	Had a mind block	Math tests are unfair	That was a bad test

Depressive and Nondepressive Attributions

Of the eight possible attribution combinations, the RLHM is most interested in the one that involves the making of an internal, stable, and global attribution after a negative experience. Such an attribution is called "depressive attribution", because such an attribution will most likely lead to intense, prolonged, and generalized post stress depression (Abramson, Seligman, & Teasdale, 1978). In contrast, a 'nondepressive attribution' (i.e., one that involves the making of an external, unstable, and specific attribuion) will best protect a person from any intense, prolonged, and generalized post-stress depression.

Depressive Attribution and Depression

According to the RLHM, depressive attribution does not cause depression directly (Abramson et al., 1978; Alloy Abramson, Metalsky, & Hartlage, 1988). Rather, it serves as a risk factor for two other depressogenic factors, lowered self-esteem and hopeless expection (Weiner, 1988; Alloy et al., 1988), which are the immediate and necessary causes for depression (Metalsky, & Abramson, 1981; Metalsky, Halberstadt, & Abramson, 1987).

In particular, the RLHM claims that internal attribution for a negative experience (e.g., failing an exam) will likely lead to self-esteem loss, which causes an intensified initial depressive reaction (i.e., the

person not only feels bad about the failure, he/she also feels bad about him/herself). Stable attribution, on the other hand, will likely lead to hopeless expectation concerning the future, thus prolonging the person's depressive reaction. Finally, a global attribution will likely lead to the generalization of the pessimistic expectation to other situations, thus causing a generalized depressive affect.

The Nature of Uncontrollable Events

Initially, the RLHM was applied only to events that are negative (e.g., failure in school). Miller and Seligman (1982) extended the model to positive events (e.g., an unexpected success in business). They claimed that depressive attribution involves not only the making of internal, stable, and global attributions for negative events, but also the making of external, unstable, and specific attributions for positive events. Nondepressive attribution, too, involves not only the making of external, unstable, and specific attribution for negative events, but also the making of internal, stable and global attributions for positive events.

Miller and Seligman's (1982) extension of the model has not been well validated (Coyne & Gotlib, 1983). Correlation between attributions for positive and negative events is low, indicating that the two attribution process are independent of each other (Zautra, Guenther, & Chartier, 1985, Zutra & Reich,

1983). In addition, attribution for positive events typically does not predict people's post event affective reaction, and some researchers have recommended the defining of attributional style only with respect to negative life events (Weiner, 1988; Zautra et al., 1985).

The Existence of Attributional Style

According to the RLHM, individual differences exist in attributional style (Abramson et al., 1978). People form habitual attribution patterns, and once formed, they tend to be consistent over time and across situations. For example, a person who tends to make internal, stable, and global attributions for uncontrollable bad events will do so in school, at home, at work, etc. everytime a negative event occurs. Thus, if we can reliably measure a person's attributional style, then we will be able to predict the kind of attributions he/she is likely to make when he/she experiences a negative life event. This information will in turn predict the likelihood of experiencing a depressive episode.

Measuring Attributional Style

To measure attributional style, Seligman, Abramson, Semmel, and von Baeyer (1979) developed an attributional style scale, which was then slightly modified (Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman,

1982) and named the Attributional Style Questionnaire (henceforth ASQ). This self-report instrument consists of twelve hypothetical events, six positive and six negative. People answering the questionnaire are instructed to generate their own causal attribution concerning the occurrence of each event, and then rate the cause along three 7-point Likert type scales corresponding to the internality, stability, and globality dimensions of their attribution. The higher the ratings, the more internal, stable, and global the attribution is (see Appendix A).

The ASQ has six subscores, measuring internality, stability, and globality of attributions for positive and negative events respectively. These six subscores combine into two composite scores (for positive and negative events respectively), which are in turn subtracted from one another to form a grand composite score for depressive attributional style. The higher the grand composite score, the more depressive the attributional style (see Table 2 for an illustration).

Table 2

Subscales and Composite Scales of the ASQ

Six Negative Events:
- Internality Scores
- Stability Scores
- Globality Scores
- Composite Scores (= internality + stability + globality)

Six Positive Events:
- Internality Scores
- Stability Scores
- Globality Scores
- Composite Scores (= internality + stability + globality)

Depressive Attributional Style
- = Composite Scores for Negative Events -
  Composite Scores for Positive Events

According to this calculation, a person who obtains a high composite score for negative events (i.e. a person who tends to make internal, stable, and global attributions for negative events) but also a high composite score for positive events (i.e. also tends to make internal, stable, and global attributions for positive events) will NOT get a high score for depressive attributional style. The person who gets a high score for depressive attributional style would have to obtain a HIGH composite score for negative events and a LOW composite score for positive events (i.e. internal, stable, and global attributions for negative events and external, unstable, and specific attributions for positive events).

Recently, Perloff and Persons (1988) objected to this simple mathematical method in obtaining the grand composite ASQ score. In a re-analysis of the research data collected by Persons and Rao (1985), they found that relationships between the six ASQ subscales and depressive symptoms are not the same. They therefore recommanded that in using the ASQ to predict depressive symptoms, the 6 subscales should be weighed differently. However, more research will be needed before a reliable weighing system can be found. For the most part, researchers have relied on the original method in scoring the ASQ.

Test-retest reliability of the ASQ is respectable. At a 5-week interval, test-retest correlations are 0.64 for composite negative event scores and 0.70 for composite positive scores. Test-retest reliability for the individual subscales is also satisfactory (ranging from 0.57 0.69), with all of them being significant at the 0.001 level. For research purposes, the authors (Peterson et al., 1982) recommended the use of composite scores instead of the individual subscores.

Internal reliability for the two composite scores is satisfactory (Cronbach's alpha = .75 and .72 for good and bad events respectively, Peterson et al., 1982), and is higher than the reliability for all of the individual subscores (which range from 0.44 to 0.69). Correlation between the two composite scores is low (r = 0.2), indicating that attribution for positive and negative events might involve two separate and independent cognitive processes.

Respectable test-retest reliability and internal reliability of the questionnaire showed that attribution, as measured by the ASQ, can indeed be regarded as a 'style' that remains stable over time and consistent across different events. Similar findings were reported by other researchers (Calicchia & Pardine, 1984; Peterson, Luborsky, & Seligman, 1983). Additional support came from Brewin and Harris (1985) and Mukherji, Abramson, and Martin (1982), who showed that ASQ scores

for normal people remained the same even after depressive mood induction.

Criterion validity of the ASQ was supported by O'Hara, French, Zekoski, Neunaber, and Schroeder (1985) and by Peterson, Bettes, & Seligman (1982; cited in Peterson & Seligman, 1984), both of whom demonstrated high correlation between ASQ scores and ratings of blind judges on subjects' attributions concerning real life events.

B. Current Status of the RLHM

As Applied to Clinical Depression

Hopelessness Depression

Like the original learned helplessness theory, the RLHM was designed to be a model for clinical depression. It states that people with depressive attributional style are more vulnerable to clinical depression than people with nondepressive attributional style.

It is well known that many subtypes of clinical depression exist. The most well defined and well validated subtypes (e.g., Bipolar Disorder, Major Depressive Disorder, Cyclothymic Disorder, Dysthymic Disorder) are those classified by the Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised (DSM-III-R) and the Research Diagnosis Criteria (RDC; Spitzer, Endicott, & Robins, 1975; 1978).

These depressive subtypes are not classified arbitrarily; rather, they represent distinct disorders that differentiate from one another according to age at onset, course of development, symptoms experienced, responsiveness to treatments, et cetera.

It is unlikely that the RLHM can account for the development of all the different depressive subtypes (Depue & Monroe, 1978; Hamilton & Abramson, 1983). Proponents of the RLHM (Alloy, Abramson, Metalsky, & Hartley, 1988; Peterson & Seligman, 1984; Seligman, 1978), however, have been reticent as to the subtype(s) of depressive disorder for which the model can account. Instead, these theorists argued strongly for the existence of an as yet unidentified subtype of depression called helplessness depession (Seligman, 1978) or hopelessness depression (Alloy et al., 1988) which runs across all the existing depressive subtypes (Alloy, Clements, & Kolden, 1985; Seligman, 1978). According to them, people who suffer from hopelessness depression can be identified by (1) the presence of depressive attributional style and (2) the receptiveness to a set of specific antihelplessness therapeutic procedures (Seligman, 1978).

Problems with Hopelessness Depression

To define hopelessness depression as depression accompanied by depressive attributional style, and then to claim that the RLHM is a valid model for hopelessness

depression, amounts to a circular argument. As such, the RLHM could be considered as clinically useful only if (1) depressive attributional style is indeed commonly found among people suffering from different subtypes of depressive disorder, and (2) the effectiveness of a theoretically based antihopelessness treatment program is empirically supported.

Unfortunately, the prevalence of depressive attributional style in the various depressive subtypes has rarely been studied, and the few existing studies of individuals with DSM-III Major depression have yielded conflicting results.

On the supportive side, Eaves and Rush (1984) found significantly more depressive ASQ scores among Major depressives than a nondepressed control group. Hamilton and Abramson (1983) also found inpatients with Major depression to have signifcantly more depressive ASQ composite scores than both normals and nondepressed psychiatric inpatients. Raps, Peterson, Reinhard, Abramson, and Seligman (1982), in comparing the ASQ scores of nondepressed schizophrenics and inpatients with Major depression, found results that are essentially the same as those of Hamilton and Abramson.

On the other hand, Miller, Klee, and Norman (1982) and Rush, Weissenburger, and Eaves (1986) found no difference in ASQ scores between normals and people with Major depression. Lewinsohn, Steinmetz, Larson, and

Franklin (1981), in a longitudinal study of 998 community residents, found that RDC diagnosed Major depressives did not differ from a nondepressed group in their attributional style. More importantly, they found that attributional style measured at an earlier time did not predict the development of depression at a later point in time.

Added to these controversial findings is the fact that unlike other popular cognitive theories on depression (e.g. Beck, 1976; Ellis, 1973), the RLHM theorists have not yet developed a sound treatment program for depression. Recently, Firth-Cozens and Brewin (1988) and Seligman, Castellon, Cacciola, Schulman, Luborsky, Ollove, and Downing (1988) demonstrated the effectiveness of two cognitive treatment programs in changing the attributional style and reducing depressive symptoms in Unipolar depressives. However, neither article reported the specific components of the treatment programs, and it is difficult to assess the extent to which the treatment programs are based uniquely on the RLHM.

Furthermore, Zeiss, Lewinsohn, and Munoz (1979) showed that non-cognitively oriented treatment approaches, such as interpersonal skills training and pleasant activity scheduling, can also lead to changes in depressive cognition very similar to those discussed by Firth-Cozens and Brewin (1988) and Seligman et al.

(1988). Simiar findings by other researchers (Fennell & Campbell, 1984; Hamilton & Abramson, 1983) suggested that depressive attributional style should be considered as a symptom that could be changed not only by cognitive treatment but by any treatment program that is successful in alleviating depression.

As Applied to the Subclinically Depressed Population

AKiskal (1979) pointed out that people often experience various depressive symptoms as a result of environmental stress although their depressive symptoms may not meet formal diagnostic criteria of a depressive disorder. AKiskal called this kind of mild to moderately severe depressive experience 'situational depression'. Situational depression is viewed as continuous with transient depressed mood except that it lasts longer, has a specific environmental trigger which forms the central theme of the depressive reaction, is more severe, and dissipates soon after the environmental stressor disappeared. Situational depression, as described by AKiskal, was later adopted into the DSM-III, and was named Adjustment Disorder with Depressed Mood. Furthermore, AKiskal believed that the RLHM could account for the development of this disorder: Internal attribution concerning the cause of an undesired stress will enhance post-stress negative affect, whereas stable and global attribution will prolong and generalize the initial negative affective reaction to other situations. Indeed, research

concerning the validity of the RLHM among the subclinically depressed population has been quite promising.

Traditionally, depressive symptoms have been measured by (1) well validated questionnaires such as the Beck Depressive Inventory (BDI; Beck et al., 1961), the Hamilton Rating Scale (HRS; Hamilton, 1960, 1967), the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), and the McLean-Hakstian depression scale (McLean & Hakstian, 1981); and (2) structured interviews such as the Schedule for Affective Disorders and Schizophrenia (SADS; Endicott & Spitzer, 1978). In fact, all the learned helplessness research presented below relied on one or more of these instruments for measuring depressive symptoms.

O'Hara, Rehm, and Campbell (1982) administered the ASQ, the BDI, and several other cognitive-behavioral assessment scales to 170 women in their second trimester of pregnancy. Attributional style for bad events, as measured by the ASQ, was the strongest, and the only significant, cognitive-behavioral variable that predicted 3-month postpartum level of depression. Similar results were obtained by Cutrona (1983). Manly, McMahon, Bradley, and Davidson (1982), on the other hand, found that none of the three attributional dimensions as measured by the ASQ correlated with 3-day postpartum depressive symptoms. Taken together, these three studies suggested that whereas attributional style might be an invalid predictor of immediate postpartum depression which, many researchers

believe, is endogenous in origin (e.g., Dalton, 1971; Paykel, Emms, Fletcher, & Rassaby, 1980), it can predict prolonged postpartum depression which cannot be imputed to abnormal estrogen and progesterone level (Steiner, 1979).

Metalsky, Abramson, Seligman, Semmel, and Peterson (1982) measured students attributional style and mood via the ASQ and the Multiple Affect Adjective Checklist, Today Form (MAACL; Zuckerman & Lubin, 1965) before a midterm exam. Their expectations for their midterm grade were also assessed. Immediately after they received their grade, the students were again given the MAACL. Results showed that changes in MAACL depression for low grade students (i.e. those who received a grade lower than that of their expectation) correlated significantly with the internality and globality but not the stability dimension of their attributional style. No significant correlation was found between ASQ and MAACL scores for the high grade students.

In a cross-lagged panel analysis (a correlation technique used mainly for causal inferences; Kenny, 1975, 1979; Kenny & Harackiewicz, 1979), Golin, Sweeney, and Schaeffer (1981) had students fill in the ASQ and the BDI twice, one month apart. For negative events, synchronous correlation between the 3 attribution dimensions and BDI scores was significant at both times. Stability and globality but not internality score measured at time 1 correlated significantly with BDI scores measured at time 2 even after time 1 BDI scores were partialled out. Further

path analysis suggested a causal relationship between two of the three attributional dimensions for negative events and the experience of depressive symptoms. The importance of attribution for positive events in predicting BDI scores was not supported.

C. Issues for Future Research

Gender Differences in Attributional Style

Early research concerning possible gender differences in attributional style have yielded null results. Using a sample of 130 undergraduates, Peterson et al. (1982) found no gender differences in ASQ scores. Hammen and Cochrane (1981), using a similar sample, also found no gender differences in attributional style. Some researchers (Calicchia & Pardine, 1984; Nolen-Hoeksema, 1987; Raps, Peterson, Reinhard, Abramson, & Seligman, 1982) pointed out, however, that research concerning gender differences in Major depression and Dysthymic Disorder have consistently shown much higher prevalence rates among women than among men (DSM-III R, 1987; see Nolen-Hoeksema, 1987 for a complete review). It is therefore reasonable to expect that (1) more women than men possess depressive attributional style, and/or (2) depressive attributional style is a more powerful depressogenic factor for women than it is for men. As it turned out, both possibilities have received empirical support.

Evidence from social attribution research suggested that women and men have different attributional patterns, with women being more 'depressive' in their attributions in general.

In a review article concerning sex role learning, Breen, Vulcano, and Dyck (1979) found that parental attitude toward success and failure in achievement related tasks depends on the gender of their children. Success in girls are usually attributed to luck and other unstable factors, whereas failure in girls are usually attributed to more internal and stable factors. For boys, success is usually attributed to internal and stable factors (e.g. ability), whereas failure is attributed to unstable but controllable factors (e.g. lack of effort) or to external factors (e.g. bad luck).

Learning from their parents, attribution patterns between boys and girls begin to differ early in life. Dweck and Reppucci (1973) and Nicholls (1975), for example found that girls in grade school attributed failure in experimental tasks more to a lack of ability, whereas boys attributed their failure more to a lack of effort (Dweck & Reppucci, 1973) and to bad luck (Nicholls, 1975).

The tendency for females to made more depressive attributions than males continues into adulthood, and research have consistently shown that women are more apt than men to attribute failure in different achievement related tasks to personal inadequacies and success to luck

or chance (Bal-Tal & Frieze, 1977; Deaux, 1976; Wiegers & Frieze, 1978).

Judging from these evidence, it is reasonable to expect the ASQ, if it is a valid measure of people's attributional style, to reveal higher frequency of depressive attributional style among women than among men.

Calicchia and Pardine (1984), after administering the ASQ to males and females who were diagnoised by psychiatrists as suffering from either Adjustment Disorder with Depressed Mood, Dysthymic Disorder, or Major Depressive Disorder, found that overall, females were indeed more depressive in their attributional style than were the males. Moreover, Calicchia and Pardine found that whereas women who were considered as clinically more depressed alo had a higher ASQ score, the ASQ score in males did not vary with severity of their depression. Thus, Calicchia and Pardine showed that depressive attributional style might be a more important factor in regulating depression in women than in men.

Although Calicchia and Pardine's (1984) findings are provocative, a problem remains: their study is correlational rather than prospective in nature. Thus, although we know that the depressiveness of attributional style is more related to the severity of depression among women than among men, we cannot tell whether the depressiveness of attributional style can better predict future depression among women than it can among men. A prospective study on

this topic would be extremely valuable at this point.

The Relationship between Attributional Style, Self-Esteem, and Hopeless Expectation

Problems in Defining Self-Esteem and Hopeless Expectation

RLHM theorists (Alloy et al., 1988) claimed that therelationship between depressive attributional style and the severity (intensity, chronicity, and generlization) of depression is an indirect one. In particular, post-stress internal attribution is a risk factor for self-esteem loss, which acts as the intensifier of the initial depressive reaction. Stable and global attribution, on the other hand, act as risk factors for hopeless expectation, which in turn prolongs and generalizes the initial depressive reaction.

The relationship between attributional style, self-esteem, and hopeless expectation rarely been empirically assessed (Brewin, 1986). In part at least, the RLHM should be blame for the lack of relevant research.

First of all, the RLHM theorists considered low self esteem and hopeless expectation as temporary cognitive states that are caused by the interaction of failure experience, depressive attributional style, and other factors such as lack of social support (Alloy et al., 1988). As cognitive states, they are expected to

begin immediately before the onset of stress induced depression and to last as long as the depressive episode lasts.

But if lowered self-esteem and hopeless expectation can be obesrved only during the interim of a depressive episode, then how are we to know that they are the determinants for rather than mere symptoms of depression? Furthermore, why should we not consider the existence of low self-esteem and hopelessness as more stable, trait-like factors similar to attributional style?

Self-Esteem as Trait

Reliable measurments of self-esteem trait (e.g., Self Esteem Inventories, Coppersmith, 1967, 1982; The Tennessee Self-Concept Scale, Fitts, 1965) have shown that people do possess long term differences in self-esteem (see Gilberts, 1983 for a comprehensive review). Furthermore, research suggested that self-esteem can exert direct influence on people's causal attribution. For example, Fitch (1970), Ickes and Layden (1978), and Weiner and Litman-Adizes (1980). found that after experiencing failure in an experimental task, subjects with high esteem attributed the failure to external factors whereas subjects with low esteem attributed the failure to internal factors.

The existence of self-esteem as trait, together with its demonstrated ability to influence actual

attribution, suggested that self-esteem and attributional style might be closely related constructs. In a correlational study, Tennen and Herzberger (1987) found that all three ASQ attributional dimensions were indeed significantly correlated with self esteem as measured by the Self-Description Inventory (SDI; Diggory, 1966; Shrauger, 1972), with the latter accounting for slightly over 50 % of ASQ variation. Future research that systematically investigate the relative (and possible interactive) contribution of attributional style and self esteem to depression will certainly be valuable.

The nature of hopeless expectation and its relationship with attributional style has hardly been investigated (Alloy et al., 1988). Does a trait-like hopeless expectation exist among nondepressed people? Will people with depressive attributional style also have a more hopeless (pessimistic) expectation toward future task outcome than people with nondepressed attributional style? How can hopeless expectation be reliably measured? All these questions have not yet been answered, and an open field of research possibility awaits researchers who are interested in them.

The Relationship between Attributional Style and Real Life Attribution

Research Findings

Although studies using ASQ as a measure of attributional style have been supportive of the reformulated learned helplessness model, research that used people's real life attributions as a measure of attributional style has been far less supportive. Gong-Guy and Hammen (1980) divided 65 students into depressed and nondepressed groups according to their BDI scores. Subjects were to choose, from the Life Event Scale (Cochrane & Robertson, 1973), 5 most stressful events that had occurred within the past six months. They were also told to make causal attributions concerning these events. The two groups did not differ in all three attributional dimensions across the 5 events. Their results were essentially replicated by Hammen & Cocharn (1981) and by Hammen, Krantz, and Cochran (1981). Hammen and deMayo (1982) correlated CES-D depressive symptoms of 75 secondary school teachers with their causal attributions to various teaching related stress. They found that attribution and CES-D scores were not related.

After a meta-anaylsis of 61 published studies, Peterson, Villanova, and Raps (1985) concluded that research is supportive of the reformulated learned helplessness model when attributional style is based on the ASQ, but not when it is based on real life events.

Possible Explanations

There are two reasonable explanations. First, attributions for hypothetical and real events might be two independent cognitive processes, and only the former has depressogenic properity. In support of this explanation, Cutrona (1983) found that pregnant mother's ASQ scores did not correlate with their actual attributions for childcare stress and other daily stressful events. Furthermore, it was the former, not the latter, that predicted post-childbirth depression. Miller, Klee, and Norman (1982) tested 70 normals and RDC diagnosed depressives. Within each group, subjects' ASQ scores did not correlate with their attributions for life events and their attributions for their success/failure in an experimental task.

The second explanation is that attributions for hypothetical and real events reflect identical cognitive process, but that for some reason, attribution for real life events has been measured inaccurately or unreliably.

According to Cutrona (1983), inaccurate measurement of actual attribution is due to need of public image management. According to this theory, people, in order to protect their ego (self-esteem) after experiencing task success/failure, will deliberately distort their causal attribution as a stregagy for managing the impression they make on other people (Arkin, Appleman, &

Burger, 1980).

The need for public image management can lead to attribution biases in two opposite directions. Bradley (1978) and Stevens and Jones (1976), for example, argued for the self-enhencing bias, in which people might assume more responsibility (internal attribution) for success in front of an audience (e.g. an experimenter) than when they are alone; and they might assume less responsibility (external attribution) for failure in front of other people (e.g. an experimenter) than when they are alone. On the other hand, Bradley (1978) and Jones and Wortman, (1973) pointed out that people may give more 'modest' public attribution (i.e. blaming oneself for failures and crediting others for success) than they in fact believe if they perceive that such modesty can lead to a pardoning of misconduct or to social approval.

Interestingly, both kinds of attribution biases (self enhencing bias and 'modest' approach) have been empirically demonstrated under different situations (e.g. Sicoly & Ross, 197-; Weary, 1980 on self-enhencing bias; Arkin, Appelman, & Burger, 1980; Ross, 1977 on 'modest' approach), and the situational/personal factors that leads to the adoption of one kind of bias over the other have yet to be fully clarify. High level of social anxiety, for example, have been shown to enhence 'modest' attribution bias, whereas low level of social

anxiety can lead to self-enhencing attribution bias (Arkin, Appelman, & Burger, 1980; Arkin, Gleason, & Johnston, 1976; Federoff & Harvey, 1976), and theorists expect that many similarly influential factors are yet to be discovered.

In light of the difficulty in obtaining accurate (or honest) public attribution, it is important to note that attributions in learned helplessness research are often obtained through either interviews (e.g. Gong-Guy & Hammen, 1980) or filling of questionnaires in front of an experimenter (e.g. Hammen & deMayo, 1982) or both (e.g. Cutrona, 1983). It is highly possible that attributions obtained from these studies are tainted with both self enhencing and 'modest' attribution biases, thus making them an inaccurate measurement of actual attributional style. The ASQ, on the other hand, assesses causal explanations for hypothetical events only, and might have eliminated for the subjects the need for self-serving or 'modesty biases (Cutrona, 1983).

Whether people's responses to the ASQ are free of attributional biases due to public image management is, of course, an empirical issue that will have to be settled experimentally. For now, public image management remains the most plausible explanation for the attributional style-actual attribution discrepancy and the inability of actual attribution in predicting

depressive symptoms, and this possibility is certainly worth further investigation.

If public image management is indeed the cause for actual attribution inaccuracy, then future research on the RLHM will have to either take a less ego-threatening approach (such as those used by the ASQ), or borrow from social psychology techniques such as the "bogus pipeline" (a machine that supposedly works like a lie detector on the basis of a person's EMG reaction; Jones & Sigall, 1971) that has been shown to be effective in eliminating public attribution biases. To the present author's knowledge, such research has yet to be carried out.

The Effect of Public Attribution on Mood

Although Cutrona (1983) and other attribution theorists (Miller & Ross, 1975, Weary, 1980) have attempted to explain why public causal attributions are unreliable, they have not considered the effect of public attribution on mood. The present author believes that the sheer necessity of having to make a public causal statement concerning a stressful event is itself stressful enough to affect a person's mood.

Imagine that a person with a depressive attributional style have been told that he performed poorly on a presumably important experimental task. Asking him/her to give causal attributions for his/her poor performance in the presence of the experimenter

means that he/she would have to admit to another person, in addition to him/herself, that he/she is indeed the cause of the poor performance (internal attribution), that he/she is likely to do poorly in the future (stable attribution), and that he/she will probably do equally poorly in other tasks (global attribution). Making such public admittance means opening oneself up to the ridicule of others, and will probably aggravate the already undesirable situation into an extremely unpleasant experience. In fact, attempts to prevent such aggreviation of unpleasantness might be the source of the self-serving tendency in cases of failure experience. As yet, little have been done to assess the effect of self-serving bias on a person's mood (Weary, 1980). Gaes, Quigley-Fernandez, and Tedeschi (1978) argued, however, that self-serving public attributions will probably not help prevent the aggreviation of unpleasantness, since whatever social pardon the person gains will likely be balanced by the person's subjective realization that he/she has lied.

On the basis of Gaes et al.'s (1978) argument, the present author hypothesizes that regardless of the kind of attribution a person makes in public, requiring a person with depressive attributional style to make a public attribution (e.g. in the presence of an experimenter) after task failure will aggravate his/her depressive mood reaction toward the incident.

For a person with a nondepressive attributional style, a public admittance of his/her failure would probably be less stressful. In fact, a chance to make known to other people that the failure is not his/her fault (external attribution), that he/she will probably do better in the future (unstable attribution), and that he/she would do better in other tasks (specific attribution) will likely help him/her ease the negative reaction he/she has concerning the task. Based on [illegible]s argument, the present author hypothesizes that requiring a person with nondepressive attributional style to make a public attribution after task failure will reduce his/her depressive mood reaction toward the incident.

Using similar arguments, the present author also predicts that the process of making public attribution after task success will reduce the positive mood reaction for people with depressive attributional style (i.e. those who attribute success to external unstable, and specific factors) but intensify the positive mood reaction for people with nondepressive attributional style (i.e. those who attribute success to internal, stable, and global factors).

D. Proposal for an Experiment

Purpose and Specifications

The present study has four purposes: (1) To assess the possible gender differences in how attributional style influences the vulnerability to depressive mood reaction, (2) to explore the effect of attributional style on people's outcome expectation, (3) to explore the relationships between attributional style and actual attribution, and (4) to explore the possible effect of public attribution on mood.

Following Akiskal's (1979) suggestion, the validity of the reformulated learned helplessness model will be tested using a nondepressed population. In particular, the present author selected nondepressed college students as the target population for investigation. Also, the experiment is designed on the basic assumption (Akiskal, 1979) that transcient depressive mood reaction is continuous with and therefor a valid analog for the more stable depression experienced by people with Adjustment Disorder With Depressed Mood.

Hypotheses

(1) The central hypothesis of this study is that given a negative stressor, students with depressive attributional style will report a more dysphoric mood reaction than students with nondepressive attributional style. Furthermore, the present author hypothesized that this difference would be greater for females than for males, and

that this difference would be enhanced through a publicity requirement.

(2) According to the reformulated learned helplessness model, people's causal attributions concerning the occurrence of a stressor should be predicted by their attributional style. Specifically, people with depressive attributional style should give more internal, stable, and global attributions than people with nondepressive attributional style after a negative stressor has occurred. When the stressor is positive, people with depressive attributional style should give more external, unstable, and specific attributions than people with nondepressive attributional style.

(3) The present author hypothesized that after the experimental task (a bogus achievement test), participants with depressive attributional style should have lower performance expectation than participants with nondepressive attributional style.

II. Method

A. Design

The experiment had a 2 X 2 X 2 X 2 design. The between subjects variables were gender (male vs. female), attributional style (depressive vs. nondepressive), stressor (positive vs. negative), and publicity (required vs. not required). Dependent variables included dysphoric mood, test performance expectation, post-feedback attributions concerning test performance outcome, and rating of test accuracy. One other variable, called skills importance rating, was used as a manipulation check for the experiment (see section "Measurement and rationale for the manipulation check" for further clarification).

Operational Definitions for the Between Subject Variables

Attributional style was operationally defined as that which is measured by the Attributional Style Questionnaire (ASQ; Peterson et. al., 1982; see Appendix A). Metalsky et al. (1982) classified students into a depressive attributional style group and a nondepressive attributional style group on the basis of their ASQ scores. Students who scored 0.7 standard deviation above the sample mean were considered to have depressive attributional style; those who scored 0.7 standard deviation below the sample mean were considered to have nondepressive attributional style. Using this classification method, Metalsky et al. found

significant interactive effects between attributional style and the nature of stress on student's post-stress mood reaction. The present author decided to adopt the same criteria for classifying participants into the depressive and nondepressive attributional style groups.

The stressor was operationally defined as the feedback participants received concerning their performance on a bogus achievement test called the Fisher Achievement Test (FAT; see section on material). Participants in the positive stressor condition were told that they scored at the 60th percentile range, the norms of which were based on University of Alberta students who had taken the test before. Those in the negative stressor condition were told that their scores were at the 40th percentile range.

Publicity was operationnally defined as the answering of a paper-and-pencil format Performance Outcome Attribution Questionnaire (POAQ; see section on material). Participants in the Publicity condition had to answer the POAQ after they received their FAT performance feedback. Participants in the No-publicity condition did not answer the POAQ.

Measurement of the Dependent Variables

Dysphoric mood was measured by the Dysphoria Scale (raw scores) of the Multiple Affect Adjective Check List, Today Form (MAACL; Zuckerman & Lubin, 1965, 1985; see section on material).

Test performance expectation was measured by a single Test Performance Expectation Question (TPEQ; see section on material).

Post-feedback attributions concerning test performance outcome were measured by the Performance Outcome Attribution Questionnaire (POAQ; see section on material).

Rating of test accuracy was measured by a Test Accuracy Rating Scale (TARS; see section on material).

Measurement and Rationale for the Manipulation Check

Skills Importance Rating was measured by a Skill Importance Rating Scale (SIRS; see section on material).

Past learned helplessness research has been criticised for their use of artificial stressors that were, in the eyes of participants, devoid of real life importance (Coyne, Aldwin, & Lazarus, 1981; Oakes & Curtis, 1982). The less important the experimental task, the less ego involved the participants would be in carrying that task, which in turn lessens the likelihood of developing learned helplessness after unsuccessful task performance (Oakes & Curtis, 1982; Silver, Wortman, & Klos, 1982).

The present author hoped that the FAT would be considered as a meaningful and important task by participants. The SIRS measured just that: A high SIRS score meant that the skills measured by the FAT (verbal, mathematic, and logic reasoning skills) were considered as important by participants. If so, they should consider the

FAT an important test, and they should therefore be sensitive to the feedback they received concerning their performance on the test.

B. Participants

Participants were selected from 952 students at the University of Alberta. For screening and selection purposes, these students were administered the Beck Depressive Inventory (BDI; Beck et. al., 1961; see Appendix B) and the ASQ. They received one experiment credit toward the fulfillment of their course requirements.

Since the purpose of the experiment was to assess post-stress mood reaction of a clinically nondepressed student population, students with BDI scores equal to or above 16, who might be considered as suffering from at least moderate depressive symptoms (Kovacs & Beck, 1977), were excluded from further selection for the experiment (N = 69)

Of the remaining students (N = 883), 182 scored 0.7 standard deviation above the sample mean on the composite ASQ scale. From these 182 students, 64 (32 males and 32 females) were randomly selected for further experimentation. They were called the depressive attributional style group (DASG). One-hundred-and-seventy-two students scored 0.7 standard deviation below the sample mean on the ASQ composite scale. From these 172 students, 64 (32 males and 32 females) were randomly selected for further experimentation. They were called the nondepressive

attributional style group (NASG). All 128 participants received another 2 experiment credits toward the fulfillment of their course requirements.

C. Materials

The Multiple Affect Adjective Check List, Today Form (MAACL; Zuckerman & Lubin, 1965, 1985; see Appendix C) was used to assess participants' transient levels of dysphoric mood. The MAACL is a self-administered, relatively short, and relatively well-validated (Zuckerman & Lubin, 1965) mood scale which measures anxiety, depression, and hostility. The three affect measurements can be evaluated separately, or they can be combined through simple addition into a dysphoria score. The MAACL has been shown to be sensitive to affect changes that occur in response to ongoing negative experimental conditions in studies of learned helplessness and depression (e.g. Gatchel, Paulus, & Maples, 1975; Metalsky et. al., 1982).

The Fisher Achievement Test (FAT; see Appendix D) was used as an experimental stressor. It was a bogus 20-item achievement test made up by the researcher. It consisted of 20 questions selected from Barron's GRE, 6th Edition (Brownstein & Weiner, 1982). Participants were told that the test measured verbal, mathematic and logical reasoning ability at college level. In a pilot study on 15 first year undergraduate students, no one scored above a 12 out of 20 possible points and no one scored below a 7. The result

suggested that most students would probably score in the middle range in terms of raw scores, and would probably be susceptible to either a positive or a negative feedback manipulation.

Feedback manipulation was on the percentile scores. Consequently, a set of bogus score distribution diagrams, ranging from a mean score of 6 to a mean score of 13, were developed for feedback manipulation purposes (see Appendix E).

The Test Performance Expectation Question (TPEQ; see Appendix F) was a 9-point scaled question. Participants were to give an estimate of where they expect to stand (1 = way below average, 9 = way above average) compared to other University of Alberta students who had taken the FAT test.

The Performance Outcome Attribution Questionnaire (POAQ; see Appendix G) consisted of 4 questions formulated in accordance to the format of the ASQ. The first question of the POAQ asked participants to write down one major cause for their performance outcome, and the next three Likert-type questions measured the internality, stability, and globality dimensions of participants' causal attribution. The TPAQ was administered only to participants in the publicity conditions (see Procedure).

The Test Accuracy Rating Scale (TARS; see the first question of Appendix H) was a 9-point scaled question. Participants were to rate how accurately the FAT had reflected their verbal, mathemstical, and logic reasoning

skills (1 = not at all accurately, 9 = very accurately). The TARS was used as an additional measure for the internality of the participants' attribution.

The Skills Importance Rating Scale (SIRS; see the second question of Appendix H) was also a 9-point scaled question. Participants rated the importance they ascribed to the skills (verbal, mathematical, and logic reasoning) presumably measured by the FAT (1 = not at all important, 9 = very important).

D. Procedures

Experimental Settings

The laboratory consisted of two adjacent rooms separated by a door. The larger room was used as an 'office' of the experimenter and the smaller room, in which were placed a chair, a desk and two bookshelves, was used as a testing room. Participants were tested individually. Each testing session lasted about 75 minutes.

Summary of Procedures

Below are the key procedures listed in order of their occurrence.

1. Cover story
2. Description of experimental procedures.
3. Administer MAACL for the first time (MAACL-T1).
4. Administer Fisher Achievement Test.

5. Administer TPEQ and a second MAACL (MAACL-T2)
6. Provide FAT performance feedback.
7. Publicity manipulation: Adminster POAQ (only to participants in the publicity required condition).
8. Administer MAACL for the third time (MAACL-T3).
9. Administer TARS and SIRS.
10. Process debriefing.

Step One: Cover Story

Every participant for the experiment waited in the hallway outside the laboratory. Upon the appointed time, he/she was led into the office of the experimenter and was seated opposite the experimenter. After signing a participant consent form (see appendix I), he/she was told a cover story concerning the purpose of the experiment. He/She was told that the purpose of the experiment was to examine the patterns of mood fluctuation at different points during a testing situation. He/She was told that in order to make the experiment as similar to real life as possible, he/she would be given a commonly used measure of scholastic aptitude (the FAT) and that he/she would be given feedback, in terms of both raw scores and percentile scores, on his/her test performance.

Step Two: Description of Experimental Procedures

Please see Appendix J for verbatim.

Steps Three through Five

After the experimental procedures were described to the participant, he/she was given the MAACL for the first time. Afterwards the participant was led to the adjacent 'testing' room and were given the FAT. At the end of 35 minutes, the experimenter entered the room and collected the FAT from the participant. The participant was given the TPEQ and another MAACL at this time, and was told to complete these two questionnaires while the experimenter corrected his/her test in the other room.

Step Six: Test Performance Feedback

When the experimenter had finished correcting the participant's test, the participant was asked to enter the experimenter's office. At this point, feedback was given to the participant. In all, half the participants (equal numbers of each gender) from the DASG and the NASG were given a negative feedback (-FB) and the other half were given a positive feedback (+FB). In the negative feedback condition, participants were told that they did worse than the average University of Alberta students who had taken the FAT before. They were shown a (pre-selected) distribution curve in which their scores corresponded to the 40th percentile level. In the positive feedback condition, participants were told that they did above the average University of Alberta norm. They were shown a (pre-selected) distribution curve in which their scores corresponded to the 60th percentile

level. Note that the manipulation was on the percentile score and not on a participant's actual raw score.

Steps Seven through Ten

After feedback, half of the participants in each of the 4 attribution X feedback conditions (DASG/+FB, DASG/-FB, NASG/+FB, NASG/-FB) were led through the publicity procedure. They were told the following:

> We are curious as to why you've done well/poorly in the Fisher Achievement Test. Therefore we would like you to answer a few questions for us.

They were then asked to fill out the POAQ in the presence of the experimenter. Afterwards, they were given the MAACL for a third time, the TARS, and the SIRS. Finally, they were process debriefed (Ross, Lepper, & Hubbard, 1975), given a debriefing statement (see Appendix K) and dismissed.

The other half of the subjects (no publicity condition) were simply given the MAACL, the TARS, and the SIRS after the feedback. Afterwards, they were also process debriefed (Ross et. al., 1975), given a debriefing statement, and dismissed.

E. Data Analysis

Raw data obtained from this experiment are listed in appendix L. Many components of our experiment were exploratory in nature. Specifically, the possible effect of publicity on post-stress dysphoria have not been explored

before, and gender as a potentially important factor has not been systematically studied. We are also not aware of any study that has assess the relationship between attributional style and hopeless expectation. We therefore decided to analysize all our data using alpha = 0.1 as our significance level rather than using the more conventional alpha = 0.05 level. Also, due to the exploratory nature of the study, we do not have a set of theoretically based planned contrasts to carry out in event of a significant higher order (e.g. a 3-way or a 4-way) interaction. As a result, the Scheffe test (Edwards, 1985, pp. 153 - 157) will be used for all post hoc analyses of significant interaction effects. The alpha level of all Scheffe tests will be set at the 0.1 level, since the traditional alpha = 0.05 has been criticized as being overly conservative for the Scheffe test (Edwards, 1985, p. 156).

All analyses of covariance (ANCOVAs) described below met the assumptions of normality and homogeneity of variance and the assumption of homogeneity of regression. We also assumed linear relationship between dependent variables and covariates (Howell, 1982, p. 473). All correlations discussed met the normality of distribution assumption. All multivariate analyses of variance (MANOVAs) discussed met the assumption of homogeneity of variance-covariance and the normality-of-distribution assumption.

Dysphoric Mood

Mood was measured three times during the experiment: At the beginning (MAACL-T1), after participants completed the FAT but before they received performance feedback (MAACL-T2), and after they had received their performance feedback (MAACL-T3).

A gender by attributional style ANCOVA was carried out to assess participants' MAACL-T2 dysphoric mood. A gender by attributional style by feedback by publicity ANCOVA was carried out to assess participants' MAACL-T3 dysphoric mood. For the first ANCOVA, participants' MAACL-T1 dysphoric mood was used as a covariate for both analyses. For the ANCOVA on MAACL-T3, both MAACL-T1 and MAACL-T2 scores were used as covariates.

Test Performance Expectation

To assess the possible effects of gender and attributional style on participants' test performance expectation, a gender by attributional style ANCOVA on TPEQ scores was carried out. Participants' FAT raw scores were used as a covariate. This was to control for possible effect of a participant's actual test performance on his/her performance expectation.

Post-Feedback Attributions

Participants in the publicity conditions were given the POAQ which measured their attribution along the internality,

stability, and globality dimensions. A gender by attributional style by feedback MANCOVA on the POAQ scores, with FAT raw scores as covariate, was carried out.

Rating of Test Accuracy

To assess participants' rating of FAT accuracy, a gender by attributional style by feedback by publicity ANCOVA on TARS score was carried out. Participants' FAT raw scores were used as a covariate. This was to control for possible effect of a participant's actual test performance on his/her test accuracy rating.

Manipulation Check: Skills Importance Rating

The raw scores of the SIRS would be examined. We expected the scores to have a high mean and a small variance. We also expected a negatively skewed distribution. Finally, a gender by attributional style by feedback by publicity ANCOVA on the SIRS scores was carried out.

Feedback Manipulation

To assess whether the participants did view our positive feedback manipulation as a positive one and our negative feedback manipulation as a negative one, a repeated T-test comparing their baseline dysphoria score (MAACL-T1) and their post-feedback dysphoria score (MAACL-T3) was conducted for each of the gender-by-attributional-style-by-feedback treatment groups.

III. Results

A. Manipulation Check

The Fisher Achievement Test

The Fisher Achievement Test was successful as an experimental tool. Post-experiment interviews indicated that participants believed that the cover story was true, and that the FAT was a real achievement test. Most participants also believed that the feedback was real.

Participants' responses to the Skills Importance Rating Scale (SIRS) were also supportive of our use of a bogus achievement test as experimental manipulation. Most participants rated achievement capacity as very important ($M = 7.5$, $S = 1.11$), resulting in a highly skewed distribution (skewness = -1.05). Also, a gender by attributional style by feedback by publicity ANOVA on SIRS score showed no significant results, indicating that the rating of skills importance was not affected by any of the between subject variables.

On the basis of these results, it is reasonable to infer that they had treated the experimental task as an important one, and that the feedback they received should have had a considerable impact on their post-feedback dysphoric mood.

The Feedback Effect

In this study, a feedback score of 60th percentile was defined as positive, and a feedback score of 40th percentile was defined as negative.

Repeated T-tests comparing baseline dysphoria mood (MAACL-T1) to post-feedback dysphoria mood (MAACL-T3) for the 8 gender by attributional style by feedback treatment groups showed, however, that our positive feedback manipulation was not successful.

As shown in Figure 1, significant increase in MAACL Dysphoria score was evidenced for all four gender-by attributional style treatment groups that were given negative feedback. For the four treatment groups that were given positive feedback, however, only the female-with-depressive attributional-style group showed a significant decrease in dysphoria score, $t(1, 15) = 1.74$, $p < 0.1$. For the rest of the four groups, there was actually nonsignificant increases in MAACL Dysphoria score. These findings suggested that most participants in the positive feedback condition had actually viewed the 60th percentile feedback as a neutral or even a negative one.

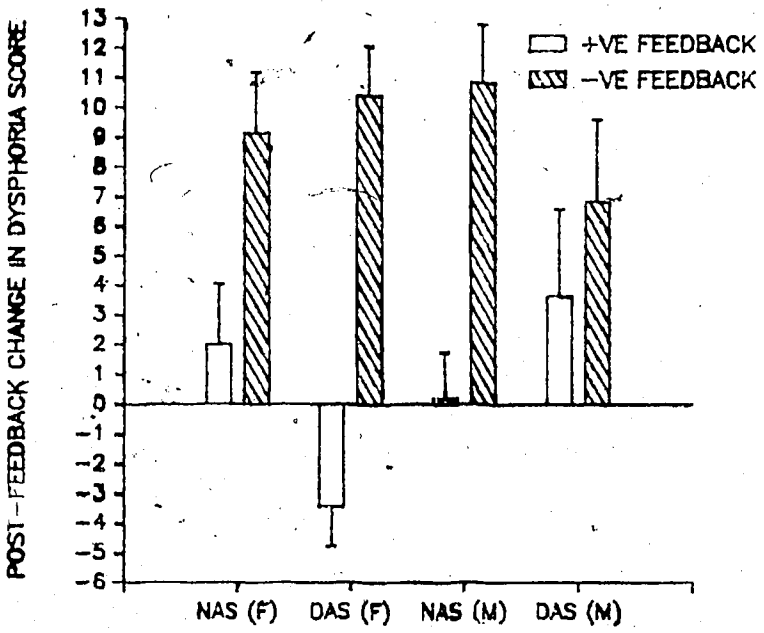

Figure 1

Change in MAACL Dysphoria Score (MAACL-T3 minus MAACL-T1) as a Result of Experimental Feedback

B. Mood Reaction

Pearson correlations between Anxiety, Depression and Hostility subscales of the MAACL at the three different phases of the experiment (T1, T2, T3) are reported in Table 3. Within each of the three phases, the subscales were significantly correlated with one another. This result supported the use of the combined Dysphoria score for data analysis (Zuckerman & Lubin, 1985).

Table 3

Correlations between the MAACL Anxiety, Depression and Hostility Subscales at the Three Experimental Phases

	Anx1	Dep1	Hos1	Anx2	Dep2	Hos2	Anx3	Dep3	Hos3
Anx1	1.00	.476**	.392**	.432**	.293**	.337**	.345**	.273*	.181
Dep1	----	1.00	.577**	.185	.459**	.260*	.220	.380**	.209
Hos1	----	----	1.00	.099	.134	.183	.178	.325**	.258*
Anx2	----	----	----	1.00	.616**	.573**	.359**	.325**	.234*
Dep2	----	----	----	----	1.00	.641**	.198	.456**	.271*
Hos2	----	----	----	----	----	1.00	.321**	.441**	.442**
Anx3	----	----	----	----	----	----	1.00	.716**	.765**
Dep3	----	----	----	----	----	----	----	1.00	.754**
Hos3	----	----	----	----	----	----	----	----	1.00

2-tailed significance: * - $p < .01$ ** - $p < .001$

MAACL-T2

A gender by attributional style ANCOVA on participants' Dysphoria scores at T2 (after completion of FAT but before feedback), using Dysphoria scores at T1 as covariate, was conducted. No significant effect was found. Repeated T-tests comparing the baseline Dysphoria score (MAACL-T1) to the post-test Dysphoria score (MAACL-T2) for the eight gender-by-attributional style-by-feedback treatment groups yielded nonsignificant results. That is, the FAT test itself did not act as a stressor that interacts with other between subjects variables to create mood change, nor was taking of the FAT test alone stressful enough to induce any significant dysphoric mood change from the baseline level.

MAACL-T3

Post feedback Dysphoria scores (MAACL-T3) were analysed using the ANCOVA procedure with MAACL-T1 and MAACL-T2 Dysphoria scores as covariates. A significant feedback main effect was found, $F(1, 110) = 36.30$, $p < 0.001$. Since there was also a significant three-way interaction between participants' gender, attributional style, and feedback, $F(1, 110) = 8.26$, $p < 0.01$, results from comparisons of treatment means (Edwards, 1985, p. 179 & 182) rather than overall effects were discussed.

Figure 2 shows the simple 2-way gender by attributional style interactions within the positive and the negative feedback conditions separately. Scheffe test indicated that

neither were significant (Edwards, 1985, p. 182). A scheffe test on the 2-way simple interactions between attributional style and feedback within each of the two genders yielded no significant results either. Pairwise comparisons among the eight treatment means revealed only one significant treatment difference. Females with depressive attributional style had significantly higher dysphoria score ($M = 44.05$, $SD = 7.80$) when they received negative feedback than when they received positive feedback ($M = 29.42$, $SD = 7.98$), $F(1,110) = 34.57$, $p < 0.1$.

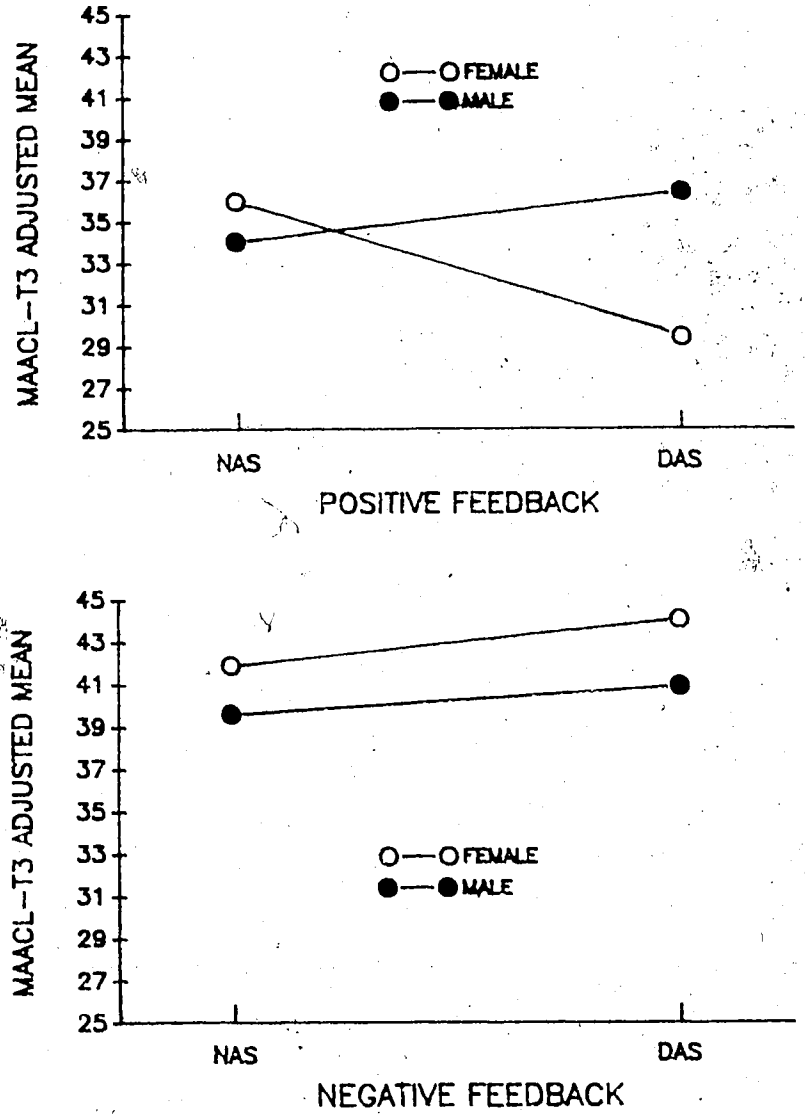

Figure 2

Effects of Gender, Attributional Style and feedback on MAACL Dysphoria Score

Contrary to expectation, publicity had no effect on MAACL-T3 Dysphoria score, and none of the expected 2-way (attributional style by feedback, attributional style by publicity) and 3-way (attributional style by feedback by publicity) interactions were significant.

C. TPEQ Score

A gender by attributional style ANCOVA was conducted on participants's TPEQ score. Their FAT raw scores were used as a covariate.

Neither gender nor attributional style had any effect on participants' TPEQ score. As shown in Figure 3, a significant sex by attributional style interaction was found, $F(1, 123) = 3.42$, $p < 0.07$. However, pairwise comparison revealed no significant difference among the 4 treatment means.

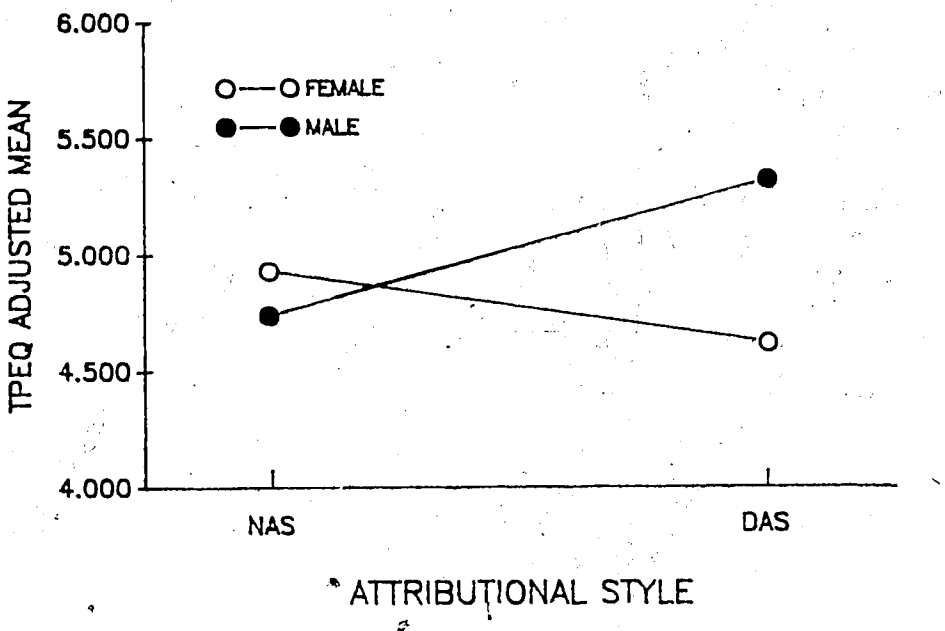

Figure 3

Effects of Gender and Attributional Style on TPEQ Score

D. Correlation between TPEQ Score and MAACL-T2 Score

To test the relationship between between participants's performance expectation and their post-test dysphoric reaction, the correlation (gender by attributional style) between TPEQ score and dysphoria change score (MAACL-T2 - MAACL-T1) for each of the four gender by attributional style treatment groups was tested. Significant negative correlation between the two variables was found for three out of the four groups ($r = -0.49$, $p < 0.01$ for males with nondepressive attributional style; $r = -0.41$, $p < 0.05$ for males with depressive attributional style; $r = -0.57$, $p < 0.01$ for females with nondepressive attributional style). For females with depressive attributional style, TPEQ score and MAACL-T2 score were not correlated at the 0.1 significance level ($r = -0.28$).

E. POAQ Score

Participants (N = 64) in the Publicity condition were given the POAQ. Correlations between the internality, stability and globality dimensions of the POAQ are shown in Table 4. Although all three dimensions were correlated with one another at the 0.05 significance level, these correlational values were lower than expected, because Seligman et al. (1982) stated that the three dimensions should be highly correlated with one another in people (such as those in this study) who exhibit a clearly defined attributional style.

Table 4

Correlations between the Three POAQ Attribution Dimensions

	Internality	Stability	Globality
Internality	1.00	.303*	.208*
Stability	----	1.00	.340**
Globality	----	----	1.00

N = 64; 1-tailed significance: * - $p < .05$; ** - $p < .01$

A gender by attributional style by feedback MANCOVA on the three attribution dimensions, with FAT raw score as covariate, was carried out. Hotellings T^2 indicated significant main effects of attributional style, T^2 (3, 53) = 2.94, $p < 0.05$ and feedback, T^2 (3, 53) = 4.42, $p < 0.01$). There were also significant two-way (attributional style by feedback) and significant three-way (gender by attributional style by feedback) interactions (T^2 (3, 53) = 7.41, $p < 0.01$; T^2 (3, 53) = 3.57, $p < 0.02$ respectively).

Further univariate F-tests on each of the three attribution dimensions for the four significant main and interaction effects revealed that all significant results were confined to the internality dimension of the POAQ. We will therefore limit our discussion to the internality dimension only. Also, due to the existence of significant two- and three- way interactions, results from comparisonsof treatment means rather than overall effects were discussed.

Figure 4 shows the simple 2-way interaction between gender and attributional style within each of the two feedback conditions. Using the Scheffe test, we found no significant results. Similarly, no significant 2-way interaction between attributional style and feedback was found within each gender. Pairwise comparison among the eight treatment means showed that males with nondepressive attributional style gave significantly more internal attribution (M = 6.13, SD = 1.07) when feedback was positive than when it was negative (M = 3.33, SD = 1.01), F(1,55) =

25.93, $p < 0.1$. Also, when feedback was negative, males with deprssive attributional style gave significantly more internal attribution ($M = 6.00$, $SD = 1.01$) than those with nondepressive attributional style ($M = 3.33$, $SD = 1.01$), $F(1,55) = 23.54$, $p < 0.1$. Neither attributional style nor feedback had any effect on the internality dimension of the POAQ among female participants.

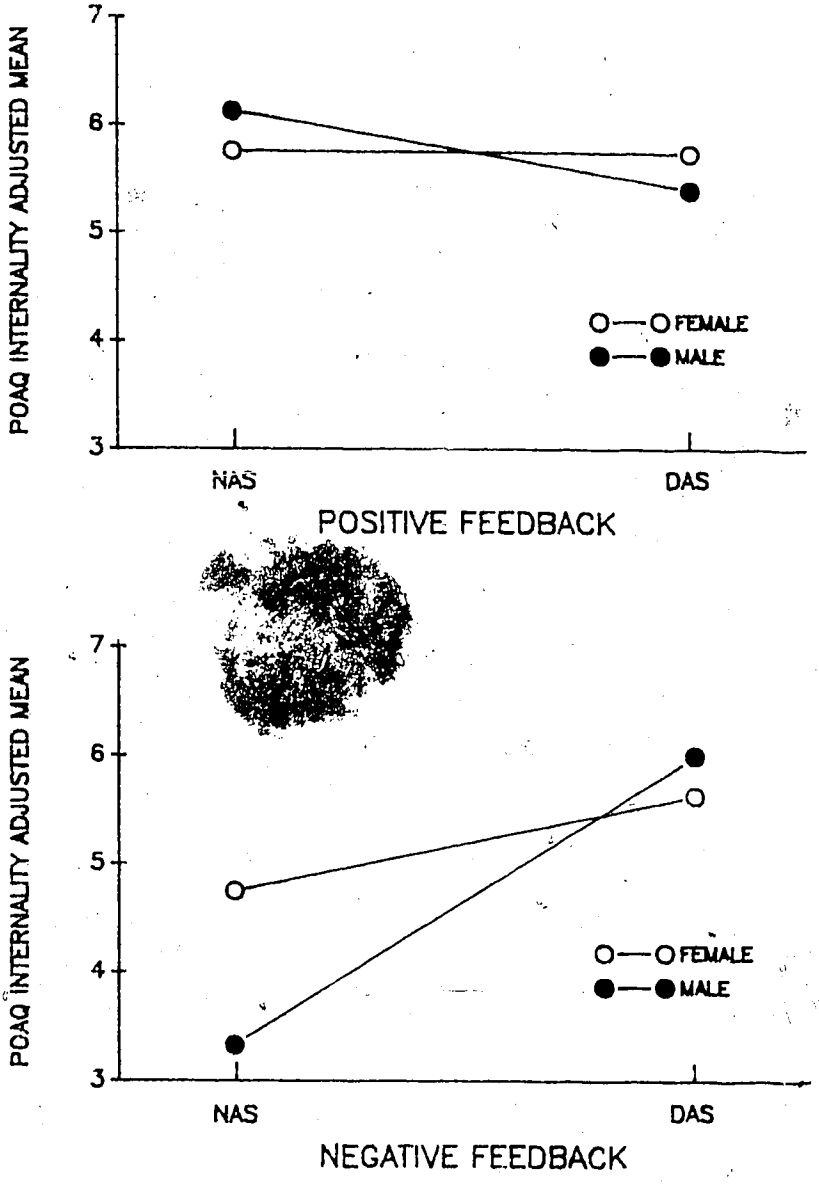

Figure 4

Effects of Gender, Attributional Style and Feedback on POAQ Internality Score

F. TARS Score

A gender by attributional style by feedback by publicity ANCOVA on the TARS score using participants' FAT raw score as a covariate showed a significant feedback effect, $F(1, 111) = 26.18$, $p < 0.001$ and a significant attributional style effect, $F(1, 111) = 7.86$, $p < 0.01$. Since there was also a significant two-way (attributional style by feedback) interaction, $F(1, 111) = 4.20$, $p < 0.05$, results of comparison of treatment means rather than of overall effects were discussed.

Figure 5 shows the two-way interaction between attributional style and feedback. Pairwise comparison of treatment means showed that participants with depressive attributional style rated the FAT as significantly more accurate ($M = 4.96$, $SD = 1.91$) than did participants with nondepressive attributional style ($M = 3.53$, $SD = 1.58$) when feedback was negative. The two groups did not differ when feedback was positive.

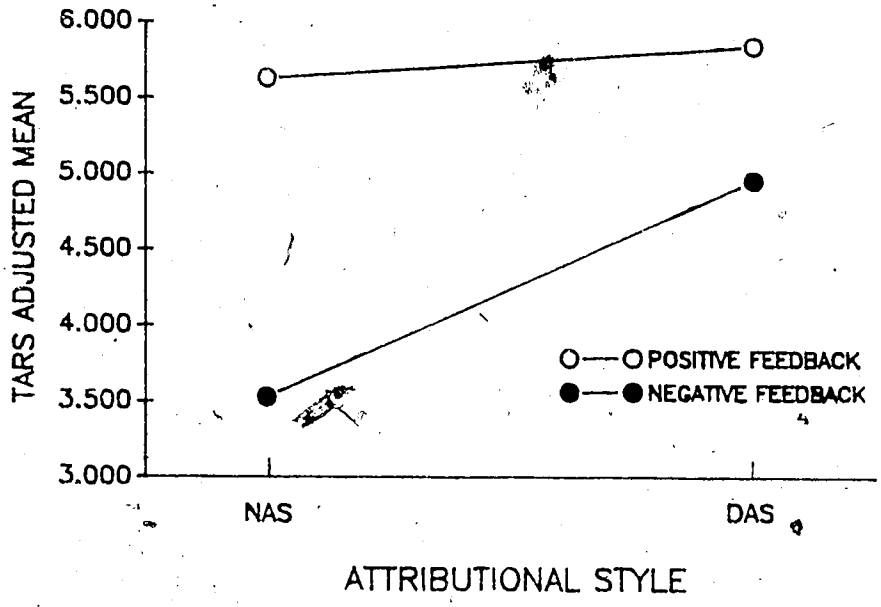

Figure 5

Effects of Attributional Style and Feedback on TARS Score

IV. Discussion

The present study tested three hypotheses related to the reformulated learned helplessness model. Each of them received little support.

The central hypothesis of the reformulated learned helplessness model is that people with depressive attributional style, compared to those with nondepressive attributional style, are more vulnerable to post-stress dysphoria. This hypothesis did not receive any support. After negative feedback, participants with depressive attributional style were no more dysphoric than those with nondepressive attributional style. This result remained unchanged when males and females were assessed separately.

Participants in the positive feedback condition were told that they scored at the 60th percentile range on the FAT. Surprisingly, positive mood reaction toward positive feedback was evidenced only in females with depressive attributional style (i.e. their MAACL-T3 Dysphoria score was lower than their baseline score). For the rest of the participants who received positive feedback, their MAACL-T3 Dysphoria score was actually nonsignificantly higher than their baseline (MAACL-T1) Dysphoria score.

Combining the two results, we concluded that not only is depressive attributional style <u>not</u> predictive of vulnerability to post-failure dysphoria mood change, it actually enhances satisfaction after a mild success for females. These findings clearly contradicted the

reformulated learned helplessness model, and they need some explanation.

First, that attributional style failed to predict post-failure dysphoria in our study might be due to the kind of stressor we used. Previous research typically assessed the reformulated learned helplessness model under very negative and very stressful situations such as abortion (Major, Mueller, & Hildebrandt, 1985), spouse suffering from Alzheimer's disease (Pagel, Becker, & Coppel, 1985), and unemployment (Rothwell & Wiliams, 1983). Our study, on the other hand, used a stressor that has little real-life consequences, and negativity of our stressor (a 40th percentile feedback) was mild compared to those of other [illegible] is possible that attributional style as a vulnerability factor for post-stress depression is effective only when the stressor itself is rather negative and severe. Research that systematically varies the negativity and severity of different stressors will hopefully yield a clearer picture as to the kind of stressor that will interact with attributional style in regulating the vulnerability of post-stress depression.

The criterion we used in classifying pariticipants into depressive vs. nondepressive attributional style groups might also have explained our null findings. Following Metalsky et al. (1982), we used 0.07 standard deviation above and below the mean ASQ scores in a sample as the cut off points for depressive and nondepressive attributional

style respectively. In retrospect, this criterion might have been unsatisfactory. Other measurement s of pathological personality factors such as the Minnesota Multiphasic Personality Inventory (MMPI) has typically considered only scores of at least 2 standard deviations above the population mean as indications of pathology. Had we used a similarly stringent classification criterion for depressive attributional style, we might have obtained significant findings.

Why would depressive attributional style enhance satisfaction after a mild success in females? One possible explanation is that females with depressive attributional style, compared to other participants, had lower outcome expectations. They are therefore more easily satisfied with a mild positive feedback. However, this explanation was not supported by our data. Using the TPEQ as a measure of outcome expectation, we found no differences in TPEQ score among the four gender by attributional style treatment groups. A second possible explanation is that females with depressive attributional style had actually (and contrary to their style) made more internal, stable, and global attribution for the positive feedback they received and thereby felt better about the result. As we will see later, this explanation was not supported by our data either.

A third explanation comes from the literature concerning sex differences in achievement motivation. First, early research concerning sex differences (e.g. Stein &

Baily, 1973) showed that although both men and women are equally concerned with achievement, the areas in which women chose to excel are different than those chosen by men. According to Stein and Baily (1973), women prefer to excel in areas such as home-making and nursing, whereas males are more concerned with areas such as business and sports. Particularly interesting for our purpose is Stein and Baily's finding that achievement in higher level education is more of a concern for men than it is for women. Secondly, some research showed that whereas women are more anxious about failure than men in general (Maccoby & Jacklin, 1974), they are also afraid to excel in areas that are traditionally considered as masculine (Cherry & Deaux, 1978; Condry & Dyer, 1976). As a result, when given a 'masculine' task, women might feel most happy if they perform well but not too well (Condry & Dyer, 1976).

It is interesting to note that of the four gender by treatment groups in our study, only females with depressive attributional style indicated satisfaction with a mildly positive feedback (i.e. a 60th percentile feedback) concerning an achievement test (a traditionally male task; Stein & Baily, 1973). Is it possible, then, that depressive attributional style in women is in some way a reflection of sex role conventionalism? That is, is it possible that women with depressive attributional style are also those who have learned to live by the tradition social image of women, and are therefore content with a mild success in a traditionally

male task? This conjecture is not unreasonable. First, almost half of the items in the ASQ consist of achievement related situations that reflect traditional male roles in the society (e.g. can't find a job, delivery of a poor presentation). Secondly, some researchers (Feldman-Summers & Kiesler, 1974) have suggested that women who exhibit strong 'fear of success' (Horner, 1968) should also be those who tend to make internal and stable attributions concerning failure and external and unstable attributions (i.e. depressive attributions) concerning success in achievement related tasks.

At this point, no definite conclusion is possible. Further research that seeks to clarify the relationship between attributional style and sex-role conventionalism in female would be very helpful.

Our second hypothesis concerns the relationship between attributional style and actual attribution. We expected that people with depressive attributional style will attribute their test failure to internal, stable, and global factors, whereas people with nondepressive attributional style will attribute it to external, unstable, and specific factors. Using the Performance Outcome Attribution Questionnaire (POAQ) as a measure of actual attribution, we found only limited support for this hypothesis. First, of the three attribution dimensions, only internality yielded a significant result. Secondly, the effect was found only for the male participants.

That ASQ measured attributional style did not predict actual attribution for female was not an unprecedented finding. Cutrona (1983), using pregnant mothers as her participants, found that their attributional style did not predict their actual attributions concerning childcare related stress.

Given the discrepancy between females's ASQ measured attributional style and their actual attribution, the logical step would be to find out which of the two can predict post stress depression more reliably. The small sample in our experiment (N = 8 for each of the eight gender by attributional style by feedback conditions) has prevented us from carrying out reliable statistical assessments. Cutrona (1983), on the other hand, found that pregnant women's ASQ scores were a better predictor of their post-childbirth depression than was their actual attribution.

To explain why females' ASQ scores were a better predictor of depression than were their actual attributions, Cutrona (1983) suggested that for need of public self-image management (self-presentation effect; Akin et. al., 1980), people often consciously distort their attribution concerning real life events (see pp. 35 to 37), thus making it an unreliable predictor of post-event depression. In order to measure people's actual attributions accurately, Cutrona suggested that more indirect methods that circumvent/prevent the need for public self-image management

should be used. Cutrona's suggestion received some support in our study.

As can be recalled, the internality dimension of actual attribution was measured in two ways: internality measure of the POAQ and the TARS. The primary difference between the two measures is in their degree of directness. The POAQ asked the participants, in a direct way, whether they were responsible for their test outcome ("...if the cause of your test outcome is due to you or if it is due to other factors). The TARS, by asking the participants to rate the accuracy of the test in measuring their achievement ability, provided a more indirect way of assessing the internality of their attribution. (The basic assumption is that rating the test as an inaccurate reflection of one's ability amounted to making an external attribution for their poor test result, whereas rating the test as an accurate reflection of one's ability amounted to making an internal attribution for the test result).

In support of Cutrona's (1983) suggestion, we found that when TARS instead of the POAQ was used to measure participants's actual attribution along the internality dimension, the gender difference diappeared. When given negative feedback, participants with depressive attributional style rated the test as more accurate than did participants with nondepressive attributional style. This was true for both male and female participants.

Thus, our preliminary findings suggested that actual attribution, if it was to be accurately measured, will have to be addressed to the participants in an indirect way. The next step in clarifying the relationship between attributional style and attribution should therefore be the design of a reliable scale that could provide indirect measures for all three dimensions for people's actual attribution.

Our third hypothesis, that people with depressive attributional style will have lower outcome expectations than people with nondepressive attributional style, was not supported. Overall, people with depressive attributional style were no more pessimistic in their performance outcome expectation than those nondepressive attributional style. This remains true when the responses of males and females were analysised separately.

One flaw of our study is that outcome expectation was measured before the participants were given their performance feedback. As mentioned in our 'Introduction' section, low outcome expectation in general is considered by the model as a result of interaction depressive attributional style and failure experience, and it is regarded as a necessary and sufficiant cause of depression (Abramson et. al., 1978; Alloy et. al., 1988). Therefore, we should have measured the outcome expectation concerning future performance of the participants after they had received their feedback.

On the other hand, one might argue that hopeless outcome expectation is a trait and not a state, and that some people are more hopeless in their outcome expectation than others in general. Lewinsohn, Mischel, Chaplin, and Barton (1980), for example, found that clinically depressed subjects rated themselves as having performed significantly poorer in a social competence task than did a nondepressed group before feedback was given to them. Other studies (Cane & Gotlib, 1985; Golin, Terrell, & Johnson, 1977; Gotlib & Olson, 1983) also showed that both clinically and subclinically depressed people have significantly lower performance expectations on novel tasks than do nondepressed people. No one, however, has researched on the possible differences in outcome expectation as a personality trait between people with depressive and nondepressive attributional style (i.e. depressive prones and nondepressive prones).

If our measurement of outcome expectation is valid, then it seems that outcome expectation as a trait does not differ between people with depressive and nondepressive attributional style. However, outcome expectation in our study was measured after the participants had taken the FAT, and their expectation might have been tainted by the experience they had had with the test. Had outcome expectation been measured before they took the FAT, a different result migh have been found.

In conclusion, we found that whether the ASQ can predict people's actual attribution depends on how people's actual attribution is measured. For females in particular, actual attribution can be measured accurately only when it is measured indirectly. Furthermore, we found that under a mildly negative stressor, depressive attribtuional style does not increase a peron's vulnerability to depression. Our data also suggested that depressive attributional style in females might be related to sex role conventionalism, and it might influence females' inclination to a positive mood reaction after a mild success in achievement related tasks. Future research that assess the relationship between attributional style and sex role conventionalism therefore is recommended.

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Appendix A

Attributional Style Questionnaire [1]

(Pp. 97 - 102)

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[1]The material involved has been removed because of the unavailability of copyright permission. See page 18 in text for information concerning the original source of the material.

Appendix B

Beck Inventory [2]

(Pp. 103 - 106)

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[2]The material involved has been removed because of the unavailability of copyright permission. See page 48 in text for information concerning the original source of the material.

Appendix C

The Multiple Affect Adjective Checklist (MAACL) [3]

(P. 107)

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[3]The material involved has been removed because of the unavailability of copyright permission. See page 49 in text for information concerning the original source of the material.

Appendix D

Fisher Achievement Test [4]

(Pp. 108 - 113)

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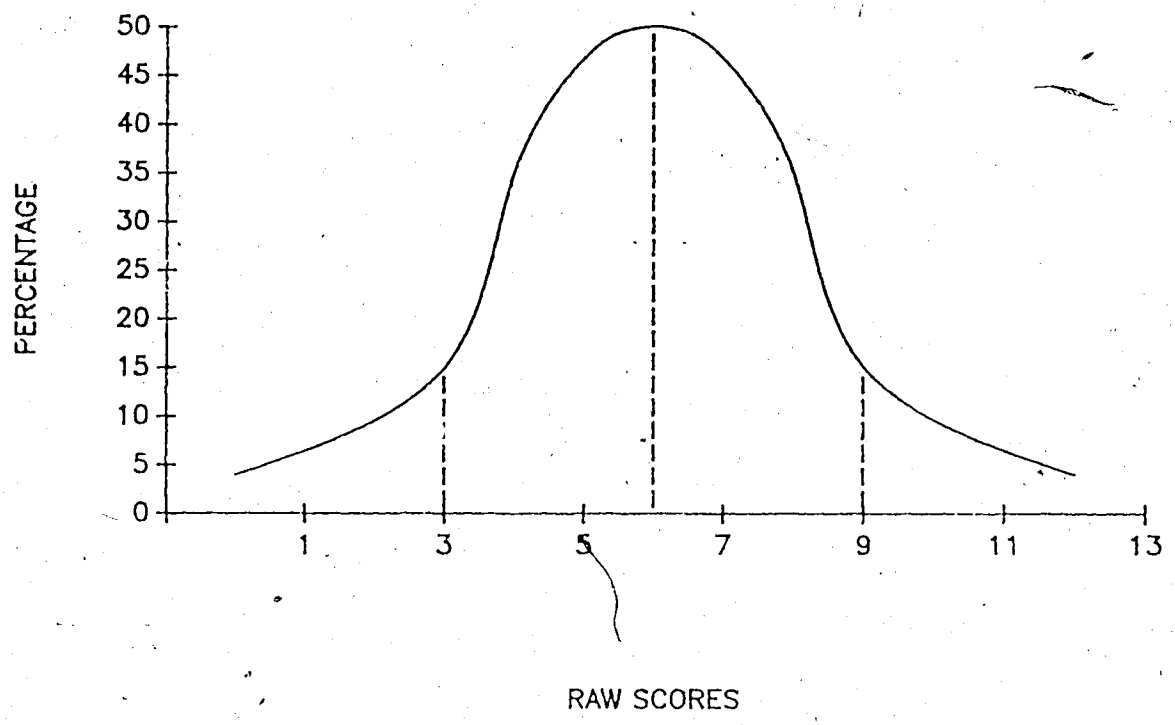
[4]The material involved has been removed because of the unavailability of copyright permission. See page 49 in text for information and the original source concerning the material.

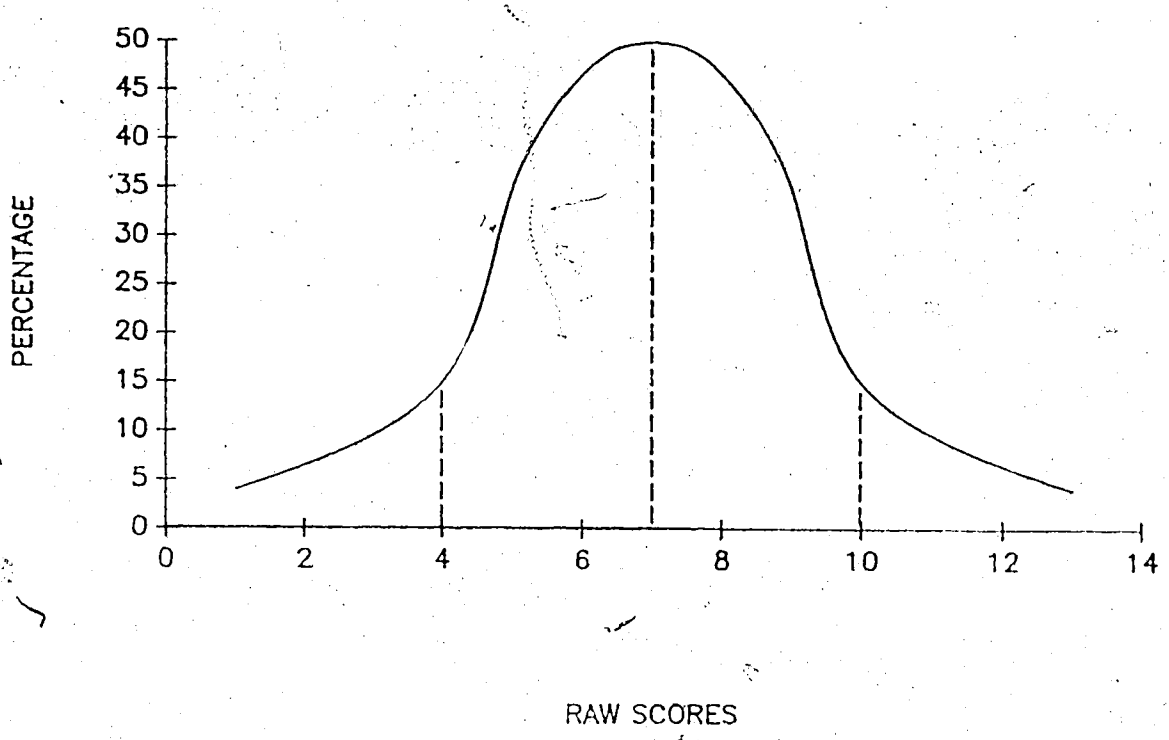
Appendix E

FISHER ACHIEVEMENT TEST
DISTRIBUTION OF RAW SCORES

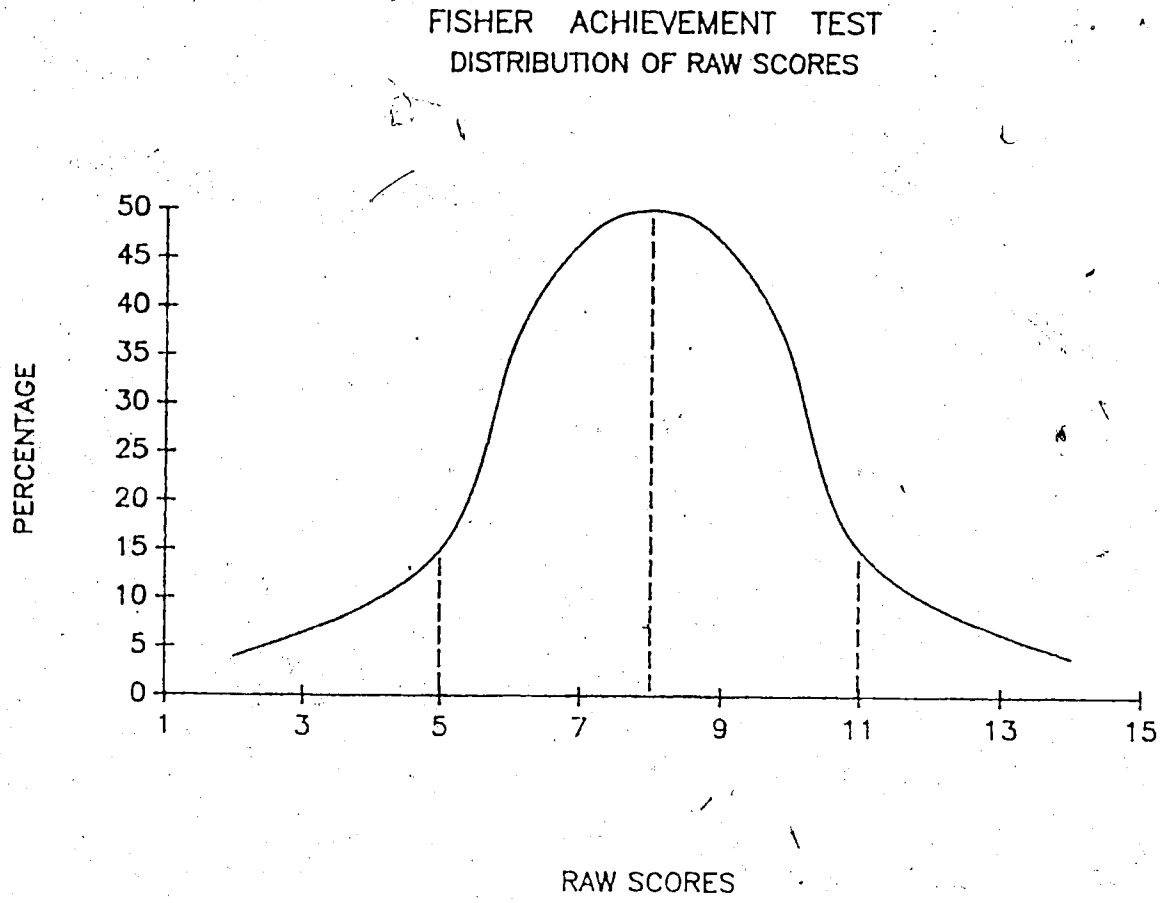


FAT raw score distribution curves: Mean = 6

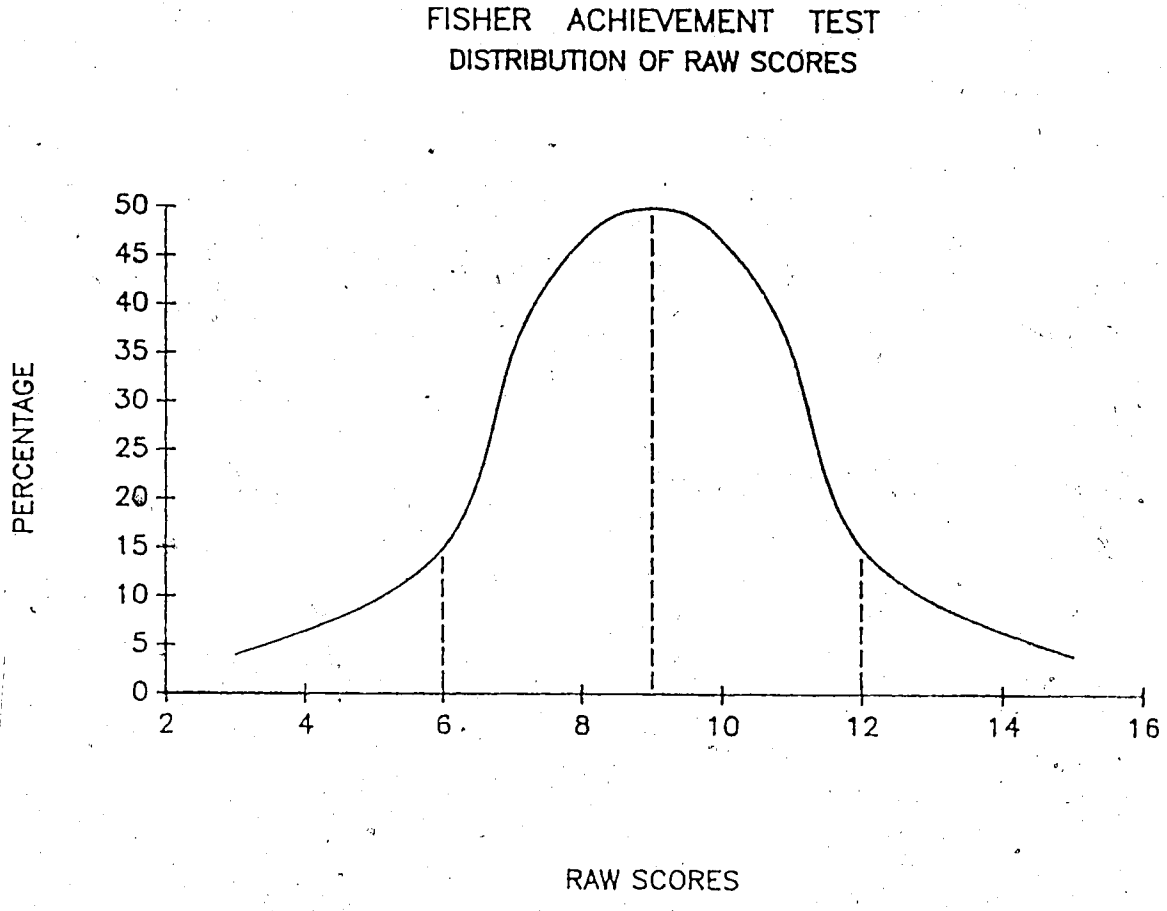
FISHER ACHIEVEMENT TEST
DISTRIBUTION OF RAW SCORES



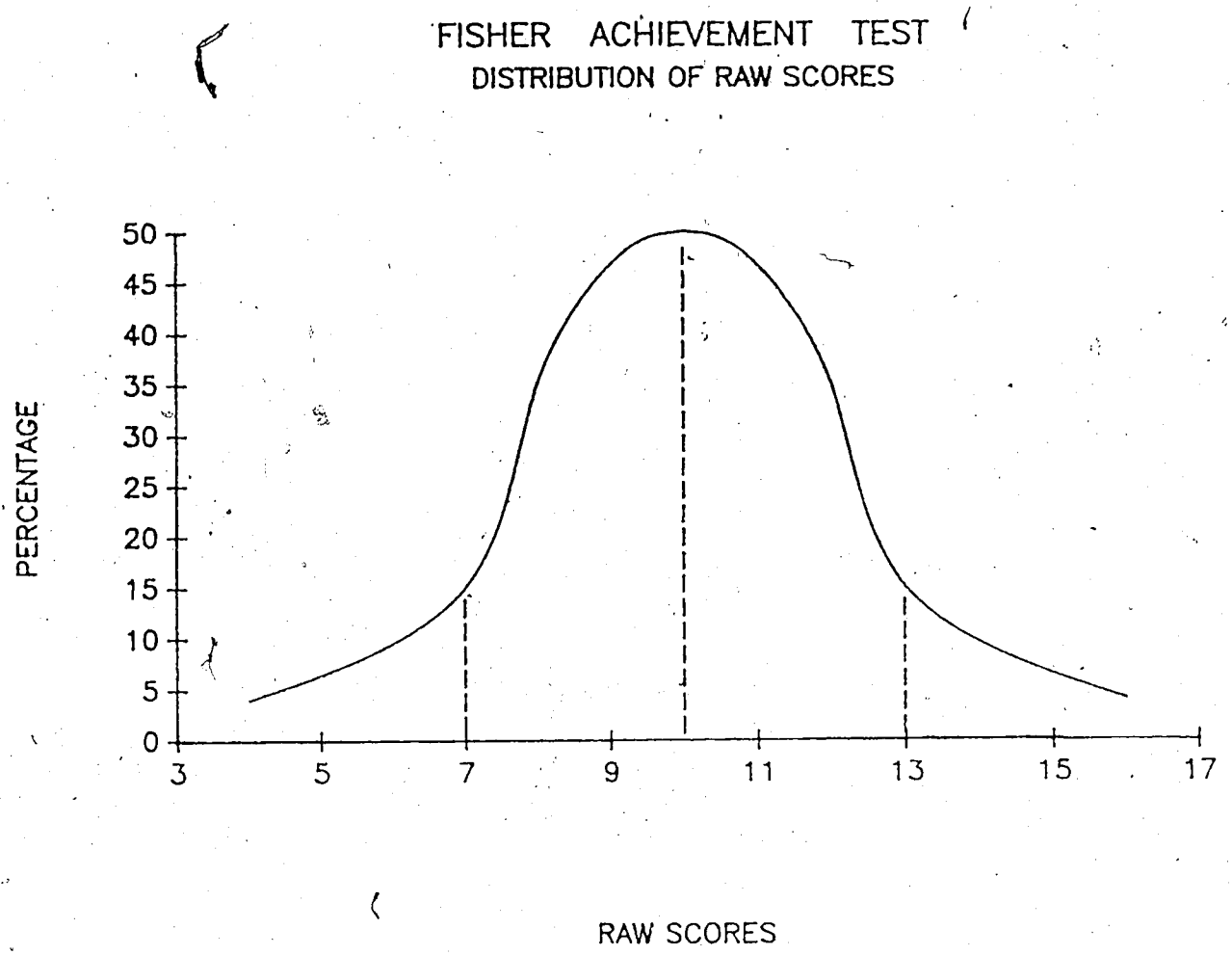
FAT raw score distribution curves: Mean = 7



FAT raw score distribution curves: Mean = 8

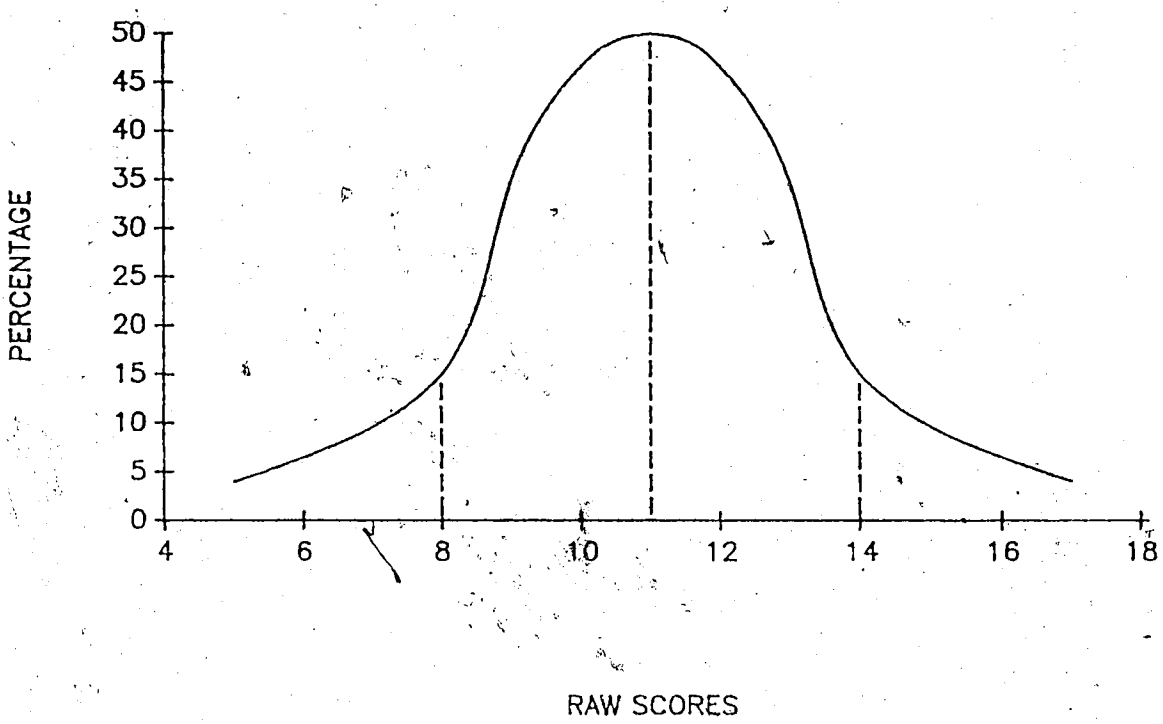


FAT raw score distribution curves: Mean = 9



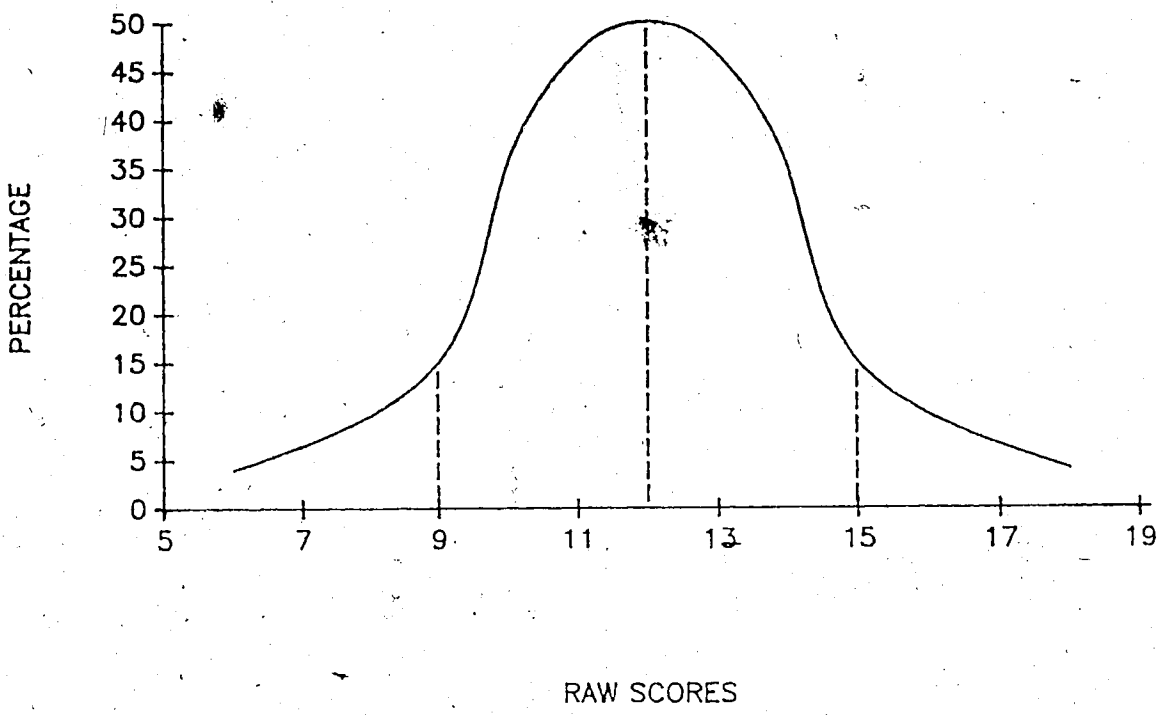
FAT raw score distribution curves: Mean = 10

FISHER ACHIEVEMENT TEST
DISTRIBUTION OF RAW SCORES



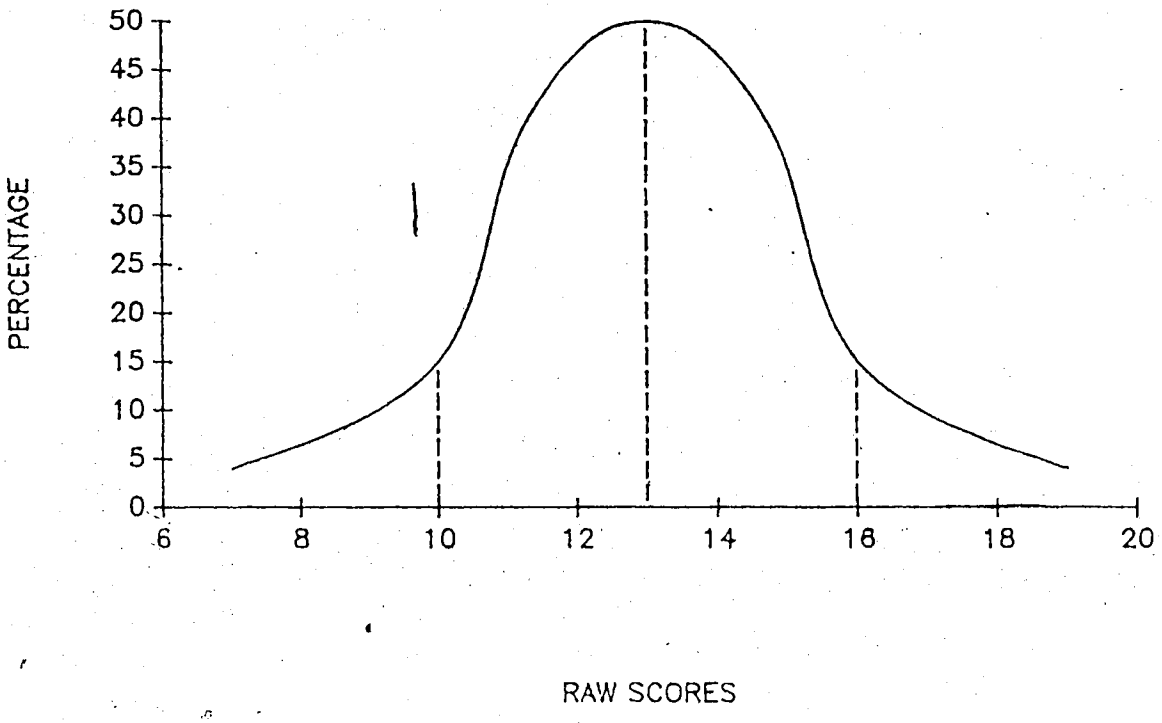
FAT raw score distribution curves: Mean = 11

FISHER ACHIEVEMENT TEST
DISTRIBUTION OF RAW SCORES



FAT raw score distribution curves: Mean = 12

FISHER ACHIEVEMENT TEST
DISTRIBUTION OF RAW SCORES



FAT raw score distribution curves: Mean = 13

Appendix F

The Test Performance Expectation Question (TPEQ) [1]

Name:

I.D.:

We would like to know how well/poorly you think you have done in the Fisher Achievement Test compared to the established norm. Please circle, on a scale from 1 to 9, how well/poorly you think you have done.

1-----2-----3-----4-----5-----6-----7-----8-----9

1 = way below average
5 = average
9 = way above average

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[1]This questionnaire was designed by Justin T. K. Wong for the purpose of this study.

Appendix G

The Performance Outcome Attribution Questionnaire (POAQ) [2]

Name:

I. D.:

It is important for us to know <u>why</u> you have performed the way you did (i.e. better than average? average? or below average?) in the Fisher Achievement Test. Therefore, please answer the four questions stated below.

1) Can you give one reason for your performance outcome?

2) Please rate, on a scale of 1 to 7, if this cause is due to you or if it is due to other factors.

Totally due to other people or circumstances. 1---2---3---4---5---6---7 Totally due to me.

3) In the future when you take achievement tests, will this cause again be present?

Will never again be present. 1---2---3---4---5---6---7 Will always be present.

4) Is the cause something that just affects achievement test performance or does it also influence other areas of your life?

Influences just this particular situation 1---2---3---4---5---6---7 Influences all situations in my life.

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[2]This questionnaire was designed by Justin T. K. Wong for the purpose of this study.

Appendix H

The Test Accuracy Rating Scale (TARS) and The Skills Importance Rating Scale (SIRS) [3]

Name:

I D.:

1) Please rate, from a scale of 1 to 9, how accurately has the Fisher Achievement Test reflected your verbal, mathematical, and reasoning ability.

(1 = not at all accurately; 9 = very accurately)

1-----2-----3-----4-----5-----6-----7-----8-----9

2) Please rate, on a scale of 1 to 9, how important it is for you as a university student to have good verbal, mathematical, and reasoning ability?

(1 = not at all important; 9 = very important)

1-----2-----3-----4-----5-----6-----7-----8-----9

Thank you very much for your coorperation.

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[3] This questionnaire was developed by Justin T. K. Wong for the purpose of this study.

Appendix I

Project Consent Form

The general purpose of this experiment is to assess the relationships between test taking and mood. You will be asked to complete an achievement test, and your mood will be monitored at different times by a mood scale. You will have the right to withdraw participation at any time during the experiment, without risk of penalty of any kind, and sufficient time will be provided to you at the end of the experiment for questions or comments you may wish to raise. If you agree to participate in this experiment, please sign this consent form.

By signing this consent statement, I agree to participate in this experiment under the above stated conditions.

Signature:

Date:

Appendix J

Description of Experimental Procedures

In a moment, you will be given instructions for filling out a first mood scale. After you're finished, I will take you to the testing room (pointing toward the room) where you'll stay for 30 minutes to do the Fisher Achievement Test. During that time, the door will be closed and you will not be disturbed. The test is a speed test, which means that time will be tight. If you're done early, look over the questions again. I'll come and get you when time is up.

At that time, I will collect your test and correct it here in my office while you will remain out there and fill out another mood scale and a simple question concerning your expectation as to your performance on the test (the TPEQ). When I am done correcting your test, I will open the door, and you may come in whenever you are ready. I will then show you your test. There are twenty possible points, one each for every correct answer. I will also show you a distribution table of scores that is based upon performance of students who had taken the test in the past. That would give you a feel as to where you stand vis-a-vis other students. Finally, I will give you a third mood scale together with a few questions assessing your opinion concerning the Fisher Achievement Test.

Appendix K

Debriefing Statement

The purpose of this experiment is NOT to assess how mood fluctuates with test taking behaviors. Rather, it is to assess how success and failure feedback concerning people's performance in a presumably important task affect their mood. Also, we are interested in finding out how the feedback affect their attitude toward the test.

We hypothesized that positive feedback concerning a person's performance on an important task would lead to positive mood experience, whereas negative feedback would lead to negative mood experience. Furthermore, we hypothesized that people who were given negative feedback (i.e. people who were led into believing that they had done poorly) on the task will dislike that task and rate it as a less accurate and less important task.

To test our hypotheses, 128 students were given a Fisher Achievement Test. They were told that the test measures academic ability. In reality, however, the test was a sham. It measured nothing at all. The true manipulation was on the feedback students received.

On a random selection bawis, half of the students in this experiment were given positive feedback concerning their test performance. The other half received negative feedback. Students' mood was measured at various intervals during the experiment, and they were asked to rate the accuracy and importance of the test at the end of the experiment. Statistical analyses on these two dependent variables would tell us whether our hypotheses are supported.

Thank you for your participation.

Appendix L

Raw Data from the Experiment
Groups 1 to 3

Gp	A1	D1	H1	A2	D2	H2	A3	D3	H3	TQ	TS	SS	SC	IN	ST	GL
01	06	10	05	03	06	08	07	09	09	07	05	08	11	--	--	--
01	05	15	07	10	16	12	11	18	12	04	06	08	05	--	--	--
01	14	18	09	11	19	12	11	22	13	05	04	06	10	--	--	--
01	16	19	09	18	20	09	10	17	08	04	08	09	05	--	--	--
01	10	25	11	09	20	11	08	19	12	06	03	08	06	--	--	--
01	14	16	10	18	18	14	07	14	09	03	08	07	08	--	--	--
01	06	15	09	07	16	08	07	16	10	07	07	09	12	--	--	--
01	08	16	08	12	20	14	11	21	13	06	04	06	14	--	--	--
02	06	18	10	10	20	12	09	20	11	05	07	04	03	--	--	--
02	06	15	08	09	19	12	08	17	09	03	07	07	11	--	--	--
02	09	20	12	12	20	12	09	18	11	03	06	07	12	--	--	--
02	08	16	09	10	21	13	07	17	12	04	04	08	11	--	--	--
02	09	24	10	10	22	10	08	17	08	06	07	07	12	--	--	--
02	14	15	09	17	19	12	11	18	08	04	04	08	06	--	--	--
02	08	14	10	09	18	12	07	15	11	05	06	07	10	--	--	--
02	13	18	12	11	16	12	10	21	12	07	07	09	12	--	--	--
03	16	18	11	16	20	13	05	15	08	03	06	08	12	--	--	--
03	09	11	05	11	22	11	07	15	08	04	06	09	13	--	--	--
03	09	18	11	11	21	13	08	19	11	03	05	07	03	--	--	--
03	12	18	12	07	18	08	06	18	08	07	06	08	14	--	--	--
03	12	19	09	17	22	12	08	18	09	05	06	06	09	--	--	--
03	14	13	07	05	08	08	09	07	09	05	06	08	03	--	--	--
03	08	09	10	11	18	12	07	17	11	05	04	07	11	--	--	--
03	12	18	10	11	17	10	06	14	07	05	08	08	12	--	--	--

Raw Data from the Experiment
Groups 4 to 7

Gp	A1	D1	H1	A2	D2	H2	A3	D3	H3	TQ	TS	SS	SC	IN	ST	GL
04	09	23	10	09	25	11	10	26	13	04	04	08	11	--	--	--
04	11	13	11	08	14	11	11	22	19	07	03	07	10	--	--	--
04	05	15	16	15	14	08	11	21	14	06	07	09	09	--	--	--
04	09	17	11	09	17	12	08	16	10	07	07	04	07	--	--	--
04	10	17	11	10	17	12	08	18	12	05	07	09	11	--	--	--
04	07	18	09	07	19	11	06	18	08	04	07	05	09	--	--	--
04	11	17	08	10	20	13	10	17	13	07	04	09	12	--	--	--
04	08	10	08	10	21	12	09	14	10	02	04	08	06	--	--	--
05	06	14	07	06	16	08	10	17	10	05	02	07	11	--	--	--
05	13	14	07	08	12	08	11	18	12	07	03	08	09	--	--	--
05	10	16	07	05	15	09	09	18	10	05	06	08	12	--	--	--
05	12	19	08	10	24	12	05	13	10	03	04	07	09	--	--	--
05	02	06	03	05	12	07	04	12	06	05	05	07	12	--	--	--
05	05	09	09	11	19	11	11	23	14	04	03	08	10	--	--	--
05	06	17	07	11	21	12	09	19	15	04	03	07	11	--	--	--
05	09	15	05	11	20	11	12	21	14	05	04	07	09	--	--	--
06	09	20	11	09	15	08	09	18	14	06	04	07	08	--	--	--
06	04	04	05	06	06	12	10	21	15	03	03	07	02	--	--	--
06	15	16	06	18	31	19	13	24	17	04	06	08	09	--	--	--
06	04	08	04	07	12	07	06	10	10	05	04	06	05	--	--	--
06	08	13	09	10	19	11	09	19	14	05	02	07	10	--	--	--
06	04	16	06	06	12	06	08	15	09	07	03	08	05	--	--	--
06	09	10	06	06	16	11	10	19	12	03	05	08	07	--	--	--
06	06	14	07	06	16	09	09	16	10	04	03	08	11	--	--	--
07	08	13	07	11	18	09	13	22	14	04	06	08	11	--	--	--
07	08	20	11	08	11	12	12	20	12	07	05	07	12	--	--	--
07	11	18	10	13	20	15	13	21	19	05	04	08	13	--	--	--
07	10	19	12	09	20	12	12	22	13	04	05	07	10	--	--	--
07	09	17	09	11	19	11	14	22	15	05	07	08	08	--	--	--
07	13	20	10	11	17	11	12	23	14	06	03	07	10	--	--	--
07	06	09	06	09	17	09	12	18	12	06	07	08	10	--	--	--
07	07	11	09	10	17	12	12	20	14	03	04	06	08	--	--	--

Raw Data from the Experiment
Groups 8 to 11

Gp	A1	D1	H1	A2	D2	H2	A3	D3	H3	TQ	TS	SS	SC	IN	ST	GL
08	08	17	09	12	24	13	15	23	18	06	01	08	09	--	--	--
08	08	16	09	06	12	12	14	25	15	05	07	08	07	--	--	--
08	06	10	06	12	19	12	12	18	14	04	08	08	07	--	--	--
08	09	07	06	16	17	15	15	16	13	05	05	08	09	--	--	--
08	11	20	09	09	21	13	11	21	12	05	04	07	12	--	--	--
08	09	19	09	10	22	08	12	18	13	07	08	09	10	--	--	--
08	07	17	09	08	16	13	06	16	10	03	07	08	10	--	--	--
08	10	17	10	08	13	10	08	14	07	05	08	08	09	--	--	--
09	07	15	09	07	10	08	07	10	07	05	03	07	12	07	07	06
09	07	14	09	09	16	10	06	16	09	03	05	08	06	07	07	06
09	08	17	11	10	20	13	07	16	11	05	07	09	10	06	07	06
09	08	15	09	12	21	11	12	23	13	05	07	07	10	05	05	06
09	09	17	10	09	18	09	08	19	11	06	06	07	12	05	05	03
09	07	14	08	05	17	08	04	20	09	07	07	08	08	06	03	05
09	07	18	10	07	17	12	09	20	15	07	03	08	10	04	04	04
09	09	18	12	07	18	12	06	20	09	07	06	07	13	06	06	04
10	13	15	10	06	16	09	07	16	08	05	06	07	08	05	03	05
10	08	11	05	17	26	10	10	21	07	02	03	04	06	06	07	06
10	09	18	11	08	19	12	08	18	11	04	02	08	10	06	06	06
10	11	20	12	11	20	12	11	20	13	05	06	09	10	06	07	05
10	08	17	07	05	18	08	07	14	09	06	07	08	10	07	03	02
10	15	21	08	12	18	08	13	21	13	04	06	08	13	07	06	05
10	14	12	06	04	08	08	05	10	06	05	07	09	12	07	07	07
10	05	06	06	09	12	09	05	12	05	07	06	08	12	05	02	02
11	09	19	11	09	20	12	08	20	12	05	05	08	08	06	07	03
11	09	19	09	11	21	12	10	22	12	02	05	06	09	06	06	05
11	04	15	06	08	20	11	00	04	05	05	08	09	09	05	04	06
11	08	19	10	09	17	10	09	18	09	04	07	07	11	05	04	06
11	10	10	10	17	20	11	05	12	07	04	07	08	13	06	06	06
11	09	16	11	12	18	11	09	17	12	03	08	09	03	07	07	06
11	07	14	08	07	17	09	04	15	06	05	07	07	12	06	06	06
11	03	15	05	07	19	10	04	16	06	05	07	07	12	05	03	07

Raw Data from the Experiment
Groups 12 to 15

Gp	A1	D1	H1	A2	D2	H2	A3	D3	H3	TQ	TS	SS	SC	IN	ST	GL
12	06	18	10	07	18	09	03	15	08	05	07	08	10	07	07	06
12	08	17	09	09	18	11	08	16	11	05	06	07	09	06	06	07
12	11	16	11	11	21	12	07	12	12	05	04	09	07	05	06	04
12	04	08	07	08	13	11	03	07	06	04	04	05	09	06	06	05
12	10	15	08	09	17	09	08	16	08	05	06	08	14	06	07	03
12	11	21	05	15	24	12	08	16	08	05	05	08	12	03	07	07
12	10	20	10	08	17	10	10	20	11	07	07	08	10	06	07	07
12	05	10	06	14	21	12	14	28	19	06	04	07	12	04	04	07
13	05	16	07	06	18	09	06	16	11	06	02	09	15	03	05	01
13	14	13	08	13	25	16	11	28	16	02	07	08	08	04	04	06
13	08	18	10	10	21	15	08	21	14	02	04	08	09	05	06	06
13	10	09	07	15	12	10	09	16	10	03	05	08	08	07	05	06
13	01	04	04	01	07	04	04	08	07	06	03	07	08	04	04	05
13	08	20	10	08	19	07	07	20	11	04	02	07	11	05	04	06
13	09	09	06	10	19	11	07	16	12	04	02	07	11	04	07	03
13	07	18	10	08	20	13	09	19	14	06	03	06	09	06	06	04
14	04	13	01	09	20	10	05	12	08	03	07	08	08	05	05	06
14	09	17	10	11	21	14	08	20	11	06	03	09	10	02	02	02
14	09	16	18	08	15	09	10	19	14	05	02	06	11	04	06	05
14	06	08	06	06	09	10	05	18	11	04	03	07	08	04	04	04
14	11	17	09	08	18	09	12	20	15	05	06	08	05	03	04	05
14	09	19	09	13	21	12	10	21	14	03	01	04	08	02	04	04
14	05	11	07	06	12	07	09	17	12	06	02	09	12	04	05	02
14	15	18	08	16	23	12	14	25	15	04	02	07	09	03	05	04
15	14	19	12	13	18	13	14	21	13	02	06	05	09	06	06	04
15	02	04	07	02	07	04	03	10	04	08	03	08	11	05	06	05
15	08	18	10	10	19	11	13	25	15	05	04	08	07	06	04	02
15	08	20	11	10	21	12	12	20	13	04	05	07	09	04	02	06
15	09	19	12	10	20	12	11	21	13	05	07	09	12	04	07	07
15	08	17	08	08	13	10	10	16	11	05	07	09	12	07	07	07
15	10	20	12	08	18	11	13	22	13	05	05	07	11	07	06	05
15	04	10	02	12	08	07	09	12	08	06	02	08	11	06	04	02

Raw Data from the Experiment
Group 15 and Codes for the different groups

Gp	A1	D1	H1	A2	D2	H2	A3	D3	H3	TQ	TS	SS	SC	IN	ST	GL
16	12	14	07	05	07	08	14	18	13	07	04	07	12	06	04	05
16	09	17	10	09	17	08	09	18	12	06	02	08	12	07	03	06
16	09	13	08	08	17	09	09	14	10	07	02	09	11	05	03	02
16	15	16	11	12	25	14	10	19	10	06	05	07	06	04	05	06
16	09	14	06	09	21	13	10	20	09	04	03	06	11	07	05	06
16	09	15	09	06	17	09	09	22	13	05	04	08	09	07	02	04
16	14	19	18	03	06	07	10	17	11	07	06	06	11	06	04	03
16	10	15	08	11	15	08	08	15	08	05	04	08	09	06	04	04

/* Codes for the different groups (GP):

01 = Females + NAS + Positive Feedback + No Publicity
02 = Males + NAS + Positive Feedback + No Publicity
03 = Females + DAS + Positive Feedback + No Publicity
04 = Males + DAS + Positive Feedback + No Publicity
05 = Females + NAS + Negative Feedback + No Publicity
06 = Males + NAS + Negative Feedback + No Publicity
07 = Females + DAS + Negative Feedback + No Publicity
08 = Males + DAS + Negative Feedback + No Publicity
09 = Females + NAS + Positive Feedback + Publicity
10 = Males + NAS + Positive Feedback + Publicity
11 = Females + DAS + Positive Feedback + Publicity
12 = Males + DAS + Positive Feedback + Publicity
13 = Females + NAS + Negative Feedback + Publicity
14 = Males + NAS + Negative Feedback + Publicity
15 = Females + DAS + Negative Feedback + Publicity
16 = Males + DAS + Negative Feedback + Publicity

Raw Data from the Experiment
Codes for the dependent measures

A1 = Pre-test MAACL Anxiety scores.
D1 = Pre-test MAACL Depression scores.
H1 = Pre-test MAACL Hostility scores.
A2 = Post-test MAACL Anxiety scores.
D2 = Post-test MAACL Depression scores.
H2 = Post-test MAACL Hostility scores.
A3 = Post-feedback MAACL Anxiety scores.
D3 = Post-feedback MAACL Depression scores.
H3 = Post-feedback MAACL Hostility scores.
TQ = TPEQ scores.
TS = TARS scores.
SS = SIRS scores.
SC = actual FAT scores obtained.
IN = scores on the internality dimension of the POAQ.
ST = scores on the stability dimension of the POAQ.
GL = scores on the globality dimension of the POAQ.