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The Effects of Experimentally Induced Frustration upon Depressed and Nondepressed College Students

by

Melvyn R. Ellner

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

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The Effects of Experimentally Induced Frustration upon Depressed and Nondepressed College Students

by

Melvyn R. Ellner

Adviser: Professor Arnold Bernstein

Depressed and nondepressed college students were frustrated in an incentive task utilizing a non-reward technique. Control Ss participated in a related incentive task in which the frustrating condition was minimized. Before and after measurements were obtained of hostility, depression, and speed of performance. Frustration produced significant increases in hostility ($p<.01$) and depression ($p<.05$) in the nondepressed Ss; and frustration did not produce significant increases or decreases in speed of performance in the depressed and nondepressed Ss. Coefficients of correlation were computed between the initial depression scales and the initial hostility scale for all Ss ($N=127$), and yielded the following correlations: Beck Depression Inventory x MAACL Hostility scale ($r=.51$; $p<.001$), MAACL Depression scale x MAACL Hostility scale ($r=.76$; $p<.001$). Chi-square analyses were performed upon all depressed and nondepressed Ss whose score changed on both the final hostility scale and the final MAACL Depression scale. Of those Ss who became more hostile ($N=38$), 76% became more depressed; of those Ss who became less hostile ($N=18$), 90% became less depressed ($p<.001$). The results were interpreted in terms of the frustration-aggression hypothesis, and Freud's theory of depression.

INTRODUCTION

Depression is an emotion, a symptom, and a nosological entity. A common form of human suffering, depression is a universal phenomenon. As an emotion, it is often a normal experience. As a symptom, it accompanies many pathological conditions, physical as well as mental. And as a nosological entity, "depression" is a diagnosis attached to 1/6 of all first admissions to mental hospitals (Grinker, et al, 1961).

Regardless of its intensity and whether it is a normal or pathological depression, the symptoms of depression are about the same: sadness, dwelling on the past, turning inward, social withdrawal, loss of self confidence, lack of initiative and motivation, passivity, feelings of loneliness and hopelessness, engulfment in feelings of guilt and self-accusation, pessimism, goallessness, morbid interests, a sense of being isolated, a feeling that life is meaningless, and nihilistic attitudes. The depressed person may also exhibit disturbances in sleeping patterns (insomnia, excessive sleep) and eating patterns (anorexia, bulimia), a dryness of the throat and mouth, closure of the eyelids, slowing of metabolic activities, and psychomotor retardation.

It was Kraepelin (1899) who coined the term "manic-depressive" psychosis. Abraham (1911, 1916, 1924) developed a theory of manic-depressive psychosis which held that individuals who became afflicted are by constitution and development, orally fixated and possessing anal components. He explained depression

as resulting from a childhood disappointment in love. The etiology of depression was explained to be a consequence of the repression of hostility which relates to the latter disappointment.

Freud (1917, 1923, 1930) discussed the depressive person, as one who introjected a disappointing love object and suffered from a severe narcissistic rejection. He distinguished between mourning and "melancholia" by their differences in narcissism, esteem, mourning work, duration, and ambivalence. Rado (1928, 1951) said that depression represents a cry for love. He discussed the depressive's precarious self esteem, and how in depression the patient reacts to loss of love with anger and introjection. Federn (1952) stated that the symptoms of manic-depressive psychosis are not dependent upon a prepsychotic personality. He saw the depressive as a person who is characterized by an impotence to suffer pain and frustration, the latter being painful in itself.

Klein (1934) emphasized the mother-child relationships during the weaning period which produce a depressive "position". She held that this was a normal event, but was unsolved in the case of the depressive. She interpreted the depressive's aggression as arising from the loss of the mother's breasts and milk. Klein contended that the depressive defends his

position in order to insure survival. Jacobson (1953, 1954) discussed depression as being the result of a loss of self esteem. She held that in childhood the depressive experienced a loss of object love before the child could distinguish itself from mother. Later in life the depressive tends to exaggerate love objects, and in his disappointment, a regressive breakdown of ego identity takes place. Bibring (1953) theorized that the frustration of any aspiration, not only of love, might reduce self esteem, and produce a depression. Cohen, et al. (1954) spoke of depressives as being individuals with high status strivings. The authors explained the etiology in terms of family dynamics. The depressive's mother was ambitious and contemptuous of her husband. The child grew up to lack confidence, and was expected to be the standard bearer for the family's social status.

Wolman (1966) sees the core of the manic-depressive personality to lie in a "paramutual disorder", in which the individual has a "Dr. Jekyl-Mr. Hyde" personality. The depressive person swings from one extreme to the other. In his desire to gain love the depressive may glorify his defeats and express his misery, hoping to win sympathy and love ("Cinderella Complex"). Even in the depth of a depression the patient expects to be rewarded. Wittenborn (1965) studied depressives and found them to be competitive and dependent,

a combination which the author sees as interfering with success. Wittenborn sees depression as a state of ambivalence in which the patient is not free to assert his competitiveness. The origin of the depressive's competitive predisposition is traced back to an identification with a competitive parent. Beck (1967) theorizes that during the developmental period the depression-prone individual acquired negative attitudes about himself, others, and the world, which produce "schemas". When disappointed in later life these schemas are evoked and lead to depressive symptoms. During depression the schemas increasingly dominate the cognitive process.

The symptoms of depression describe a psychologically and physically passive individual. A depressive person is "turned inward" and withdrawn (Grinker, 1961); lacks motivation (Beck, 1967); and clings to a "futilistic" philosophy (Beck, 1967). The presence of "somatic passivity" is well substantiated by clinical and experimental studies. Studies by Greenfield, et al (1963); Rimon, et al (1966); and by Krantz-Gross and Hasse (1958) show depressed individuals to have low galvanic skin responsivity, little muscular activity, and lack of tension.

Ostow (1962) concluded from his data that "libidinal level" declines in depression. He deduced this from his finding that there is a reduced frequency of eye blinks in depressed subjects while elated subjects show increased frequency of eye blinks. That eye blink rate can be used as an indicator of heightened drive states is borne out by recent studies. For example, Antrobus, Antrobus, and Singer (1964) found eye blink rate in their subjects to increase following instructions to engage in active rather than passive thinking. And Harris, et al (1966) found that eye blink rate speeds up when subjects show muscular tension and anxiety.

It has long been contended that depression results from repressed aggression, notably by Freud (1917, 1923), who sees depression as a result of self hatred or of "aggression turned against the self." Freud says: "The more a man controls his aggressiveness the more intense becomes his ideal's inclination to aggressiveness against his ego." (Freud, 1923, p. 44).

That the occurrence of aggressive behavior presupposes the existence of frustration is a hypothesis pioneered by Dollard, Doob, Miller, Mowrer, and Sears (1939). Concisely stated, the frustration-aggression hypothesis holds that "...aggression is always a consequence of frustration." (Ibid, p. 1). The latter and others, (Sears & Sears, 1940; Haner & Brown, 1955; Finch, 1942; Graham, et al 1951; Palmer, 1960; Otis & McCandless, 1955) present data from studies of animals, children, and adults to support this contention, while

Miller & Bugelski (1948), Stagner & Congdon (1955), Kuhn, et al (1967), and Buss (1966) provide data which do not support this contention.

The adaptive function of this mechanism is not hard to infer. A species (or an organism) which becomes hostile and active in response to frustration is more likely to overcome obstacles and to survive than one which is thwarted and becomes passive in the face of frustration. For example, increase in drive (Hull's D or Freud's libido) in a hungry organism will ordinarily activate it to gain access to food which is otherwise unavailable because of an actual or psychological barrier. When cornered and in fear of one's life one may attack the frustrating agent, thus contributing to survival. When failure threatens, if one becomes devitalized the possibility of success recedes. In general, when one is thwarted in gaining desired ends, aggression and increased motivation will assist the frustrated organism to attain its goals. This survival mechanism apparently does not operate effectively in the abnormal psychological condition known as depression. For in depression, especially in the face of frustration, the individual tends to become passive rather than active and according to Freud (1917, p. 244; 1923, p. 44) to defend himself against aggressive strivings. In this connection, it would be of significance to confirm experimentally whether frustration does in fact produce aggression or depression

in depressed individuals, for it would be expected according to Freud (Ibid), that when aggressively provoked, the depressed individual will inhibit aggression and become passive and even more depressed.

Operational definitions provided by Dollard, et al (1939) are utilized in many studies: "aggression" being defined as "...an act whose goal response is an injury to an organism..."(Ibid, p. 11), and "frustration" as any interference with a goal response. A goal response is "An act which terminates a predicted sequence..."(Ibid, p. 6). As a dependent variable, aggression has been measured in numerous ways. In a study of infants, Sears & Sears (1940) used crying in infants as a measure of aggression and "latency of crying" as a measure of the strength of the frustrating stimulus, i.e., the ability of food withdrawal to instigate aggression. Haner & Brown (1955) utilized the intensity of pressure exerted in a bar press as a measure of aggression. A measure of aggression will be obtained in the current experiment utilizing score on the hostility scale of the Multiple Affect Adjective Check List.

Two frustration techniques are suggested by Dollard, et al (1939) which they regard as effective in producing aggression. One is to put a motivated response into a response sequence which leads to non-reward. The other is to punish goal responses. Experiments by Azrin (1966) have shown that both of these techniques are effective in producing aggression. Learning theorists would view an object loss situation as being analogous to a non-reward technique.

In the current experiment, depressed and nondepressed subjects will be frustrated in an incentive task utilizing a non-reward technique. Depressed and nondepressed control subjects will participate in a related incentive task in which the frustrating condition is minimized. Before and after measurements of hostility, depression, and speed of performance will be obtained. According to Dollard, et al (1939, p. 1) it would be expected that Ss will show a significant increase in hostility as a consequence of the frustration procedures. But according to Freud (Ibid) the depressed Ss would not be expected to show an increase in hostility and in speed of performance, but to show an increase in depression as a consequence of the frustration procedures.

The following hypotheses will be tested:

1. Under the frustration condition hostility scores will increase for nondepressed subjects.

2. Under the frustration condition hostility scores will not increase for depressed subjects.

3. (a) Under the frustration condition speed of performance scores will increase for nondepressed subjects.

(b) Under the frustration condition speed of performance scores will decrease for depressed subjects.

4. Under the frustration condition there will be an increase in depression scores for the depressed subjects.

5. Under the frustration condition there will not be an increase in depression scores for the nondepressed subjects.

METHOD

Subjects: Three classes in undergraduate psychology were used as the experimental group (N = 64). Two classes in undergraduate psychology were used as the control group (N = 63)

Materials:

The Beck Depression Inventory (Beck, 1967), a 21 item test of depression in which each item contains 4 to 6 statements graded according to the severity of a common symptom of depressive illness.

The Hostility and Depression scales of the Today Form of the Multiple Affect Adjective Check List (Zuckerman & Lubin, 1965). The MAACL is a 132 item test, each item being a word which describes an affect. S is asked to check each word which describes how he feels now.

The Dex Aim psychomotor speed test (Holmes, 1955), a speed test which requires S to place an "x" in the center of as many boxes as he can during a 60 second period.

The Digit Symbol subtest of the Wechsler Adult Intelligence Scale (Wechsler, 1955).

See appendix for a more detailed description of the scales.

Procedure:

Frustration Condition

1. The tests are administered to each group in the order listed above.
2. Each S is given a packet containing 10 copies of the Digit Symbol test, and the following instructions are read:

"This test is part of the Wechsler Adult Intelligence Scale. To be able to complete all of the boxes within the time limit is a mark of high intelligence. You will be allowed 10 chances to complete all of the boxes within the time limit. I will tell you when to begin and when to stop. There will be a 30 second break between trials, during which time I would like you to count the number of digits which you have completed."

Sixty seconds are allowed for the first trial, a pretested time period known to be insufficient to complete the task, and thereafter the time allowed is reduced by 2 seconds per trial to compensate for practise effect and to intensify the frustrating nature of the task.

3. The tests are then readministered in the same order as listed above.

Control Condition:

The control condition is identical to the frustration condition except that S is given a packet containing 4 copies of the Digit Symbol test, and the instructions regarding the administration of the Digit Symbol test are changed as follows:

"This is a test of intelligence which is used for screening purposes at colleges and universities. I would like you to attempt completion of all the boxes on the sheet within the time limit. I will tell you when to begin and when to stop."

Three and one half minutes are allowed. This is sufficient time to permit all Ss to complete the task.

The following instructions are then given:

"Now I would like you to do the test again. But this time there will be a different time limit. To be able to complete all the boxes within the time limit is predictive that a student will graduate from college within the upper half of his class."

Time allowed is reduced to 3 minutes which is still sufficient to allow all Ss to complete the task.

The instructions are then repeated as follows:

"Now I would like you to do the test again. But this time there will be a different time limit. To be able to complete all the boxes within the time limit is predictive that a student will graduate from college within the upper third of his class."

Time allowed is maintained at 3 minutes which is sufficient to allow all Ss to complete the task.

The instructions are then repeated as follows:

"Now I would like you to do the test again. But this time there will be a different time limit. To be able to complete all the boxes within the time limit is predictive that a student will graduate from college within the upper quarter of his class."

Time allowed is maintained at 3 minutes which is sufficient to allow all Ss to complete the task.

At the conclusion of the experiment, about 30 unselected Ss were interviewed informally as to "what they thought the experiment was all about." None of these Ss indicated that they were aware of the experimenter's objectives.

Selection of Subjects: The subjects were divided into depressed and non-depressed groups on the basis of their initial scores on the Beck Depression Inventory.

Nondepressed Group: 26 experimental Ss and 16 control Ss who scored at or between 0 and 4 on the initial Beck Depression Inventory. From this subject pool, 15 Ss from the experimental group and 15 Ss from the control group were found to be matched on the basis of initial Beck Depression Inventory score, and were retained as subjects.

Depressed Group: 18 experimental Ss and 24 control Ss who scored at or between 10 and 27 on the initial Beck Depression Inventory. From this subject pool, 15 Ss from the experimental group and 15 Ss from the control group were found to be matched on the basis of initial Beck Depression Inventory score, and were retained as subjects.

The groups had the following characteristics:

	Non-depressed Experimental	Non-depressed Control	Depressed Experimental	Depressed Control	Hospitalized Depressives (Beck, p. 196)
Mean Beck Score	2.1 (1.4)	2.1 (1.4)	14.7* (5.3)	14.7* (5.1)	25 (9.4)
Mean Age	21	21	20	20	not reported
Number Men	6	7	2	7	270
Number Women	9	8	13	8	472

Note.--Figures in parentheses are standard deviations.

*Significantly greater than the Nondepressed group ($p < .001$).

A greater number of women in the depressed groups is to be expected as depressed women outnumber depressed men by a wide margin (Beck, 1967, p. 15). In the current study the differences in the number of male and female subjects in the depressed and nondepressed groups is not significant (X^2=1.1). Male and female Ss changed equally on the administered tests.

Treatment of the Data

A 2x2x2 analysis of variance design with replications on one factor was used (see Winer, 1962, pp. 337-349), which included diagnostic group (depressed and nondepressed), experimental condition (frustration and control), and test condition (before and after). This design was utilized to test the significance of the differences regarding the factors for each of the dependent variables, which were: MAACL depression score, MAACL hostility score and Dex Aim psychomotor speed test score.

Means and standard deviations of each test were computed for each of the groups; t tests for correlated and uncorrelated data (where appropriate) were performed to test the significance of the differences between initial and final means for each of the groups, under the various conditions.

RESULTS

The effect of frustration upon hostility

An analysis of the variance of hostility scores (see Table 1) reveals a significant main effect for diagnostic group ($F = 18.1$; $p < .001$), and test condition ($F = 16.4$; $p < .001$), and a significant interaction effect between experimental condition, diagnostic group, and test condition ($F = 3.69$; $p < .05$, one tailed test).

Table 2 shows initial and final means and standard deviations of hostility scores for the depressed and nondepressed groups, under frustration and control conditions. The data show that only in the nondepressed group undergoing frustration did the hostility scores significantly increase ($t = 2.6$; $p < .01$). The depressed group did not significantly increase in hostility scores under the frustration condition.

Hypotheses 1 and 2 are therefore confirmed. Under the frustration condition, hostility scores increase for nondepressed subjects and do not increase for depressed subjects.

Of special interest and to be discussed later is the unpredicted finding that the initial hostility scores in the depressed groups were significantly higher than in the nondepressed groups ($p < .001$).

TABLE 1

Analysis of variance of MAACL Hostility scores

SOURCE	SS	df	MS	F	p
Between Subjects	1916	59			
Frustration-Control (A)	7	1	7	.26	
Depressed-Nondepressed (B)	449	1	449	18.15	.001
AB Interaction	77	1	77	3.11	
Subj. W. Grps.	1384	56	25		
Within Subjects	524	60			
Initial-Final Test (C)	108	1	108	16.44	.001
AC Interaction	21	1	21	3.16	
BC Interaction	2	1	2	.25	
ABC Interaction	24	1	24	3.69	.05
C x Subj. W. Grps.	369	56	7		

TABLE 2

Initial and final means and standard deviations of MAACL Hostility scores for depressed and nondepressed groups under frustration and control conditions.

Condition	Nondepressed		Depressed	
	Initial	Final	Initial	Final
Frustration	3.7 (2.3)	7.5* (5.3)	7.1** (3.7)	8.7 (3.9)
Control	4.3 (4.)	4.7 (3.9)	9.1** (3.4)	10.8 (4.9)

Note.--Figures in parentheses are standard deviations.

*Final score is significantly greater than initial score; t for correlated data = 2.6; $p < .01$.

**Significantly greater than the initial score of the nondepressed group; $p < .005$.

The effect of frustration upon speed of performance

An analysis of the variance of Dex Aim scores (see Table 3) reveals a significant main effect for experimental condition ($F = 7.1$; $p < .025$) and test condition ($F = 118.5$; $p < .001$).

Table 4 shows initial and final means and standard deviations of Dex Aim psychomotor speed test scores for the depressed and nondepressed groups, under frustration and control conditions. The data show that in all groups, final Dex Aim scores significantly increased over initial scores (t test for correlated data; $p < .001$). Practise effect no doubt accounts for at least a part of these differences. The data show an unexpected significant difference between the frustration and control groups in their initial Dex Aim scores ($p < .01$). This difference might be due to a smaller subject pool in the nondepressed control group. Further statistical analyses were precluded as there were no significant interaction effects.

These data show that under the frustration condition, speed of performance scores do not significantly increase or decrease for depressed and nondepressed groups. Hypotheses 3a and 3b are therefore not confirmed.

TABLE 3

Analysis of variance of Dex Aim scores

SOURCE	SS	df	MS	F	p
Between Subjects	15434	59			
Frustration-Control (A)	1680	1	1680	7.12	.025
Depressed-Nondepressed (B)	317	1	317	1.34	
AB Interaction	210	1	210	.89	
Subj. W. Grps.	13217	56	236		
Within Subjects	7571	60			
Initial-Final Test (C)	5057	1	5057	118.55	.001
AC Interaction	1	1	1	.02	
BC Interaction	10	1	10	.23	
ABC Interaction	115	1	115	2.70	
C x Subj. W. Grps.	2389	56	43		

TABLE 4

Initial and final means and standard deviations of Dex Aim psychomotor speed test scores for depressed and nondepressed groups under frustration and control conditions.

Condition	Nondepressed		Depressed	
	Initial	Final	Initial	Final
Frustration	86.7 *	97.	84.8	100.1
	(9.0)	(13.6)	(14.6)	(10.5)
Control	75.2	89.1	83.4	93.5
	(12.4)	(12.0)	(12.2)	(8.8)

Note.--Figures in parentheses are standard deviations.

*Significantly greater than initial score of control group; $p < .01$.

The effect of frustration upon depression

An analysis of the variance of MAACL Depression scores (see Table 5) reveals a significant main effect for diagnostic group ($F = 29.7$; $p < .001$), and significant interaction effects between experimental condition and test condition ($F = 4.1$ $p < .05$), and between diagnostic group and test condition ($F = 9.1$; $p < .005$).

Table 6 shows initial and final means and standard deviations of MAACL Depression scores for the depressed and nondepressed groups under frustration and control conditions. The initial depression scores in the depressed groups were found to be significantly higher than in the nondepressed groups ($p < .001$). Under the frustration condition the nondepressed group significantly increased in depression score ($p < .05$).

Contrary to expectations the data show that under the frustration condition, depression scores increase for nondepressed subjects, and do not increase for depressed subjects. Hypotheses 4 and 5 are therefore not confirmed.

TABLE 5

Analysis of variance of MAACL Depression scores

SOURCE	SS	df	MS	F	p
Between Subjects	7978	59			
Frustration-Control (A)	19	1	19	.21	
Depressed-Nondepressed (B)	2745	1	2745	29.66	.001
AB Interaction	28	1	28	.30	
Subj. W. Grps.	5185	56	93		
Within Subjects	899	60			
Initial-Final Test (C)	10	1	10	.78	
AC Interaction	51	1	51	4.10	.05
BC Interaction	112	1	112	9.07	.005
ABC Interaction	34	1	34	2.76	
C x Subj. W. Grps.	692	56	12		

TABLE 6

Initial and final means and standard deviations of MAACL Depression scores for depressed and nondepressed groups under frustration and control conditions.

Condition	Nondepressed		Depressed	
	Initial	Final	Initial	Final
Frustration	7.3	12.7*	18.9**	17.8
	(5.0)	(7.9)	(7.8)	(7.0)
Control	7.9	8.1	19.3**	17.7
	(6.4)	(6.0)	(7.7)	(9.5)

Note.--Figures in parentheses are standard deviations.

*Final score is significantly greater than initial score; t for correlated data = 2.4; $p < .05$.

**Significantly greater than initial score of the nondepressed group; $p < .001$.

The relationship between depression and hostility

It will be recalled (see tables 1 and 2) that an unpredicted difference in the mean initial hostility scores was obtained for depressed and nondepressed groups, the depressed groups scoring significantly higher on the hostility scale than the nondepressed groups ($p<.001$). In order to clarify further the relationship between depression and hostility, the following additional statistical analyses were performed.

Table 7 shows coefficients of correlation (for all subjects, see procedure) between the initial MAACL Depression scale and the initial MAACL Hostility scale ($r = .76$; $p<.001$); between the initial Beck Depression Inventory and the initial MAACL Hostility scale ($r = .51$; $p<.001$); and between the initial MAACL Depression scale and the initial Beck Depression Inventory ($r = .66$; $p<.001$).

Chi-square analyses were performed upon all depressed and non-depressed Ss (see selection of subjects, in procedure) whose score changed on both the final hostility scale and the final MAACL Depression scale. Table 8 shows that of those nondepressed Ss who became more hostile, 90% became more depressed; and that of those nondepressed Ss who became less hostile, 80% became less depressed ($X^2 = 7.2$; $p<.01$). Table 9 shows that of those depressed Ss who became more hostile, 59% became more depressed; and that of those depressed Ss who became less hostile, 92% became less depressed ($X^2 = 5.9$: $p<.05$).

Contrary to expectations, these findings imply that there is a significant positive relationship between hostility and depression.

TABLE 7

Coefficients of correlation between depression and hostility scales.

Test	Beck Depression Inventory	MAACL Depression Scale
MAACL Hostility Scale	.51*	.76*
MAACL Depression Scale	.66*	---

Note. -- N = 127 in each computation.

* $p < .001$.

TABLE 8

Chi-square analysis for nondepressed subjects, comparing the frequency and direction of changes in MAACL Depression score when MAACL Hostility score increased or decreased.

	Nondepressed group	
	Hostility Increased	Hostility Decreased
Depression Increased	19 (90%)	1 (20%)
Depression Decreased	2 (10%)	4 (80%)
$X^2 = 7.2$, corrected for continuity; $p < .01$.		

Note.--A 3x3 chi-square analysis which included a "no change" category yielded a X^2 of 7.9 (df=4, $p < .05$, one tailed test).

The above chi-square analysis was performed to determine the source of the differences.

TABLE 9

Chi-square analysis for depressed subjects, comparing the frequency and direction of changes in MAACL Depression score when MAACL Hostility score increased or decreased.

	Depressed group	
	Hostility Increased	Hostility Decreased
Depression Increased	10 (59%)	1 (8%)
Depression Decreased	7 (41%)	12 (92%)
$X^2 = 5.9$, corrected for continuity; $p < .05$.		

Note.--A 3x3 chi-square analysis which included a "no change" category yielded a X^2 of 6.2 (df=4, $p < .10$).

The above chi-square analysis was performed to determine the source of this trend.

DISCUSSION

The results of this study tend to indicate that frustration tends to increase hostility in nondepressed subjects (see table 2), and that frustration tends to maintain drive (speed of performance) in depressed and nondepressed subjects (see table 4). These findings suggest that frustration can acquire drive properties. The adaptive function of this mechanism is self evident; an organism which becomes hostile and/or active in response to frustration is more likely to overcome obstacles and to survive than one which is thwarted and becomes passive in the face of frustration.

The hypothesis that frustration acquires drive properties can be useful in explaining the success of the intermittent reinforcement schedule. Hill (1968), Goodrich (1959), and Amsel (1958) discuss this matter, and the current data suggest the hypothesis that during a partial reinforcement schedule, the nonreinforcement trials might frustrate the organism and increase or maintain drive and learning potential.

The findings tend to confirm the psychoanalytic hypothesis that there is a linkage between depression and hostility. The data show that depressed subjects were initially significantly more hostile than nondepressed subjects (see table 1); hostility and depression scores rose and fell in communion (see tables 8 and 9); and significant positive correlations were found between the depression scales and the hostility scale (see table 7).

In view of the relationship that has been assumed to exist between depression and the repression of hostility (Freud, 1917, 1923), significant increases in depression scores following frustration for depressed subjects would be expected. This was not the case (see table 6). Since it was found that after frustration, depressed subjects did not significantly increase in hostility and depression; that nondepressed subjects significantly increased in hostility and depression; and that there were significant positive correlations between hostility and depression ($p < .001$; see table 7); it is concluded that hostility and depression are not inversely related processes, as Freud (Ibid) hypothesized, but parallel processes.

The data show that depression increases following frustration for nondepressed subjects (see table 6). One possible explanation of this finding is that hostility intervenes between frustration and depression. Significant positive correlations between the hostility and depression scales tend to support this contention (see table 7). The data lead one to speculate as to why frustration did not increase the amount of depression in depressed subjects. It may be noted that the depressed subjects did not significantly increase their hostility scores following frustration. Reference to table 2, however, shows that the initial hostility scores of the depressed group was already as high as the final hostility scores obtained by the nondepressed group after frustration. It might be inferred from this unexpected finding that the depressed group was already suffering from the effects of highly frustrating life experiences by comparison to which the amount of frustration administered

during the experiment only represented a small increment. This might explain why they did not become significantly more depressed. It might also be hypothesized that a depressed college student maintains a psychological defense mechanism, e.g., a character armor, which precludes further increases in his symptomatology. Future research might examine the effects of frustration upon depressed subjects using greater intensities of frustration in an attempt to overcome this hypothesized defense. It is expected that the defense might collapse when the intensity of frustration is significantly increased, and produce significant increases in hostility and depression.

It will require additional experimentation to ascertain how psychotically depressed individuals respond to frustration. A review of the literature discloses that the appearance of psychomotor retardation during psychotically depressed states is widely reported. Bleuler (1911) states that inhibition in manic-depressive psychoses takes the form of "...a general heaviness and slowing up of movements and thinking..." (p. 309). Freud (1917) describes the following features of melancholia: "...a profoundly painful dejection, cessation of interest in the outside world, loss of the capacity to love, inhibition of all activity*, and a lowering of the self-regarding feelings..." (p. 244). And Grinker (1961) found "slowed and retarded speech and thought" to be a factor which pervades depression. The psychological defense mechanism which possibly exists in depressed college students is not expected to function in the

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* underlining added.

psychotically depressed individual. We suspect that psychotically depressed individuals are even more hostile than the depressed college students used in this study, so that further frustration might threaten to induce uncontrollable rage.

It was critical to the study to pose a technique which would be frustrating. Dollard, et al (1939) define frustation as: "...an interference with the occurrence of an instigated goal-response at its proper time in the behavior sequence..." (Ibid, p. 7). In the current experiment, S was asked to attempt completion of a speed task within a time period. The time period was insufficient and the Dollard, et al(Ibid) formulation of frustration was satisfied, viz., the goal-response was blocked. To intensify the frustrati ng nature of the task, 10 such trials took place; and time was reduced by 2 seconds per trial, thereby reducing S's output, and adding to the futility of the task. Statistically significant increases in mean hostility scores for the nondepressed Ss under the frustration condition, and not under the control condition (see table 2), further substantiate that the task was a frustrating one. It would be of interest to replicate the current study utilizing a more powerful frustration technique, perhaps a punishment method would be most effective (see Dollard, 1939). It is expected that increasing the intensity of the frustrating stimulus would enhance the effects upon depression, hostility, and speed of performance.

The method of selecting depressed and nondepressed subjects in the current experiment was accomplished by the use of cut-off points on the Beck Depression Inventory. Although highly significant mean differences were obtained between the depressed and nondepressed groups on their initial Beck Depression Inventory scores (see procedure) and MAACL Depression scores (see table 5), a comparison with the norms of the Beck Depression Inventory reveals that the mean score of the depressed college students is midway between the mean score of "severe psychotic depressives" (see Beck, 1967, p. 196) and nondepressed college students. Of course, it is not unreasonable to assume that some of the "depressed" college students are depressed individuals, whose depressive symptoms might be secondary to a different disorder (e.g., see below). However, it cannot be concluded from the data obtained in our research that the group of students who were scored as "depressed" are to be regarded as having what is conventionally diagnosed as a depressive personality structure. This study did not undertake to study depressive personalities as much as to identify depression as a dependent variable. In future research, it would be useful to study differences between clinically depressed patients, e.g., neurotic depressives; psychotic depressives; and patients whose depressive symptoms are secondary to their main disorder, e.g., schizophrenics, obsessive-compulsive neurotics, character disorders, and drug addicts.

A common problem in the study of personality is the selection of suitable measuring devices. In the current study it was imperative to use scales which were valid, and capable of reflecting changes in the subjects' affect. Test data show that nondepressed subjects had a

greater opportunity to increase their scores than depressed subjects, while depressed subjects had a greater opportunity to decrease their scores than nondepressed subjects. These points suggest that future research utilizing tests with higher ceilings and lower floors (see appendix) might display more dramatically the results obtained in the current study.

The possibilities for additional research involving frustration and depression are many. On the one hand are important theoretical questions involving the origins of depression; and on the other are applied research projects, such as the development of therapeutic techniques. The current study raises many questions, among them are the following:

By which mechanisms are frustration and aggression, and frustration and drive united? Are there genetic factors which account for these connections? Or does learning play a powerful part? How are frustration and depression related? How is it that hostility and depression are related? Does guilt intervene between hostility and depression? Or can a stimulus situation simultaneously evoke hostility and depression? Is hostility the fantasy counterpart of aggression?

CONCLUSIONS

1. Frustration increased hostility in the nondepressed subjects.
2. Frustration did not increase hostility in the depressed subjects.
3. Frustration did not decrease speed of performance in the depressed subjects.
4. Frustration did not increase speed of performance in the nondepressed subjects.
5. Frustration increased depression in the nondepressed subjects.
6. Frustration did not increase depression in the depressed subjects.
7. There was a significant positive correlation between the hostility scale and the depression scales.
8. The Beck Depression Inventory and the MAACL Depression scale were consistent with respect to their findings.
9. When the subjects became more hostile, they became more depressed.
10. When the subjects became less hostile, they became less depressed.

APPENDIX

TABLE 10

RAW DATA OF TEST SCORES FOR ALL SUBJECTS

	IDENT. INFORMATION	BDI INITIAL	BDI FINAL	DA INITIAL	DA FINAL	MAACL DEP. INITIAL	MAACL DEP. FINAL	MAACL HOST. INITIAL	MAACL HOST. FINAL
*	212148696	0	2	63	91	1	2	1	1
*	212145914	0	0	71	94	9	7	1	4
*	202141123	0	0	77	86	1	2	0	0
	202140333	0	0	92	102	11	16	8	10
*	211932210	1	1	47	52	0	2	0	0
*	202140246	1	0	92	103	15	13	11	10
*	202245738	2	2	64	65	17	17	7	7
*	212036180	2	2	90	100	14	13	6	4
*	212034040	2	2	91	100	1	0	2	3
*	202249317	3	3	80	96	8	7	11	10
*	202142555	3	3	69	90	8	8	5	3
*	212042385	3	2	65	93	1	4	1	1
*	212031274	3	0	75	87	17	18	9	10
*	211932420	4	1	75	84	9	8	2	2
*	202747017	4	4	71	82	14	16	6	10
*	202245055	4	2	87	92	4	4	2	5
	211937977	5	4	89	92	22	22	12	15
	212243433	5	5	75	75	7	10	5	5
	202240213	5	5	86	97	13	12	2	2
	202143353	5	4	74	95	17	16	11	12
	211934344	6	6	89	87	18	16	5	6
	212248899	6	5	77	100	9	9	2	6
	212240004	6	6	86	104	17	17	9	10
	202147442	6	4	51	70	24	16	13	9
	212042752	6	2	92	97	10	3	0	1
	212038438	6	4	70	86	17	19	9	13
	212034099	6	5	83	87	2	2	4	5
	213534451	7	3	83	98	15	16	8	10
	202143241	7	2	87	78	16	20	13	18
	202249796	8	5	75	95	8	4	8	6
	202245550	8	8	94	100	21	23	17	17
	212143729	8	7	82	94	12	9	6	5
	212038573	8	6	95	105	8	8	5	3
	212037579	8	4	44	90	1	4	2	1
	212034824	8	7	3	3	70	68	3	2

* SUBJECTS SELECTED FOR STATISTICAL ANALYSIS

RAW DATA OF TEST SCORES FOR ALL SUBJECTS (CONTINUED)

	IDENT. INFORMATION	BDI INITIAL	BDI FINAL	DA INITIAL	DA FINAL	MAACL DEP. INITIAL	MAACL DEP. FINAL	MAACL HOST. INITIAL	MAACL HOST. FINAL
	213332226	9	1	67	98	6	8	3	3
	202245119	9	5	54	75	34	30	16	15
	212144235	9	5	79	96	12	17	7	12
	212143750	9	6	60	95	3	5	4	4
*	211934021	10	6	78	85	24	24	10	13
*	201823809	10	9	74	99	12	6	5	5
*	212136579	10	9	98	104	21	21	10	11
*	212027259	10	7	82	84	15	17	9	14
*	202142431	11	8	93	102	14	10	6	5
*	202130202	11	15	74	82	28	31	14	19
	202032097	12	9	75	83	24	21	1	10
*	212031233	12	5	95	96	13	5	9	9
*	201944275	13	10	90	102	27	26	4	3
*	202147975	13	6	70	93	19	12	6	4
	202247496	14	10	63	89	11	7	7	7
	212147979	14	12	91	108	17	19	10	12
*	202145369	15	17	80	83	18	18	8	11
	211926662	17	12	74	82	17	17	11	13
	202030001	17	11	83	91	25	21	9	9
*	202243544	18	18	55	88	29	25	14	17
	202033355	18	17	95	97	27	32	19	19
	212037601	19	12	77	89	24	15	11	9
*	211932413	20	7	75	96	11	13	7	10
*	211825436	20	5	78	85	5	2	8	11
*	211921369	21	19	82	94	31	32	12	14
	202145427	24	20	89	100	27	27	5	5
	212143571	24	24	64	91	23	27	9	17
*	212030924	27	24	102	110	23	24	14	16
	212141142	30	18	69	111	32	21	17	13
*	311933470	0	2	93	92	10	15	5	10
*	302740006	0	0	68	75	2	1	2	2
*	312031284	0	3	82	92	14	18	8	13
	303230123	1	1	92	97	3	5	2	4
	312146554	1	1	87	93	4	5	2	4
*	302144265	1	1	84	94	6	9	4	7

* SUBJECTS SELECTED FOR STATISTICAL ANALYSIS

RAW DATA OF TEST SCORES FOR ALL SUBJECTS (CONTINUED)

	IDENT. INFORMATION	BDI INITIAL	BDI FINAL	DA INITIAL	DA FINAL	MAACL DEP. INITIAL	MAACL DEP. FINAL	MAACL HOST. INITIAL	MAACL HOST. FINAL
*	312045377	1	1	96	96	0	0	2	1
	312041542	1	1	100	111	6	4	5	3
	312033456	1	1	106	110	11	11	5	9
	311935353	2	0	76	100	3	6	0	0
	311933971	2	2	54	73	12	14	6	6
*	312143807	2	0	83	99	5	7	3	7
*	302142323	2	12	89	75	1	26	1	19
	302135457	2	1	63	82	14	11	6	6
*	312049876	2	2	104	125	11	17	1	11
*	312141244	3	3	89	92	7	12	3	6
*	302043203	3	2	86	113	12	8	4	4
*	312040427	3	3	96	119	16	20	8	7
*	312032669	3	3	85	95	3	3	2	1
*	311934042	4	4	92	97	11	11	4	2
	311931327	4	2	84	83	9	15	4	11
	311924635	4	4	62	83	2	1	1	1
*	302136283	4	8	75	97	3	24	2	14
	312045234	4	6	75	87	5	6	2	2
	312044924	4	2	79	100	4	4	0	1
*	302037498	4	3	79	94	9	12	6	9
	311826539	5	2	62	100	15	6	1	8
	302145310	5	6	100	95	14	14	9	11
	312037315	5	4	76	94	8	11	2	2
	312035311	5	3	84	104	12	13	5	8
	312033691	5	5	90	110	12	15	3	1
	311945505	6	6	85	96	11	13	6	9
	301925471	6	0	83	108	5	1	4	8
	311354273	6	2	76	101	17	14	6	7
	302145327	6	5	75	86	25	26	12	12
	312031234	6	9	75	86	17	18	3	3
	311938467	7	6	73	93	14	19	5	9
	311923241	7	9	86	98	15	16	12	13
	312032101	7	7	90	97	15	11	8	6
	302031377	7	7	64	82	15	15	5	6
	302245856	8	4	87	94	12	19	7	13

* SUBJECTS SELECTED FOR STATISTICAL ANALYSIS

RAW DATA OF TEST SCORES FOR ALL SUBJECTS (CONTINUED)

	IDENT. INFORMATION	BDI INITIAL	BDI FINAL	DA INITIAL	DA FINAL	MAACL DEP. INITIAL	MAACL DEP. FINAL	MAACL HOST. INITIAL	MAACL HOST. FINAL
	312149460	8	2	91	107	1	2	C	0
	312147086	8	5	96	111	14	10	10	8
	312134234	8	8	83	107	17	15	7	5
	302042430	8	8	90	102	11	21	4	13
	316049879	9	9	91	98	10	9	5	4
*	311933628	10	10	75	98	7	19	5	15
*	311923747	10	11	77	98	11	12	3	9
	311814628	10	6	97	113	4	6	1	0
*	312133456	10	5	83	95	12	10	6	5
*	312033326	10	9	69	95	14	18	9	13
*	302131369	11	5	87	101	17	8	12	9
*	312037625	11	10	93	109	18	13	2	5
*	311824371	12	12	85	89	10	10	8	6
*	311932461	13	12	75	81	24	24	6	8
	311923690	13	9	83	94	30	15	17	10
*	312034928	13	9	87	100	15	15	3	1
*	312034758	13	14	80	100	22	20	4	8
*	312233222	18	15	56	86	33	30	13	12
*	302147345	20	14	120	118	19	15	8	6
*	311935627	21	20	95	105	28	24	11	11
*	311925387	22	15	97	114	23	19	4	8
	301921736	23	12	59	87	31	28	17	18
*	312047654	27	20	93	113	31	30	12	14

* SUBJECTS SELECTED FOR STATISTICAL ANALYSIS

IDENTIFICATION INFORMATION.
COLUMN 1, 2=CONTROL, 3=EXPERIMENTAL
COLUMN 2, 0=MALE, 1=FEMALE
COLUMNS 3 AND 4, AGE
COLUMN 5, YEARS OF EDUCATION
COLUMNS 6 - 10, IDENTIFICATION NUMBER

Beck Depression Inventory

The Beck Depression Inventory (Beck, 1967) is a 21 item test of depression. Each item covers a common symptom of depressive illness. There are 4 to 6 statements within each item which are graded according to the severity of the symptom. Each statement has a numerical value, ranging from 0 to 3, assigned to it. Total score is obtained by adding together each of the item scores. Range of scores is 0 to 67.

Normative data (N = 406) including means and standard deviations, were obtained from depressed and nondepressed hospitalized psychiatric patients, whose mean score was 19 (S.D. = 10, Ibid, p. 196). Reliability studies (Ibid) indicate that the test is internally consistent in that each item but one significantly correlated with total test score ($p < .001$); split-half reliability yielded a reliability coefficient of .86 (with a Spearman-Brown correction, the coefficient would be .93). Validity studies (Ibid) show the Beck Depression Inventory to significantly correlate with clinical rating of depression (r = 67; N = 406), the Depression Adjective Check Lists (r = .66), and the Depression scale of the Minnesota Multiphasic Personality Inventory (r = .75).

Multiple Affect Adjective Check List

The Multiple Affect Adjective Check List (Zuckerman & Lubin, 1965) is a test of affect which provides a score for depression and hostility. The test contains 132 items, each item being a word which describes an affect. In scoring each scale, plus items are scored 1 point each if the S checks them, while minus items are scored 1 point each if the S does not check them. Total score for each scale is the number of plus items checked, plus the number of minus items not checked. Range for the Depression scale is 0 to 40. Range of scores for the Hostility scale is 0 to 28.

Normative data for the scales, including means and standard deviations, were obtained from job applicants, college students (N = 46), and psychiatric patients. Separate norms are provided for each of these groups. Split half reliability coefficients of the college group for the Depression scale and the Hostility scale were .92 and .90, respectively (Zuckerman & Lubin, 1965). Validity studies (Zuckerman & Lubin, 1965) found a significant relationship to exist between the MAACL Hostility scale and the "Belligerence" scale of the Lorr Psychotic Reaction Profile ($F = 6.05$; $p < .01$). The MAACL Depression scale was found to significantly correlate with the MMPI Depression scale ($R = .49$ and $.41$).

Dex Aim Test

The Dex Aim test (Holmes, 1955) is a speed test which requires the subject to place an "x" in the center of as many boxes as he can within a 60 second interval. There are a total of 125 boxes, and the median score for college students is 82.

Test-retest reliability at an interval of two months was found to be R = .72 for a group of 95 college studets (Ibid, p. 1). Validity studies have shown that women assembly workers who are appraised by their foremen to be "good workers" score significantly higher on the Dex Aim test than those appraised to be "poor workers" ($p < .01$; Ibid, p. 1); and "High Leadership" college students were found to score significantly higher on the test than "Non-Leaders" ($p < .01$; Ibid, p. 2).

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AUTOBIOGRAPHICAL STATEMENT

Melvyn Ellner was born in New York City on January 13, 1940. He received the B. A. from Adelphi University and the M. A. from Queens College. Ph. D. course work was completed at Queens College and the C. U. N. Y. Graduate Center.

The candidate began a career in clinical psychology at Hillside Hospital in 1962 where he was a counselor at the Adolescent Pavilion. Currently he is a clinical psychologist at the Beth Israel Medical Center. The candidate is a graduate of the Washington Square Institute for Psychotherapy and Mental Health (1969).

DEX-AIM TEST

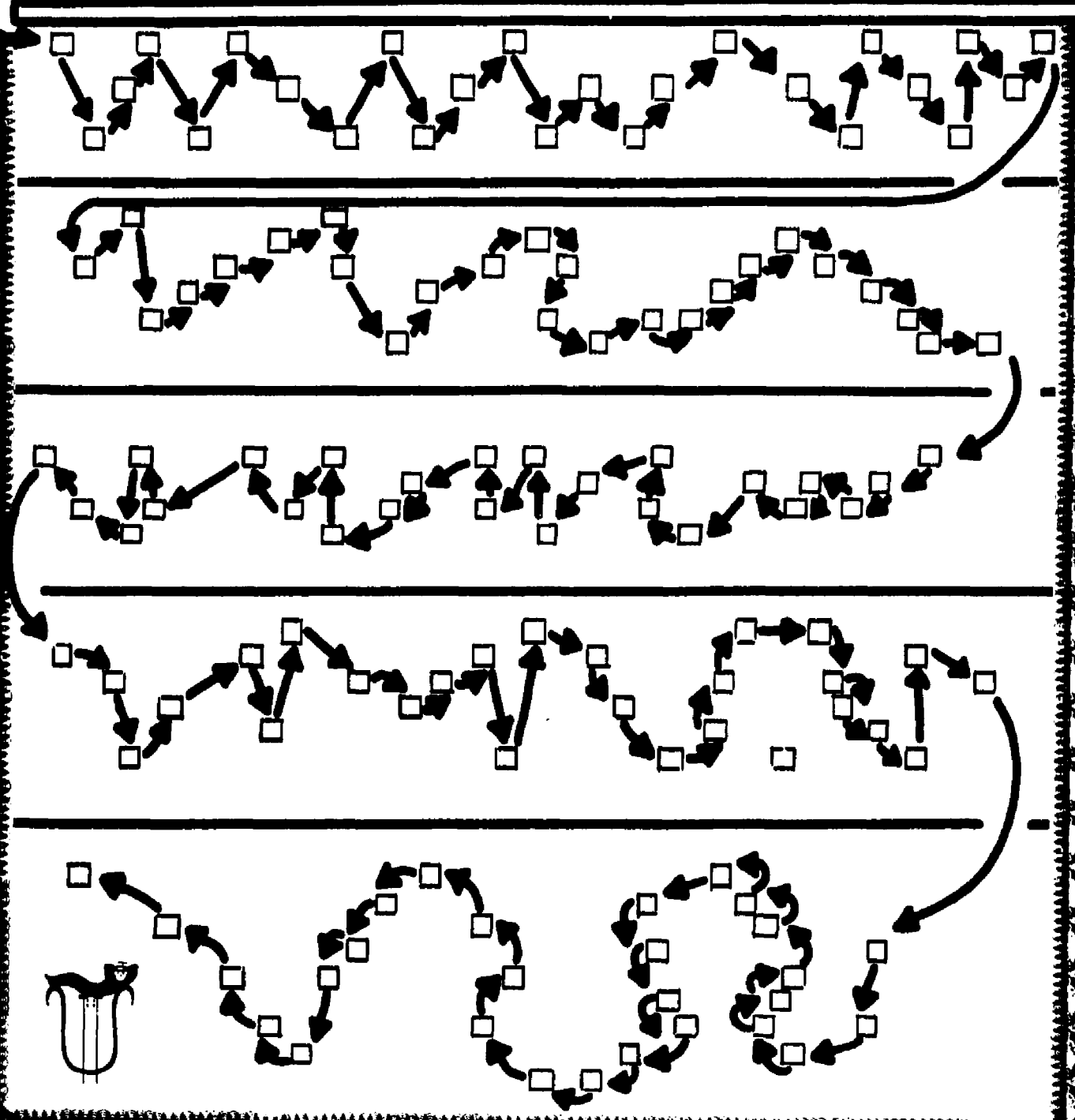
F J Holmes
Illinois Wesleyan University

Name .....
(print last name first)

DIRECTIONS

INSTRUCTION: When the signal is given to begin: follow the arrows and place an X in each box. Be sure not to mark outside the boxes as only marks which fall inside a box will be counted. Work as rapidly as you can until the signal is given to stop.

BEGIN • SMALL SQUARE MARKING •



Psychometric Affiliates Box 1625 Chicago 90, Illinois

BECK DEPRESSION INVENTORY

A. (SADNESS)

0 I do not feel sad
1 I feel blue or sad
2a I am blue or sad all the time and I can't snap out of it
2b I am so sad or unhappy that it is quite painful
3 I am so sad or unhappy that I can't stand it

B. (PESSIMISM)

0 I am not particularly pessimistic or discouraged about the future
1a I feel discouraged about the future
2a I feel I have nothing to look forward to
2b I feel that I won't ever get over my troubles
3 I feel that the future is hopeless and that things cannot improve

C. (SENSE OF FAILURE)

0 I do not feel like a failure
1 I feel I have failed more than the average person
2a I feel I have accomplished very little that is worthwhile or that means anything
2b As I look back on my life all I can see is a lot of failures
3 I feel I am a complete failure as a person (parent, husband, wife)

D. (DISSATISFACTION)

0 I am not particularly dissatisfied
1a I feel bored most of the time
1b I don't enjoy things the way I used to
2 I don't get satisfaction out of anything any more
3 I am dissatisfied with everything

E. (GUILT)

0 I don't feel particularly guilty
1 I feel bad or unworthy a good part of the time
2a I feel quite guilty
2b I feel bad or unworthy practically all the time now
3 I feel as though I am very bad or worthless

F. (EXPECTATION OF PUNISHMENT)

0 I don't feel I am being punished
1 I have a feeling that something bad may happen to me
2 I feel I am being punished or will be punished
3a I feel I deserve to be punished
3b I want to be punished

G. (SELF-DISLIKE)

0 I don't feel disappointed in myself
1a I am disappointed in myself
1b I don't like myself
2 I am disgusted with myself
3 I hate myself

H. (SELF-ACCUSATIONS)

0 I don't feel I am any worse than anybody else
2 I am critical of myself for my weaknesses or mistakes
2 I blame myself for my faults
3 I blame myself for everything bad that happens

I. (SUICIDAL IDEAS)

0 I don't have any thoughts of harming myself
1 I have thoughts of harming myself but I would not carry them out
2a I feel I would be better off dead
2b I feel my family would be better off if I were dead
3a I have definite plans about committing suicide
3b I would kill myself if I could

J. (CRYING)

0 I don't cry any more than usual
1 I cry more now than I used to
2 I cry all the time now. I can't stop it
3 I used to be able to cry but now I can't cry at all even though I want to

K. (IRRITABILITY)

0 I am no more irritated now than I ever am
1 I get annoyed or irritated more easily than I used to
2 I feel irritated all the time
3 I don't get irritated at all at the things that used to irritate me

L. (SOCIAL WITHDRAWAL)

0 I have not lost interest in other people
1 I am less interested in other people now than I used to be
2 I have lost most of my interest in other people and have little feeling for them
3 I have lost all my interest in other people and don't care about them at all

M. (INDECISIVENESS)

0 I make decisions about as well as ever
1 I try to put off making decisions
2 I have great difficulty in making decisions
3 I can't make any decisions at all any more

N. (BODY IMAGE CHANGE)

0 I don't feel I look any worse than I used to
1 I am worried that I am looking old or unattractive
2 I feel that there are permanent changes in my appearance and they make me look unattractive
3 I feel that I am ugly or repulsive looking

O. (WORK RETARDATION)

0 I can work about as well as before
1a It takes extra effort to get started at doing something
1b I don't work as well as I used to
2 I have to push myself very hard to do anything
3 I can't do any work at all

P. (INSOMNIA)

0 I can sleep as well as usual
1 I wake up more tired in the morning than I used to
2 I wake up 1–2 hours earlier than usual and find it hard to get back to sleep
3 I wake up early every day and can't get more than 5 hours sleep

Q. (FATIGABILITY)

0 I don't get any more tired than usual
1 I get tired more easily than I used to
2 I get tired from doing anything
3 I get too tired to do anything

R. (ANOREXIA)

0 My appetite is no worse than usual
1 My appetite is not as good as it used to be
2 My appetite is much worse now
3 I have no appetite at all any more

S. (WEIGHT LOSS)

0 I haven't lost much weight, if any, lately
1 I have lost more than 5 pounds
2 I have lost more than 10 pounds
3 I have lost more than 15 pounds

T. (SOMATIC PREOCCUPATION)

0 I am no more concerned about my health than usual
1 I am concerned about aches and pains *or* upset stomach *or* constipation
2 I am so concerned with how I feel or what I feel that it's hard to think of much else
3 I am completely absorbed in what I feel

U. (LOSS OF LIBIDO)

0 I have not noticed any recent change in my interest in sex
1 I am less interested in sex than I used to be
2 I am much less interested in sex now
3 I have lost interest in sex completely

PLEASE NOTE:

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