

LAKEHEAD UNIVERSITY

THE EFFECTS OF SUCCESS AND FAILURE ON
SELF-ESTEEM AND LOCUS OF CONTROL

by

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ABSTRACT

The purpose of the present study was to investigate the effects of success and failure on self-esteem, locus of control and the relationship between these two variables. One hundred and four introductory psychology students were divided into three groups. The first group was administered easy anagrams that allowed for correct solutions which resulted in an experience of success. The second group was given impossible anagrams which resulted in a failure experience. The third group was used as a control group, and was given a neutral experience which did not entail success or failure. It was predicted that under the success condition self-esteem and internal locus of control would increase; under failure these two variables would decrease; the relationship between these two variables would be altered following success and failure; and that there would be no change in self-esteem and locus of control under the neutral condition. Analysis of variance results indicated significant increase in self-esteem and internality in the three groups. The predictions were therefore, largely not supported. However, subsequent analyses using "t" tests showed that under success the increase toward internal control was significantly greater than the increase for the other two groups. Moreover, the relationship between self-esteem and locus of control was not affected by success or failure.

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Recent research in the area of personality has demonstrated the multidimensional nature of most personality variables. The complexity of personality may reveal the superficiality of treating personality variables as unrelated rather than as interdependent. Self-esteem and locus of control have been increasingly viewed as major determinants of behaviour. These two personality variables seem to function as effective defensive and initiating mechanisms in dealing with negative and positive situations. Accordingly, many investigators have attempted to determine a relationship between self-esteem and locus of control. However, the underlying nature of this relationship is still obscure.

Self-esteem and locus of control may not be stable traits, but rather state dependent variables. These two variables may change differentially depending on specific conditions. Consequently, their relationship may also be state dependent and would undergo changes following the same specific situations. In order to test this assumption, the present study dealt with the effects of success and failure on self-esteem, locus of control, and the relationship between these two variables. The direction of change was expected to be consistent with the specific conditions.

Locus of control as measured in this study was based on Rotter's (1966) internal-external (I-E) scale. Supported by empirical evidence, Rotter (1966), Rotter, Chance & Phares (1972), and Lefcourt (1966; 1972) showed that people differ in their generalized expectancies about their own actions and the positive and negative contingencies they receive from the environment. Persons who characteristically perceive events as being under their own control or a function of

their own skills are labelled as "internals", those who typically perceive events as determined by external forces such as fate, chance or luck are labelled as "externals".

Self-esteem, as measured in this study was based on class I of the California Psychological Inventory (CPI) devised by Gough (1957). The class I category includes the following subscales: dominance, capacity for status, sociability, social pressure, self-acceptance, and sense of well being. Hamilton (1971) has indicated that most of the items in class I of the CPI are sufficiently reliable to measure self-esteem. Comparing other measures of self-esteem (Janis-Field Scale, and Self-Rating Scale) with the CPI, Hamilton found that the self-ideal distance measure correlated significantly only with the CPI class I. Since the degree of comparison between actual and ideal self is considered as indicative of self-esteem (Cohen, 1959; Brissett, 1972) class I of the CPI can be used to measure self-esteem.

Are locus of control and self-esteem related, and if so what is the nature of the relationship? Assuming that personality acts as a whole, then any two or more personality variables are related in some way. However, these relationships are not always easy to empirically determine. Internals have been found to be characterized by a high need for achievement and to have a relatively stable confidence in themselves, more than externals who are more likely to be influenced by the external environment (Gurin, et al. 1969; Lao, 1970; Lefcourt, 1966 and 1972; Rotter & Mulry, 1965; Rotter et al. 1972; Rotter, 1966). Moreover, Baron (1970), Fish (1971) and Ziller, Haggy & Smith (1969) argued that people with high self-esteem were more likely to be characterized by a greater potential for self-reinforcement.

Recent studies have tried to establish a relationship between internal locus of control and high self-esteem. Fish & Karabenick (1971) investigated the relationship using Rotter's I-E scale and Janis and Field's Feelings of Inadequacy Scale with male subjects. The study revealed a significant correlation ($r = -.28$) between the two scales. Rychman & Sherman (1973) found similar results using the same measures of locus of control and self-esteem to examine the relationship between these two variables for both males and females. The correlations were all significant ($r = -.29$, $r = -.20$, and $r = -.25$ for males, females, and the combined sample, respectively). A significant correlation ($r = -.18$) was reported by Heaton & Duerfeldt (1973) between the James I-E scale and Gough's Adjective Check List scale (a measure of self-esteem). Hersche & Schiebe (1967) found a significant correlation ($r = -.23$) between Rotter's I-E scale and class I of the CPI. A recent study by Gough (1974) has shown significant correlations between the I-E scale and class I of the CPI, ($r = -.29$, $r = -.18$, and $r = -.23$ for males, females, and the combined sample, respectively). All the correlations cited were negative, because a high score on the I-E scale denotes external rather than internal control. Thus high self-esteem is positively correlated with internal locus of control.

Self-esteem could be viewed as an internal source of motivation which is capable of influencing overt behaviour. In fact, personality theorists (Rogers, 1959; Snygg & Combs, 1949) have proposed that self-evaluation, emanating from an internal source, is an important factor in determining behaviour. However, despite the repeated findings of significant correlations between self-esteem and locus of

control, the correlations are small and may reveal a weak relationship between the two variables as measured. Also not all studies found significant correlation between these two variables. Platt, Eiseman & Darber (1970), for example, did not find a significant correlation ($r = -.17$) between locus of control (I-E scale) and self-esteem (Ziller, Haggy & Smith scale). It must be noted that Ziller et al. (1966) view self-esteem as a social construct within the self-other orientation. Such conceptualization is more concerned with social (external) factors affecting self-esteem rather than with internal ones. The question arises as to why the relationship between these two variables was not found to be stronger. This may be due to the fact that: 1) Different measures of self-esteem may be measuring different aspects of the concept self-esteem (see Silber & Tippett, 1965; Tippett & Silber, 1965); 2) the I-E scale measures mainly generalized expectancies rather than specific expectancies. The multidimensional and complex nature of locus of control has been demonstrated by many studies (Abramowitz, 1973 and 1974; Collins, et al. 1973; Collins, 1973; Lao, 1970; Levenson, 1972, Mirels, 1970; Nowicki, 1972; Reid & Ware, 1973 and 1974; Sanger & Alkar, 1972; Schwartz, 1973). The multidimensional and complex nature of self-esteem has also been demonstrated (Berger, 1968; Brissett, 1972; Schneider & Turkat, 1975; U'Ren, 1971). The implication here is that these two variables are global and do not measure specific constructs. Therefore, it is possible that not all internals are characterized by high self-esteem and not all externals possess low self-esteem. Although the correlation between different measures

of self-esteem and Rotter's I-E scale are relatively small, these two variables may be closely interrelated. Such an assumption is plausible since both of these variables are indicative of internal mediators of behaviour. Moreover, a holistic view of personality with a multitude of interrelated variables is gaining increasing attention (Geiwitz, 1969; Sahakian, 1974). Also plausible is the argument that as one increases in both self-esteem and internal locus of control, one becomes more productive, and capable of entertaining a wider range of problem solving strategies (Rychman et al. 1971). Accordingly, self-esteem and locus of control may function in such a way as to provide an effective mastery of the environment in accordance with specific positive and negative contingencies contained in the environment. That is to say, the direction of change of these two variables would be different depending on the nature of the situation. Furthermore, the relationship between self-esteem and locus of control may be altered under positive and negative situations.

Effects of success on locus of control: No study, as far as the present author is aware of, has investigated changes in generalized expectancies following success. A number of studies used locus of control as an independent variable to investigate changes in attribution strategy under success (i.e., would internals or externals attribute positive outcomes to their skills or outside forces?) Following success, for example, internals and externals did not differ significantly in their attribution (Davis & Davis, 1972; Jones & Shrauger, 1968; Kravetz, 1974; Phares, Wilson & Klyver, 1971; Siegel & Mayfield, 1973; Sosis, 1974). On the other hand, Gilmore &

Minton (1974) found that, following success, internals manifested an internal attribution more than externals. These studies, however, did not provide clues to the direction of change in locus of control following success. According to social learning theory (Rotter, 1954) behaviour is seen as a function of three constructs: a) behaviour potential; b) expectancy; and c) reinforcement value. Thus, expectancies regarding particular situations generalize to a configuration of situations which are seen as related. Since positive reinforcement is generally desirable, the expectancy for success among college students is high, and since a shift towards internality may be indicative of higher need for achievement, a decrease in external control after success was predicted by the present study.

Effects of failure on locus of control: Rotter (1966) suggested that an interaction may exist between internality and failure, an internal person would blame himself if he/she fails, whereas an external person would be defensive against failure and blame external forces. Many studies have supported Rotter's hypothesis (e.g., Hochreich, 1974; Phares & Lamiel, 1974; and Prociuk & Breen, 1975). Externals were found to be more prone than internals to rationalize their failure by blaming external factors. These studies used locus of control as an independent variable to investigate the direction of blame following failure. Brecher & Denmark (1972) reported significantly higher external scores for the group who received negative feedback as compared to the control group. Accordingly, an increase in external locus of control following failure is expected. Negative contingencies regarding particular situations seem to generalize to

a configuration of situations which are seen as related. Logically, then, a shift to external control should be manifested under failure condition.

Effects of success on self-esteem: High self-esteem is a characteristic of achievement motivation. Under success, subjects manifested more positive self-evaluation (Deaux & Coppess, 1971; Shrauger & Rosenberg, 1970; Silverman, 1964a and 1964b), and an increase in performance (Rychman & Rodda, 1972). The state dependent characteristic of self-evaluation has been demonstrated (Gergen & Wishnov, 1965). Subjects who were given positive reports viewed themselves more positively (Gergen, 1965; Tippett & Silber, 1966). However, in most studies, self-esteem was used as an independent variable to account for changes in self-evaluation and performance. Investigations on changes in self-esteem have been neglected. As indicated above, since self-evaluation became more positive following success, and since an increase in self-esteem reveals a more achievement oriented behaviour, there should be a shift toward higher self-esteem after success.

Effects of failure on self-esteem: Cohen (1956; 1959) maintained that high and low self-esteem persons are characterized by different modes of ego defense when they are confronted by negative evaluation; high self-esteem persons would not be generally influenced by failure as much as low self-esteem persons. Low self-esteem reflects less confidence and more uncertainty about oneself. Schneider & Turkat (1975) argued that a high score on a self-esteem test may represent a defense mechanism. Moreover, several studies have found a greater tendency for negative self-evaluation following failure situa-

tion (Leventhal & Perloe, 1962; Nisbett & Gardner, 1967; Shrauger & Rosenburg, 1970; Silverman, 1964a and 1964b). Subjects viewed themselves more negatively when given negative information (Gergen, 1965; Tippett & Silber, 1969). Since self-evaluation may become negative following failure, as indicated in the studies cited, a decrease in self-esteem should be expected.

Effects of success and failure on the relationship between self-esteem and locus of control: No study, as far as the present author is aware of, has investigated changes in the relationship between self-esteem and locus of control under specific conditions. As previously indicated, the correlations between these two variables have generally been found to be small and positive (i.e., high self-esteem correlates positively with internal locus of control). Both self-esteem and locus of control may change differentially in accordance with different specific conditions. These changes may not correspond to changes in the relationship between self-esteem and locus of control. This relationship is either static or state dependent. This issue has not been adequately dealt with in the literature. Since positive and negative feedback can influence both self-esteem and locus of control, and since logic indicates that any relationship between these two variables depends on the subject and specific conditions (e.g., the degree of internality and self-esteem are state dependent), then the relationship between self-esteem and locus of control is expected to be dynamic under specific circumstances.

In the present study, success and failure were defined by bogus performance on a set of anagrams manipulated in such a way that the success group was given a set of anagrams that were easy to solve,

while the failure group was given a set of anagrams that were impossible to solve (both sets of anagrams were modified from Feather, 1966 and 1968).

The general hypothesis of the present study was that self-esteem and locus of control would function differentially under success and failure conditions and that the relationship between these two variables would be sensitive to success and failure. Specifically, it was hypothesized that: 1) Under the success condition subjects will significantly increase in self-esteem and internal locus of control; 2) under the failure condition, subjects will significantly decrease in self-esteem and internal locus of control; 3) there will be no significant changes in self-esteem and locus of control in the control group; 4) the relationship between self-esteem and locus of control will change significantly following conditions of success and failure; and 5) there will be no significant change in the relationship between self-esteem and locus of control for the control group.

Method

Subjects

One hundred and four introductory Psychology students at Lakehead University, both male and female, participated in the experiment. Subjects received a course credit for volunteering to participate. Subjects answered Rotter's I-E scale and all the items of the California Psychological Inventory during a class session, and then made a half hour appointment to permit further testing.¹ Subjects were told that the research was conducted to determine the personality profiles of North American college students. Subjects were then randomly divided into the success, failure and control groups. The distribution of subjects was as follows: 38 subjects in the success group, 33 subjects in the failure group, and 33 subjects in the control group.

The Internal-External scale:

The Internal-External scale was based on Rotter's social learning theory (1954). According to this theory, as previously indicated, behaviour is seen as a function of three constructs: a) behaviour potential; b) expectancy; and c) reinforcement value. A reinforcement acts to strengthen an expectancy that a particular behaviour (or event) will be followed by that reinforcement in the future. Once an expectancy for such a behaviour-reinforcement sequence is built, the failure of the reinforcement to occur will reduce the expectancy.

¹Although subjects answered all the items of the CPI, only the items pertaining to class I were scored.

The I-E scale is a 29 item forced choice test including 6 filler items to conceal the real purpose of the test. The scale measures generalized beliefs about how reinforcement is controlled. A high score on the I-E implies an external locus of control, while a low score implies an internal locus of control. The test-retest reliability measures reported by Rotter (1966) for different samples, varying from one to two months, ranged between .49 and .83. Hersch & Scheibe (1967) reported test-retest reliability coefficients that ranged between .48 and .84 for a two month period. Rotter (1966) has reported good discriminate validity for the I-E scale as indicated by a low correlation with such variables as intelligence, social desirability and political affiliation. However, studies by Altrocchi, Palmer, Hellmann & Davis (1968); Berzins, Ross & Cohen (1970); Feather (1967); and Hijelle (1971) have suggested that the I-E scale is influenced by social desirability, internal items being more socially desired. The relationship of the I-E scale to political and social activism is highly inconsistent (Abramowitz, 1974).

The inconsistency of research dealing with the I-E scale suggests that the scale may be multidimensional. A massive body of research has been generated that provided evidence of the multidimensional nature of the I-E scale (Abramowitz, 1973; Collins et al. 1973; Collins, 1974; Lao, 1970; Levenson, 1972; Mirels, 1970; Nowicki, 1972; Reid & Ware, 1973 and 1974; Sanger & Alkar, 1972; Schwartz, 1973). The multidimensionality of the I-E scale implies that the items confound personal, social, political and ideological causation.

The California Psychological Inventory:

The California Psychological Inventory was developed by Gough (1957). The test booklet contains 480 true-false items (12 of which are duplicates) and yields 18 standard scores. Some of the items were taken from the Minnesota Multiphasic Personality Inventory, and other items were written to tap social and personal attitudes and interests. Part of the CPI scales were constructed through an external strategy of scale construction (e.g., contrasted groups), and other scales were constructed through an internal strategy (e.g., item homogeneity). The inventory is intended primarily for use with "normal" subjects, and its scales are addressed principally to personality characteristics important for social living and interaction. Although the present study was mainly concerned with class I of the CPI, subjects were required to answer all of the 480 items during the first testing session. However, after experimental conditions subjects were required to answer only class I of the CPI. As mentioned earlier class I of the CPI was found to be adequate to measure self-esteem, (Hamilton, 1971). Class I contains 6 subscales: dominance, capacity for status, sociability, social presence, self-acceptance and sense of well being.

Gough (1957) reported the following test-retest reliability of the six subscales using a one year interval: dominance (.71 [females], .64 [males]); capacity for status (.68 [females], .64 [males]); self-acceptance (.71 [females], .67 [males]); and sense of well being (.72 [females], .71 [males]). The average reliability of class I for females was .69 and for males .65. Bendig (1958); Dicken (1963a); Gough (1957); and Hamilton (1971) reported good convergent and discriminant validity of the CPI. Validity of each scale was determined

by comparing groups which the scale presumably ought to discriminate. Many cross validities on sizeable samples are reported (Gough, 1957). However, the CPI is not completely free from social desirability (Dicken, 1963b). Cronbach (1959) argued that the CPI seemed to reflect the existence of just one ideal personality; low scores suggesting faults rather than symptoms of needs, skills and cultural differences.

An individual score on the CPI was obtained by averaging the scores on the six subscales of class I. A high score reflects high self-esteem, and a low score reflects low self-esteem.

Anagrams Task:

Pilot study: 40 anagrams were given to ten undergraduates (not enrolled in the introductory Psychology courses) to obtain 10 impossible to solve and 10 easy to solve anagrams. The 20 anagrams were then given to another 25 undergraduates (not enrolled in introductory Psychology courses) to test their difficulty and ease. Twenty-three of the 25 students were able to solve all the easy anagrams within 30 seconds while no one was able to solve the impossible anagrams. In order to ensure that the impossible anagrams would not be detected as impossible in the actual experiment, pilot subjects were asked about their difficulty. All of the subjects indicated that they could have solved the anagrams if they were given more time. The ten easy anagrams were: INNERD, RFATHE, MIDDEL, VERBLA, CEHSEE, SECNOD, ENPCIL, FFCOEE, ERTBUT, STEETR. The first five of the easy anagrams were taken from the Feather (1966) study, and the other five anagrams were designed by the author. The ten impossible anagrams were: ALSEGT, EMAGLE, FESLNI, UPSLON, OPUSGEN, RAITCH, NAWERT, AYTREN, HCAIMT, RISHTE. The first

five of these impossible anagrams were taken from the Feather (1966) study, and the other five anagrams were designed by the author.

For the success condition, nine of the easy anagrams plus one impossible anagram were presented in booklet form with one anagram per page. The order of anagram presentation was: INNERD, RFATHE, RAITCH, CEHSEE, FFCOEE, VERBLA, MIDDEL, SECNOD, ENPCIL, ERTBUT. For the failure condition, nine of the impossible anagrams plus one easy anagram were presented in booklet form with one anagram per page. The order of anagram presentation was: ALSEGT, EMAGLE, ENPCIL, FESLNI, RAITCH, NAWERT, UPSLON, AYTREN, HCAIMT, RISHTE.

Unlike Feather (1966), the present study did not involve the effects of success and failure on performance and confidence. Therefore, the induction of success and failure was different from that of Feather. In Feather's studies (1966 and 1968), success was induced by presenting subjects with 5 easy items followed by ten 50 per cent difficult items. Failure was induced by presenting subjects with 5 impossible items followed by ten 50 per cent difficult items.

Procedure:

a) Success condition: Subjects were individually tested. Upon arrival for the second testing session, the subject was led to the testing room. The subject was then told that the second testing session was part of a research project to assess the personality profile of North American college students. The subject was also told that the test about to be performed was found essential to add further details about the subject's personality. The test was described as dealing with verbal intelligence. The subject was then asked whether there were any objections against answering the test. The bogus verbal intell-

igence test was not administered until the subject showed willingness to take the test; (one male subject was eliminated because he refused to answer the bogus intelligence test). Each of the other subjects was then handed a booklet devised for the success condition with the following initial instructions typed on the front page:

The test that you are about to perform is a test of your verbal intelligence. Please try to do your best as your scores will be taken as a fair and accurate indication of your intelligence level. The test consists of a set of disarranged words (anagrams). Your task is to rearrange each group of letters so that they make a meaningful (English) word. There is only one correct answer for each anagram. Start when you are so instructed. Stop at the stop signal. Do not turn over a page until you are told to do so. (After Feather, 1966)¹

The subject was then told:

You should find these anagrams difficult; about 30 per cent of college students are able to solve them correctly

¹The sentence: "There is only one correct answer for each anagram." was added by the author so that subjects would concentrate on one answer per anagram.

in the time allowed. (After Feather, 1966)²

After these instructions, the subject was told to vocalize any anagram as soon as it was solved because he/she would be timed for each anagram. A scoring sheet that contained the anagram numbers was used to record the time the subject took to solve an anagram; (a score was computed by averaging the number of seconds each subject took to solve all the anagrams). The subject was then given a signal to start and was timed with a stopwatch. When the subject finished answering most of the anagrams (all subjects were able to solve most of the easy anagrams) the subject's score was given to the subject (a hand calculator was used to compute the score). The bogus intelligence score was designed to indicate a high average. The subject was then flattered for his/her performance by being told that such performance was among the best, and was then asked to leave the room. However, before the subject reached the door the examiner shook his head as if he forgot something and told the subject to fill out the I-E scale and the class I of the CPI (all the items to be answered were already indicated on the answer sheet). The subject was told that answering the test had nothing to do with the present research but would be used only for future research

²These instructions were used by Feather to induce a low expectation condition. The use of the same instructions in the present study was to prepare the subject for a success condition. The subject would feel a sense of personal achievement after solving most or all of the "easy" anagrams.

purposes. The subject was told not to write his/her name on the tests and was given an envelope to put the tests in and to drop it in a special slot after answering them. Subjects answered the test in separate rooms. When subjects completed the tests they were debriefed and were allowed to ask questions. Subjects were also requested not to tell anyone in their Psychology class about the true purpose of the study.

b) Failure condition: the same procedure took place as that in the success, however, following the initial instructions the subject was told:

You should find these anagrams easy; almost 70 per cent of college students are able to solve them correctly in the time allowed. (After Feather, 1966)¹

The subject was given the booklet that was devised for the failure group. Every subject was able to solve only one of the ten items (i.e., the included easy anagram). The subject was given a bogus score indicating a very low average. The subject was disparaged by being told that such performance on the anagrams was the worst and that this should be considered as unsatisfactory verbal intelligence. The subject was then asked to answer the I-E scale and class I of the CPI; and was told that answering these scales was part of another research. Subjects

¹These instructions were used by Feather to induce a high expectation condition. In the present study these instructions were used to prepare the subject for a failure condition. The subject was expected to feel a sense of personal inadequacy after the failure in solving most of the anagrams.

were then debriefed and were allowed to ask questions to make sure that they were aware that the anagrams were truly impossible.

c) Neutral condition: Upon arrival the subject was seated and was handed an empty CPI answer sheet. The subject was told to answer specific items on the CPI. The examiner read the numbers of the items (class I) and the subject marked them down on the answer sheet. The subject was then handed the CPI booklet together with the I-E scale and asked to answer the tests as part of different research being carried on elsewhere. Subjects were given the option to write their names on the tests. Subjects were then taken to another room to complete the tests. No interpretation of these tests were provided to the subject. After that subjects were debriefed.

Experimental Design: Self-esteem and locus of control were analyzed by using two $3 \times 2 \times 2$ analyses of variance (the first two were between factors, namely, treatment condition and sex, and the third a within factor, namely, before and after treatment). Because of unequal cell frequencies analyses were based on unweighted means solution (Winer, 1971). Correlations of pre and post treatment self-esteem and locus of control scores were used to investigate the nature of, and changes in, the relationship between these two variables.

Results

Means and standard deviations of the pre and post treatment CPI and I-E scores for the success, failure and control groups and the combined sample are presented in Tables 1 and 2.

Effects of success and failure on locus of control:

Table 3 shows analysis of variance of pre and post I-E scores for the success, failure and control groups. As the table shows there were no differences due to sex. All the groups increased significantly in internal locus of control. The treatment by pre- post-interaction was not quite significant ($F = 2.998$, $p < .10$). However, Dunnett's procedure applied to the change scores revealed that under success subjects increased in internality significantly more than the control group ($t = 3.210$, $p < .005$). Moreover, the failure group did not increase differently from the control group ($t = .430$). Figure 1 shows the direction of change in locus of control for the three groups.

Effects of success and failure on self-esteem:

Table 4 shows analysis of variance of the pre- and post-self-esteem (CPI) scores for the success, failure and control groups. Again, there were no differences due to sex. Self-esteem increased significantly in the three groups, and no significant interaction between the treatment and changes in self-esteem took place. Dunnett's procedure showed that neither the success ($t = 1.667$) nor failure ($t = 1.408$) groups significantly changed from the control group.

Effects of success and failure on the relationship between self-esteem and locus of control: Table 5 shows the correlations of the pre and post treatment scores across the experimental, control and combined groups. There are no significant differences between any of the correla-

TABLE 1

MEANS AND STANDARD DEVIATIONS OF THE
PRE AND POST TREATMENT INTERNAL-EXTERNAL SCALE SCORES

	TREATMENT			
	PRE		POST	
	\bar{X}	S.D.	\bar{X}	S.D.
Success	10.29	4.91	7.84	5.14
Failure	9.73	3.82	8.64	4.18
Control	8.94	4.70	8.21	4.76
Combined sample	9.68	4.51	8.21	4.70

TABLE 2

MEANS AND STANDARD DEVIATIONS OF THE
PRE AND POST TREATMENT CALIFORNIA PSYCHOLOGICAL INVENTORY SCORES

	TREATMENT			
	PRE		POST	
	\bar{X}	S.D.	\bar{X}	S.D.
Success	27.62	3.34	28.94	4.03
Failure	27.40	3.27	28.49	4.18
Control	26.29	3.34	26.83	3.79
Combined sample	27.13	3.34	28.03	4.07

TABLE 3

ANALYSIS OF VARIANCE OF LOCUS OF CONTROL
CHANGE SCORES ACROSS SUCCESS, FAILURE AND CONTROL GROUPS

SOURCE	S S	df	M S	F
BETWEEN		103		
Treatment	20.51	2	10.25	.269
Sex	24.20	1	24.20	.636
Treatment X sex	84.08	2	42.03	1.105
Error	3728.13	98	38.04	
WITHIN		98		
Change scores	96.82	1	96.82	19.539**
Treatment X change scores	29.72	2	14.86	2.998*
Sex X change scores	.63	1	.63	.127
Treatment X sex X change scores	.31	2	.16	.032
Error	485.632	98	4.955	

** $p < .005$

* $p < .10$

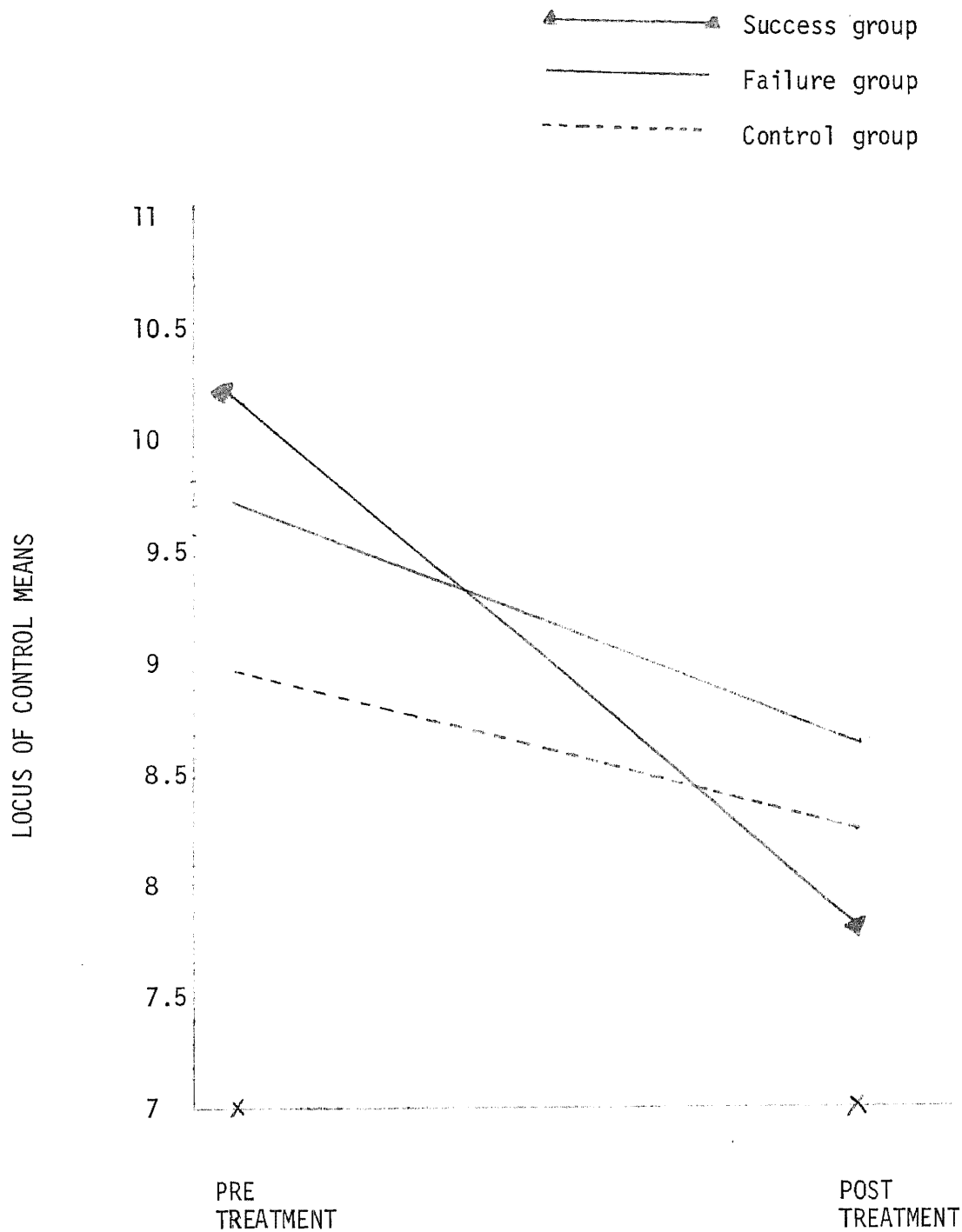


FIGURE 1
CHANGES IN LOCUS OF CONTROL IN THE SUCCESS,
FAILURE AND CONTROL GROUPS

TABLE 4

ANALYSIS OF VARIANCE OF SELF-ESTEEM CHANGE SCORES
ACROSS SUCCESS, FAILURE AND CONTROL GROUPS

SOURCE	S S	df	M S	F
BETWEEN		103		
Treatment	99.03	2	49.52	2.041
Sex	22.63	1	22.63	.9333
Treatment X sex	81.32	2	40.66	1.676
Error	2377.86	98	24.26	
WITHIN		98		
Change scores	43.85	1	43.85	17.681*
Treatment X change scores	3.93	2	1.97	.794
Sex X change scores	.87	1	.87	.351
Treatment X sex X change scores	5.27	2	2.64	1.065
Error	243.11	98	2.48	

* $p < .01$

TABLE 5

CORRELATIONS OF THE PRE AND POST TREATMENT SCORES OF THE
INTERNAL-EXTERNAL SCALE AND CALIFORNIA PSYCHOLOGICAL INVENTORY
ACROSS THE EXPERIMENTAL AND CONTROL GROUPS AND COMBINED SAMPLE

	TREATMENT			
	PRE		POST	
SUCCESS	-.35**	(n= 38)	-.22	(n= 38)
FAILURE	+.09	(n= 33)	-.19	(n= 33)
CONTROL	-.31*	(n= 33)	-.24	(n= 33)
COMBINED SAMPLE	-.19*	(n=104)	-.21**	(n=104)

* $p < .05$

** $p < .025$

tion coefficients, either between groups or before and after treatment. Except for the failure group pre-treatment, the correlations are all negative.

Discussion

The results, largely, did not support the hypotheses. Success and failure did not have significant effects on self-esteem. However, success produced a significant increase in internal control. Locus of control was not influenced by failure. The relationship between locus of control and self-esteem remained relatively static following success and failure.

Locus of control under success and failure: Internal locus of control increased significantly in the success, failure and control groups. Subsequent analyses revealed a greater increase in internality for the success group. Thus positive feedback enhanced beliefs in internal control. This finding is consistent with Rotter's (1954) social learning theory. As the reinforcement value becomes more positive, behaviour potential and expectancy generalize to a more internal orientation. The contingency and occurrence of reinforcement define the expectancy for the potential behaviour. Phares & Lamiel (1974) argued that a decrease in external control may take place following expectancies of success. The present study showed that expectancies for internal control were more likely to be strengthened after a successful experience, and that locus of control is sensitive to success experiences. Since an increase in internality reflects a strong belief in one's abilities and skills as determinants of one's life events (Rotter et al., 1972), persons (especially college students) exhibit a potential for believing that success is contingent upon their own behaviour.

Contrary to the hypothesis, locus of control was not affected by

failure. This finding is not congruent with that of Brecher & Denmark (1972) who reported an increase in external control under failure. The present study was different from that of Brecher and Denmark, for the latter study did not use pre and post scores to account for changes in locus of control. Brecher & Denmark tested the failure and control groups once and then compared the scores. Furthermore, a test-retest shift toward internality is inherent in Rotter's I-E scale (Hersche & Scheibe, 1967). Such a shift seemed to occur despite negative feedback (see table 1). A test-retest shift toward internality may be so strong as to resist manipulations to divert it. Future research is needed to investigate such an assumption.

Research that concentrated on the difference in attribution strategies by internals and externals following success and failure have ignored changes in locus of control. A discrepancy between the direction of attribution and that of locus of control may exist. Externals, for example, may become more internal following success despite the fact that they may assume an external attribution. Although an increase in internal control belief is manifested following success, externals may not transfer such belief to their actual behaviour.

Self-esteem under success and failure: Success and failure did not have any effect on self-esteem; self-esteem increased in the three groups. Since the CPI measures enduring personality components (Gough, 1957; Stroup & Manderscheid, 1975) it is assumed that genuine self-esteem is not affected by positive or negative feedback. Solway & Fehr (1969) did not find any changes in self-acceptance (a component of self-esteem) following success and failure. Solway & Fehr concluded that self-acceptance endures experimental manipulation of success and failure. Research that dealt with the defensive models of self-esteem may have

emphasized less enduring components of self-esteem (e.g. self-evaluation and self-rating). Thus, these less enduring components fluctuate across success and failure, whereas genuine self-esteem remains stable. Different modes of defensiveness may protect genuine self-esteem. People may change the way they evaluate themselves when they succeed or fail, but may not seriously alter their self concept. The implication here is not to emphasize a rigid characteristic of self-esteem. Rather, this personality variable may allow for further freedom to cope with a configuration of different situations. The adaptive nature of self-esteem and the influence of social demands on one's identities has been demonstrated (summarized in Gergen, 1972). Moreover, Rogers (1951) stated that individuals react to their experiences with the purpose of maintaining and enhancing a favourable self-image.

The non-supporting results yielded by the present study may be due to at least two facts: 1) the treatment was not effective; and/or 2) the existence of other uncontrollable subtle variables. Some of the subjects did not totally internalize their failure on the anagrams. "I was never good at solving anagrams" was a typical remark.

The increases in self-esteem and internal locus of control for the success, failure and control groups may be due to subjects' participation in an experiment, and that the experience in the control group was not totally neutral since such groups did participate in the study. Another explanation for the increases in self-esteem and internal locus of control is that the testing changed from group to single testing; the subjects were thus more aware of being tested. Social desirability may have influenced the results, since, as indicated earlier in the present study, CPI and the I-E scale are confounded by social

desirability.

Effects of success and failure on the relationship between self-esteem and locus of control: Contrary to the predictions the correlations between the I-E scale and CPI scores did not undergo any significant changes following success or failure. Self-esteem and locus of control did not change differentially under specific conditions of success or failure. Their relationship was not state dependent. The magnitude of correlation between self-esteem and locus of control found in the present study was consistent with the magnitude of correlations reported by previous studies.

The static nature of the relationship between self-esteem and locus of control may be due to the fact that both of these variables are aspects of the same phenomena. Heaton & Duerfeldt (1973) argued that self-esteem and locus of control are encompassed by a more general variable, and that the relationship between these two variables can be better understood by this "nomological" network of personality. Logically speaking self-esteem and locus of control may be engulfed by a more general variable since both of these variables are indicative of internal mediators of behaviour. It is probable that if self-esteem and locus of control were encompassed by a macro variable, then any fluctuations in their relationship, under specific conditions, may be vitiated by that more enduring macro variable. This may imply that treating personality variables as isolated entities would render such variables more susceptible to situational factors, whereas treating them as a whole, or as sets of relationships, would result in more resistance to external factors. Future research is needed to investigate such an implication to add more understanding of the nomological approach to personality.

Conclusions:

Internal locus of control is strengthened as the positive value of the reinforcement increases. Negative reinforcement does not strengthen an external locus of control. Moreover, positive and negative feedback seem to have the same effect on self-esteem, although other manifestations of self-esteem (e.g., self-evaluation) has been shown by other studies to be differentially influenced by positive and negative feedback. The relationship between self-esteem and locus of control is stable across different situations.

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