

Reponse to faillure and the transfer of its effects

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VER the years, a substantial amount of research and theoretical writing has accumulated linking deterioration in performance following failure to learned helplessness or the perceived inability to surmount failure (Abramson et al., 1978; Seligman et al., 1975). The concept of learned helplessness, which is usually used to describe the behaviour an individual exhibits when he/she believes that his/her actions make no differences in bringing about an outcome, was originated in animal experiments that have been designed to investigate the relationship of fear conditioning to instrumental learning (Maier and Seligman, 1976; Seligman, 1975). Seligman and his associates observed that animals were subjected to traumatic situations in which electric shocks or loud noises are unavoidable then they will give up trying to avoid the shocks when escape is possible. Laboratory studies (e. g., Hiroto and Seligman, 1975; Miller and Seligman, 197) have shown that human subjects also can learn to be helpless when placed in situations they believe they are unable to control and have supported Seligman's model of learned helplessness.

However, some researchers were sceptical and doubtful about the adequacy of the model for explaining human helplessness and raised the following questions : is it appropriate to view failure as a sufficient cause of helplessness ? Does the attribution of causality that a person makes for his/her failure affects the subsequent cognitive, motivational, or affective components of helplessness? What determines whether helplessness effects will transfer to dissimilar situations from which there were induced?

To overcome and solve the inadequacies of the original learned helplessness hypothesis when applied to human helplessness, Abramson et al (1978) proposed a reformulation of the model. They hypothesized that being exposed to failure, a person makes an attribution about the causes of his/her failure and this attribution influences his/her expectancies of control. This expectation, in turn, determines the kind of performance deficit and its generality and chronicity. Such attributions, according to Abramson and his associates, are to be understood along three orthogonal dimensions : internal-external; global-specific, and stable-unstable. The generality of learned helplessness deficits across situations is determined by the global-specific dimension. If a person attributes his/her failure or helplessness to global causes, factors present in many situation, rather than specific ones, then helplessness is more likely to generalize to dissimilar tasks or situations.

What emperical evidence is there to confirm that the style of causal attribution is a determinant of the generality of learned helplessness? In investigating this question, Alloy et al (1984) found that performance deteriorations generalize from the unsolvable task to a subsequent dissimilar task among subjects who attributed their failure to global causes. Other researchers (e. g., Anderson, 1983; Passahow , 1980; and Mikulincer, 1986) also assessed the relation between performance deficits and the global specific attribution dimension for failure and found that subjects who were given instructions to elicit global attribution for their failure on an unsolvable task performed worse on a subsequent task than did subjects induced to make more specific attribution. To determine the conditions under which failure impairs performance, Mikulincer (1988) conducted an experiment to explore the effects of the internal-external attributional style on affective and performance reactions following a short or a long-duration failure and reported that both reactance and helplessness were found mainly among subjects who were exposed to a long-duration failure and who believed that their failure were due to internal factors.

Parallel to, and consistent with learned helplessness findings, studies on achievement motivation and an other research areas indicate that individual show cognitive as well as behavioural differences in handling uncontrollable

situations. For example, studies that examined the effects of level of self esteem and success-failure information on task performance reported a strong relationship between the level of self-esteem and performance decrements following a failure feedback : whilst low self-esteem subjects displayed significant performance decrements after a failure experience, subjects of high self-esteem manifested enhanced performance (Cruz-Perez, 1973; Shrauger, 1972; Shrauger and ROsenberg, 1970). Additional evidence is provided by Brockner (1979). In Brockner's experiment, subjects of low and high self-esteem were presented with a social insight test, received a false success or failure feedback, and asked to complete a concept formation task in either the presence or absence of a self-focusing stimuli (e. g., a mirror). Overall, the results showed that the success/failure feedback has no effects on performance of high self-esteem subjects. In contrast, following a failure feedback; subjects of low self-esteem made more errors than did subjects of high self-esteem.

Comparing the performance of subjects categorized as low in self-esteem; those who received a success feedback performed as well as did subjects of high self esteem and did better than those who received a failure feedback.

The above findings seem to suggest that individual differences in personality as well as the ways in which attribution for the success/failure information about their performance is made affect their behaviour on a subsequent task. For low self-esteem individuals failure leads to self-blame resulting in reduced performance and continued failure. For high self-esteem; on the other hand, attributing failure to external causes seems to protect and help them to maintain their level of performance. Thus, individuals' level of self-esteem could be a determinant in explaining low self-esteem poor task performance. There are also suggestive findings explaining low self-esteem poor performance in terms of the self-image individuals hold for themselves. It is believed that low self-esteem individuals have a negative self-image and tend to maintain that image, which in turn has an impact on their behaviour, whereas, high self-esteem individuals have a greater ego and respond only to success feedback. In accordance with this reasoning, Maracek and Mettee (1972) found that both low self-esteem subjects, who attributed their success to a luck factor and high self-esteem subjects in either the skill or luck conditions showed no performance decrements and concluded that having ability may be inconsistent with the self-image of low self-esteem subjects but not with high self-esteem ones.

while past research gives a clear indication of individuals performance deteriorations following exposure to failure, no study has systematically examined whether exposure to uncontrollable situations has an effect on the different cognitive functions and if such effects do exists are some functions more susceptible to failure than other? The present study was designed to investigate

the different cognitive functions affected by the exposure to success or failure conditions and to determine whether some cognitive tasks are more susceptible to the effects of failure than others? In this sense, the study attempts to examine the question whether existing memory is more susceptible to the effects of failure on any task, than, for example, simple reasoning, and are cognitive effects of failure or success related to similar effects on self-esteem?

It was predicted that comparing performance after failure or success, subjects of different level of self-esteem will exhibit different cognitive effects; those low in self-esteem will show a significantly greater difference in cognitive functions following a failure than subjects of high self-esteem.

It is also predicted that subjects of both low and high self-esteem will perform at roughly the same level following success feedback. The logic underlying these predictions is that under normal or successful conditions, these subjects who are equally successful in high school should perform at about the same level. But since the low self-esteem subjects will be more susceptible to helplessness, they will do relatively poorly following failure.

Subjects in the two investigations, reported here, responded to the Rosenberg's self-esteem scale and were divided into two groups based on the mean scores for self-esteem. Also in both experiments, subjects completed a set of anagrams, received either a success or failure feedback, and then were asked to perform a cognitive task.

EXPERIMENT 1

(*) Method :

(*) Subjects :

Forty-four male high school students aged 18 to 19 years from a predominantly working class area of Algiers participated in the experiment. subjects were classified as low or high in self-esteem, according to their scores in the Rosenberg's self-esteem scale. Twenty-one subjects whose scores were twenty (20) and below ($M = 18, 7368$, $SD = 1,3680$) were classified as low in self-esteem and the remaining twenty three subjects whose scores were (21) and over ($M = 31, 6400$, $SD = 3, 7625$) were classified as high. The range of possible scores is 10 to 40.

(*) Design :

The design of the study was a 2×2 between subjects design. Independent variables were level of self-esteem (low/high) and anagram performance (suc-

cess/failure). The dependent variables were the number of towns beginning with the letter B, the number of first names beginning with the letter M, and the number of football clubs the subjects did recall in thirty seconds.

(*) Research materials :

Subjects' level of self-esteem was assessed by means of Rosenberg's self-esteem scale (Rosenberg, 1965) which is commonly used in research on self-regard and self-concept. A high score on this scale represents high self-esteem and the scoring of the scale is that of Likert format. Subjects' problem solving abilities were assessed by two different sets of anagrams and a memory test. One set of anagrams comprised a list of 20 five-letter words and the other set consisted of 20 four-letter words. The memory test comprised three questions which asked subjects to recall some specific things such as first name or football clubs.

(*) Procedure :

A week prior to the study, a meeting with the headmaster was arranged through a friend of the experimenter who was a teacher at the school. The experimenter introduced the experiments as a study concerned with individual problem solving ability and outlined the procedure to be used. Both the headmaster and class teachers were blind to the hypothesis and to the conclusions that may be drawn from the study.

The experiment took place in the subject classroom and consisted of a morning and afternoon sessions. In the morning session, subjects were informed that they would participate in study which investigates individuals problem solving ability and were asked to complete and score the 10-items Rosenberg's self esteem scale. In scoring the five (5) positively worded statements of the scale subjects were asked to give a mark between 4 and 1 depending on whether their answers indicated that they strongly agreed, agreed, disagreed, or strongly disagreed with the statements. The marks were reserved for the negatively worded statements. The scoring of the scale by the subjects was done to make it possible to get on with the second part of the experiment within the period allowed by the school. It is worth noting that, at the end, the experimenter checked subjects scoring of the scale and found no errors. In the afternoon session, subjects were split into two groups, each in a separate room, shown either 20 five-letter anagrams or 20 four-letter anagrams, and were given eight seconds time to limit to write down the solution words for each anagram. To induce success and failure, subjects in the failure condition were

presented with a set of difficult anagrams and told that «these are easy anagrams although some people might find them quite difficult». In contrast, subjects in the success condition were presented with an easy set of anagrams and told that «most people would find such anagrams difficult to solve». After the anagram task was completed, the experimenter collected the results and scored them. then as the subjects left the room for the second part of the experiment they were individually informed on how they performed. Due to time pressure and relative difficulty of the task, subjects in the failure condition did not seem to be surprised when informed about their bad performance and indeed most of them had in fact failed.

Following this, subjects were individually taken to a quiet room where a second experimenter was sitting at a table. once the subject was comfortably seated, the second experimental task was introduced and the experimental task was introduced and the experimenter asked the subject how many towns beginning with the letter B can he recall in ten seconds? How many first names beginning with the letter M can he recall in ten seconds? and finally how many football clubs can he think of in ten seconds. In both the anagram and recall tasks very short intervals were allowed for responses. This was to ensure that subjects were responding at a level most sensitive to change without being attenuated by ceiling effects.

Once subjects completed the second task, the experimenter debriefed and thanked them for their participation. The debriefing was done with groups and did no more than explain the purpose of the experiment and the kind of conclusions which might be drawn from it. Practical constraints prevented this session being used to extract more information from the subjects on how they perceived the experiments and about their attitudes towards it.

(*) Result and discussion :

The effects of self-esteem and success/failure feedback were examined against the memory scores with a 2 (high/low self-esteem) X 2 (success/failure feedback) between subjects analysis of variance (ANOVA). Consistent with the predictions, level of self-esteem was found to be a clear determiner of the subjects' performance on a memory task $F(1, 40) = 9, 93, p = 0. 0000$. In addition the ANOVA indicated a significant interaction between self-esteem and the type of feedback $F(1, 40) = 6, 65, p = 0. 0137$.

Both the analysis of variance and the examination of the group means performance revealed that, in line with expectations, although subjects high and low in self-esteem did not differ from each other in the success condition ($M = 11, 76$ and $11, 40$ respectively), they did react differently under the failure condi-

tion. Memory task performance of low self-esteem subjects was apparently affected more by failure information than was that of high self-esteem subjects ($M = 5, 85$ and $9, 5$ respectively). Comparing the performance of subjects of the same level of self-esteem under the two experimental conditions, one can see that low self-esteem individuals in the success conditions outperformed their counterpart in the failure condition ($M = 11, 40$ and $5, 58$ respectively). However, although the results reveal some differences in performance of high self-esteem subjects following a success and a failure feedback, these differences were not as large and significant as those observed with low self-esteem subjects ($M = 11,76$ and $9, 5$ respectively).

EXPERIMENT 2

It seemed possible that the very clear cut result of experiment 1 was due to the similarity of anagram task to the memory task. Both may involve memory search. It was therefore decided to repeat the experiment using a very different task, an AH5 reasoning task, as a transfer task. There was no rationale to the choice of the second task other than a wish to make it as different as possible from the anagram task.

(*) Subjects and design :

Subjects were forty-eight male high school students from the same school as those of experiment 1. None had participated in experiment 1. Twenty were classified as low ($M = 18.5000$, $SD = 1.3394$) and the remaining twenty eight were classified as high ($M = 28.8000$, $SD = 3.9076$).

To test the effect of failure on reasoning for people of low and high self-esteem the same design as in experiment 1 was followed and subjects were assigned to one of the four experimental conditions in 2 (low/high self-esteem) X 2 (success/failure) between subjects design.

(*) Procedure :

In experiment 2, no procedural modification was made. Prior to the first experimental task, subjects were presented with the Rosenberg's self-esteem scale and asked to complete and score it. Like in experiment 1 subjects were split into two groups, each in separate room, and presented with the first experimental task which consisted of a set of either easy or difficult anagrams. After completing the first task, subjects in both success and failure conditions were

presented with the second part of the AH5 test (Heim, 1970) which consisted of questions which are perceptual puzzles and asked to solve as many problems as they could in eight minutes.

Again the subjects were debriefed, but again there was no opportunity to question them about their responses or attitudes.

(*) Results and discussion :

A 2 X 2 between subjects analysis of variance (ANOVA) was carried out to examine the effects of self-esteem and the failure/success feedback on a reasoning task performance. The analysis yielded significant main effects for the level of self-esteem $F(1, 44) = 37.21, p = 0.0000$; Subjects of high self-esteem performed better than the lows ($M = 38.29$ and 27.53 respectively), and also for the effect for the success/failure feedback $F(1, 44) = 42.17, p = 0.0000$ with subjects in the success condition performing better than those in the failure condition. However, in this experiment the interaction between the two variables did not reach significance $F(1, 44) = 1.23, p = 0.2727$. It will be noted that there are two big differences between this experiment and experiment 1. There are :

- a) That in this experiment those of low self-esteem did not do as well as those of high self-esteem even in the success condition and,
- b) There is no interaction between self-esteem and success/failure.

(*) General discussion of experiments 1 and 2 :

In this study, the main research question asked whether exposure to a success/failure situation has effects on cognitive functions. Two hypotheses were suggested. Individuals, regardless to their level of self-esteem, do not react differently to success feedback. In contrast, failure information about performance is predicted to have effects on cognitions of low but not high self-esteem subjects. How do the obtained results relate to those hypotheses?

The results of the first experiment were exactly in line with predictions. But those of the second experiment, while confirming the deterioration in performance after failure, did not show any greater deterioration for those of low self-esteem; several hypotheses could be put forward to account for this. The most obvious is :

To assume that low self-esteem subjects showed relatively transfer of the effects of success because of the greater differences between the two tasks.

There is, in fact, little difference between the two experiments in relation to those of high self-esteem. It is possible that they were less sensitive to the difference between the two tasks. It is also possible that self-esteem has a greater influence on problem solving than on memory task so that those of low self-esteem may have been more sensitive to the effects of both success and failure.

It would be surprising if the generalization of failure were not facilitated by similarities between the two tasks involved and by assumptions about the generality rather than the specificity of the helplessness. It would also be surprising if the effects of failure were not also affected by the context in which the tests are made. Students may have no expectation of success or failure in everyday memory task as a result of school experience, but they might have strong expectations in relation to reasoning tasks. To distinguish these possibilities and to discover the relative strength of these different effects would require a further series of similar experiments but for the moment we content to have demonstrated the strength and statistical significance of these effects.

Although the study did not assess the subjects' attribution about their success and failure, it is possible that the differential attributional styles that individuals of different self-esteem adopt to interpret their success and failure are relevant factors for explaining the caused effects. Low self-esteem individuals may have attributed their failure to internal causes (i. e. own inadequacy) and their success to external causes (i. e. luck), whilst high self-esteem individuals may make self-laudatory biases in their attribution (see Zuckerman, 1979 for a review). Thus, the low self-esteem pattern of attributing failure internally could lead to decrements in performance and continued failure, whereas attributing failure externally, could help high self-esteem individuals to protect themselves from the negative effects of failure and leads them to maintain their level of performance. Another possible explanation for the differences in performance caused by the failure feedback lies in the affective effects a failure feedback has on individuals of different self-esteem (Crandell, 1973; Shrauger and Rosenberg, 1970). For low self-esteem individuals failure information may enhance their negative self-image, lead to self-blame, and result in performance decrements. The lower level of anxiety and the greater self-confidence associated with high self-esteem individuals allow them to withstand the potentially anxiety-provoking effects of the failure feedback and thus maintain their level of performance.

Performance of low and high self-esteem individuals following success and failure feedback can also be explained in the light of theories and research findings in achievement motivation which assume that an internal attribution for failure might strengthen the motivation to avoid future challenge and would

lead to subsequent cognitive or behavioural performance deficits (Athinkson and Feather, 1966; Kuhl, 1978; and Revelle and Michaels, 1976). It could be regarded as a failure in these experiments that no direct attempt was made to assess these subjective and attitudinal factors.

Whatever the reasons that might have produced the feedback effects, the present study confirms the theory that exposure to a failure situation leads to performance decrements. But the size of the decrement may be different for different cognitive tasks. Moreover, we are pretty confident that the effects of failure are complex and both specific and non-specific in the sense that all forms of transfer can involve transfer of knowledge, transfer of attitudes, and transfer of strategies.



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