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ABSTRACT

Performance is affected by cognitive learning skills, but also by the reasons people perceive as causes of their successes and failures. People with high achievement needs perceive their successes as caused by their own ability and effort, and their failures as caused by lack of effort. People with low achievement needs blame their failures on lack of ability and do not take credit for their ability when they experience success. A change in attributions changes the way people perform. In one research study, high achievers given placebos they thought would interfere with their abilities tried less hard on a task, while people with low achievement needs and little self-confidence, since they had an excuse for experiencing difficulty, did better than usual. In another study, children subjected to repeated failures kept trying if they believed effort would make a difference. Tendencies to form causal attributions are learned, perhaps differently by different racial and social groups. However, interventions can change people's assessment of their chances for success. For example, tests on children who were reinforced for exhibiting effort attributions showed that their work improved and they became more persistent. Teachers should thus take students' individual attribution styles into consideration as a characteristic which affects achievement behavior, and, at the same time, attempt to change students' attributions in the direction of emphasizing ability and effort. (CD)

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Since the beginning of the century it has been recognized that individuals differ in their cognitive styles, abilities, social skills, motives, and personality characteristics, and that these differences require the design of educational instruction which would match individual needs. It has been assumed that by adjusting instruction to individual differences, there will be an improvement in the learning process. Thus, it is not surprising that much has been written about adapting the environment in the schools to individual differences (e.g., Gagné, 1967; Glaser & Resnick, 1972; Weisgerber, 1971).

The problem educators face is how to change those practices in education which disregard individual differences and approach students in an undifferentiated way with a limited range of instructional options. One of the solutions to this problem is the design of individualized instruction. Individualized instruction is defined, according to Southworth (1971), as planning and conducting programs which are structured to suit each student's learning requirements and each student's characteristics as a learner. Such programs reflect principles of the model of adaptive education which "assumes that the educational environment can provide for a wide range and variety of instructional methods and opportunities for success. Alternate means of learning are adaptive to and are in some way matched to knowledge about each individual--his background, talents, interests, and the nature of his past performance" (Glaser, 1972, p. 6).

During the last decade several different individualized programs were designed and introduced to the schools (e.g., Flanagan, 1969; Lindvall & Bolvin, 1967). These programs require the teachers to utilize information about each student in order to match the appropriate instructional programs with students' skills. However, most of the individualized programs are concerned mainly with individual differences in cognitive skills related to learning. Individual differences in social motives, skills, attitudes, or beliefs are relatively neglected. Brophy and Good (1974) noted that "although the movement towards individually prescribed education represents recognition by practitioners that the individual student should be the focus of educational effort, relatively little educational research has focused on the individual student" (p. 3). They suggest that such "research should focus on the individual student's present status, his pattern of strengths and weaknesses, his methods of approaching problems, and his interests in order to prescribe an educational experience which is likely to succeed for him where others have failed" (p. 3).

One assumption of individualized instruction is that students are equally motivated to learn and that they react similarly to experiences of success and failure. However, the evidence shows that students do differ in their motivation to learn and in their reactions to success and failure. These differences in turn affect the student's learning performance in the classroom.

It is the purpose of this paper to review evidence of how a characteristic other than a cognitive learning skill may affect the student's learning performance. The paper will analyze the individual differences in perceptions of causes of successes and failures. These causal perceptions, called attributions, have been found to be related to the individual's performance on achievement-related tasks. (It should be pointed out that in spite of the fact that part of this research has been done with college students, there is growing evidence that the findings can also be applied to

elementary school children [e.g., Dweck, 1975; Nicholls, 1975; Weiner & Kukla, 1970].) Specifically, the paper will review recent research on individual differences in making causal attributions about successes and failures. First, the attributional model of achievement behavior will be presented. Second, evidence which shows individual differences in making attributions will be surveyed. Third, studies which illustrate differential performance on achievement-related tasks by individuals who differ in their attributions will be reviewed. Finally, educational implications will be discussed.

Attributional Model of Achievement-Related Behavior

Weiner and his associates (Weiner, 1972, 1974; Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971) have suggested that individuals' beliefs about causes of success and failure may be of major importance in understanding achievement-related behavior. To explain achievement behavior, they proposed an attributional model that is based on the assumption that beliefs about the causes of success and failure mediate between the perceptions of an achievement task and the final performance. Individuals have been shown to see the causes of their successes and failures as being due to their ability, their effort, the difficulty of the task, and/or good or bad luck (cf. Frieze, 1973). These causal elements can be classified on two dimensions. One dimension differentiates the causal elements in terms of their internality/externality. Thus, ability and effort are considered internal because they originate within the person, while task difficulty and luck originate outside the person and are therefore considered as external causes. A second dimension differentiates the causal elements in terms of their stability over time. Thus, ability and task difficulty are considered stable because they do not vary if the same task is reattempted, while effort and luck are considered highly unstable because they fluctuate over time. These locus of control and stability dimensions have been found

to be important in understanding the affective reactions to the success or failure and the changes in perceived probability of success for future outcome, respectively (see Weiner, 1974). Figure 1 represents this process.

In a success situation, people feel maximum pride (self-satisfaction) when they can attribute their performance to either ability or effort, both internal causes. Attributions of success to good luck or the ease of the task produce considerably less pride. Failures attributed to lack of ability or lack of effort result in shame (self-dissatisfaction), while failures attributed to the difficulty of the task or bad luck result in little shame since no personal responsibility is then taken for failure. Furthermore, when one perceives one's successes as caused by good luck, the resulting expectancy is that failures might occur in the future since luck is believed to be an unstable external factor. Corresponding expectations are found for attributions to bad luck in situations of failure. Attributions to lack of effort, an internal unstable cause, in failure situations result in high expectancy for future success since the implication is that performance would have been better if more effort had been exerted. Similarly, attributions to high effort in success situations result in high expectancy for future success. Failures attributed to lack of ability result in shame and low expectancy for future success since one assumes that one's ability will not increase greatly, and, therefore, that future performance will show little improvement. Also, because ability is a stable cause, successes attributed to ability result in high expectancy for future success. According to the same reasoning, attributions of success to ease of task, a stable cause, result in high expectancy for success, while attributions of failure to difficulty of task result in low expectancy for success.

In summary, the type of causal attributions a person makes can determine his affective reactions and cognitive reactions of expectancy. The locus of control dimension influences the affective reactions of pride and shame, while the stability dimension influences the cognitive changes

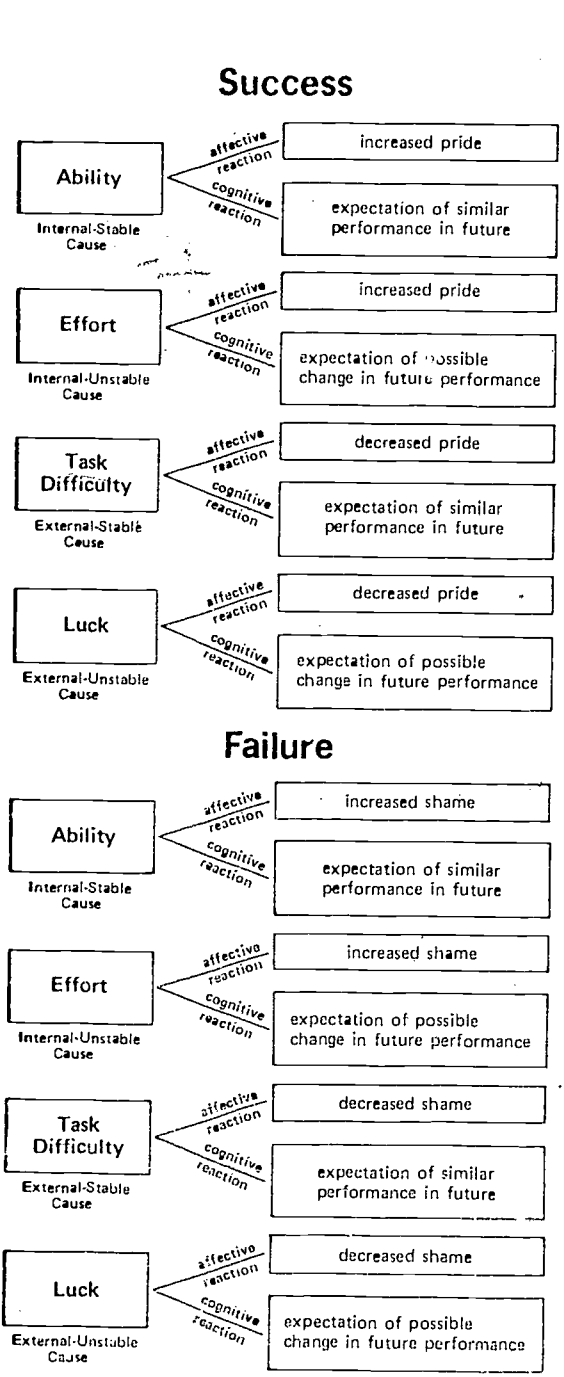

Figure 1. Affective and cognitive reactions in situations of success and failure as a function of causal attributions.

in expectancy following success or failure. This theoretical conceptualization has been verified by numerous empirical studies (e.g., McMahan, 1973; Rest, Nierenberg, Weiner, & Heckhausen, 1973; Rosenbaum, 1972; Weiner, Heckhausen, Meyer, & Cook, 1972; Weiner & Kukla, 1970; Valle, Note 1).

Individual Differences in Beliefs About Causes of Success and Failure

Numerous studies contend that certain individual characteristics are associated with the dispositions to utilize certain attributions. (These studies actually investigated differences among groups of individuals and disregarded variations within each group.) Thus, there are data which suggest that there are sex differences in making attributions (e.g., Bar-Tal & Frieze, in press; Feather, 1969; Simon & Feather, 1973; McMahan, Note 2). These data can be summarized in the following statements: There is a tendency for females to be more external and to employ more luck attributions than males; females, in general, rate their ability less highly than males (particularly in situations involving success).

There are also data which suggest that self-esteem and internal/external control of reinforcement play a major role in influencing the nature of causal attributions. Thus, Fitch (1970) showed that in the failure situation, low self-esteem individuals made more internal attributions than high self-esteem individuals. However, in the success situation, no difference was found between the attributions of high and low self-esteem individuals. In another study, Davis and Davis (1972) found that individuals who believe that reinforcement is contingent upon their behavior (internals) attributed their performance to personal causes more than individuals who believe that reinforcement is independent of their action and is controlled by luck or other external causes (externals). This trend was found to be especially significant in the situation of failure. Internals showed a greater tendency than externals to blame themselves for failure.

The most investigated individual differences in making attributions are the ones associated with achievement needs. A series of empirical studies (Bar-Tal & Frieze, in press; Kukla, 1972; Weiner & Kukla, 1970; Weiner & Potepan, 1970) has demonstrated that individuals high in achievement needs differ in their attributions from individuals low in achievement needs. Individuals high in achievement needs relative to those low in achievement motivation attribute their successes to their ability and effort and their failures to lack of effort or external factors. Individuals low in achievement needs ascribe their failures more to lack of ability and their success to external factors, and, in general, perceive themselves as low in ability. These differential cognitive appraisals of task situations help to explain behavioral differences between those with high, as compared to low, achievement motivation.

The Relationship Between Causal Attributions and Performance on Achievement-Related Tasks

Theoretical Analysis

Although Weiner (1974) suggested that there are different antecedents which elicit causal attributions, the analysis of the relationship between causal attributions and achievement behavior was made on the basis of comparing causal perceptions of individuals high in achievement needs with individuals low in achievement needs. Weiner et al. (1971) and Weiner (1972) analyzed four types of achievement-related responses--free choice behavior, persistence of behavior, intensity of performance, and risk performance--which were derived from predictions based on Atkinson's theory of achievement motivation (Atkinson, 1964). Weiner proposed that the differential behavior of individuals with a high need for achievement versus individuals with a low need for achievement is a consequence of differential perceptions of causes of success and failure displayed by these two groups. The analysis suggests that individuals high in need for achievement tend to approach

achievement-related activities more than individuals low in need for achievement. The former group tends to attribute success to ability and effort (internal causes) and, hence, experience pride or reward for their successful performances. On the other hand, those with low achievement needs tend to attribute success to external causes and exclude effort attribution and, hence, experience less pride for their successful performance. The prediction about approaching achievement-related activities is based on the assumption that those individuals who experience satisfaction as a result of success will attempt to approach the task again.

Individuals with a high need for achievement also persist more in failure situations than do individuals with a low need for achievement. The former attribute failure to lack of effort, which is changeable and leaves open the possibility of modifying the outcome in the future; the latter tends to attribute failure to lack of ability, which is a presumably stable, unmodifiable disposition and does not leave open the possibility of changing the outcome in the future. It is also suggested that individuals high in achievement motivation perform with great intensity, believing that the outcome is mostly determined by effort exerted on a task, while individuals low in achievement motivation do not recognize the importance of effort in goal attainment. The belief in effort, an unstable and internal cause, makes the person assume that the outcome depends on how hard he tries because effort itself is controlled by the person. In addition, highly motivated individuals more often choose tasks of intermediate difficulty than do individuals with lower motivation. This is because tasks of intermediate difficulty can provide the most self-evaluative feedback. Success or failure on very easy and very difficult tasks provide information concerning the properties of the task, whereas performance over trials on a task of intermediate difficulty provides information about the abilities of the performer.

In summary, the analysis suggests that individuals differ in their beliefs about the causes of their successes and failures. In particular, the data indicate that individual differences in achievement needs are related systematically to differential tendencies to make attributions in situations of success and failure. It is further assumed that these individual differences have important implications for the performance on achievement tasks. However, it should be pointed out that while it is possible to claim that the analyzed predictions can be made without the attributional model, it seems that the conceptualization of causal perceptions as a variable intervening between need of achievement and achievement behavior has at least one important advantage. This conceptualization opens a possibility for intervention by modifying individuals' causal perceptions of success and failure. Such an intervention will be proposed in the last part of the paper. First, however, empirical evidence which shows a relationship between causal attribution and achievement behavior will be presented.

Empirical Evidence

There are several studies which explicitly explored the relationship between individuals' causal ascriptions of success and failure and achievement-related behavior. The experiments which investigated such a relationship found that individuals with different tendencies to ascribe causes in achievement tasks also perform differently on these tasks. The first two studies reviewed below demonstrate the fact that individuals who make different attributions perform differently in the same situation.

A study by Weiner et al. (1972) has shown that individuals' causal attributions are related to the intensity of their performance. These experimenters included consecutive failures on a task and asked subjects to ascribe attributions in terms of the four causal factors. The results showed that individuals who tended to attribute failure to bad luck or lack of effort

performed with greater intensity than individuals who tended to attribute failure to lack of ability or task difficulty.

In another study, Dweck and Repucci (1973) created a situation in which children were subjected to continued, noncontingent failure. The experimenters were interested in finding what distinguishes those children whose performance deteriorated from those who persisted in spite of the failure. The results of this study showed that children whose performance worsened in the face of noncontingent failure took less personal responsibility for outcomes, as measured by the Intellectual Achievement Responsibility Scale (Crandall, Katkovsky, & Crandall, 1965). These children assumed less credit for their success and less blame for their failure. On the other hand, children who persisted in spite of the failure assumed greater personal responsibility for their performance. These latter children placed much emphasis on the role of effort in determining outcomes and tended to attribute their failure to lack of effort.

Two other experiments show how different types of instructions may differentially affect the performance of individuals with a high and low need for achievement, children who, as was previously indicated, differ in their attributional patterns.

In a study done by Kukla (1972), one group of subjects was told that successful performance on the achievement task depended on ability only, while another group (who received the same task) was told that successful performance depended on the amount of effort and ability exerted. The results of this study showed that the instructions given differentially affected the performance of individuals with a high and low need for achievement. The findings indicated that although there was no difference in performance between individuals with high and low need for achievement in a condition which emphasized the importance of ability, individuals with a high need for achievement performed significantly better than individuals

with a low need for achievement in a condition which emphasized effort and ability. Kukla explained these results by positing that the subject's own attributional dispositions might have interacted with the instructions given in each of these conditions. Individuals with a high need for achievement who recognize the importance of effort (an unstable and internal factor) tried harder to succeed when they heard that the outcome also depended on exerted effort. For individuals with a low need for achievement, effort does not play an important role in obtaining successful outcomes; therefore, they were not influenced by the instructions which emphasized effort. The instructions which emphasized ability discouraged hard trying for both groups because they implied that a person either has the ability or does not, and effort would not change the outcome.

Weiner and Sierad (1975) have further demonstrated one way in which the attributions of high and low achievement-motivated individuals might be modified as a result of changing the situation and that differential behaviors result from such manipulations. In their experiment, subjects were given a placebo which they were told would interfere with their performance on a simple achievement task. Other subjects who did not receive the placebo served in the control condition. Also, in each condition there were subjects with low and high need for achievement. It was hypothesized that for those with low achievement motivation, the pill would provide an excuse for failure and thereby reduce their anxiety about demonstrating their low abilities. Therefore, the pill group would perform better than the control group. On the other hand, subjects high in achievement motivation who usually tend to attribute their failures to lack of effort would also shift their causal attributions to the placebo as a result of the experimental instructions. Normally, those with high achievement needs are motivated by failure since their belief in lack of effort as the cause of their failure makes them try even harder. In this case, subjects would believe that the detrimental effects of the placebo could not be changed and, therefore, would not try as hard as they normally

might. Thus, it was predicted that for high achievement-motivated subjects, performance would be maximized in the control condition. Results of the study confirmed these predictions. Having an external excuse for failure improved the performance of those with low achievement motivation while it decreased the performance of those with high achievement motivation.

In summary, the reviewed studies have shown that individual differences in perceiving causes for success and failure affect achievement behavior. These findings have educational implications which will be discussed in the next section.

Educational Implications

The analysis of the attributional model of achievement-related behavior provides an example of how characteristics other than cognitive skills may affect an individual's performance on achievement tasks. The attributional explanation of achievement-related behavior indicates that students differ in their beliefs about the causes of their successes and failures and that those beliefs have implications for students' achievement behavior. It should be recognized, however, that the reported experiments were done mostly in laboratory settings. It is possible that experiments in educational settings, in real achievement situations, would obtain different results. Therefore, as a next step in the development of the attributional model of achievement-related behavior, it is necessary to carry out studies within real school situations with students of different ages.

In order to draw attention of the educational researchers, developers, and designers to the implications of the attributional model of achievement-related behaviors, a number of general suggestions will be made about possible applications of the model to the educational reality.

It would seem that the information provided by the attributional model could be utilized in teaching practices. Students who tend to perceive lack of ability as the cause of their failures expect to repeat failure as they attempt achievement tasks (because ability is a stable characteristic). With this orientation, they may avoid achievement activities and fail to reach their potential. The belief that their academic failure is due to their low ability could inhibit their motivation to try harder in the future. At the same time, the belief that success is due to external factors (e.g., ease of test) does not encourage one to make efforts to succeed and to believe in one's ability.

The effect of causal attributions on academic performance has an important implication in the light of evidence that the pattern of forming causal attributions might differ in various social groups. The tendencies to form causal attributions are learned, and the evidence by Katz (1967) and Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, and York (1966) suggests that the cognitive systems pertinent to achievement motivation may be learned differentially by various racial and social class groupings. For example, Katz suggested that blacks do not develop the cognitive structures which support the efficacy of effort (i.e., blacks do not appear to make effort attributions and do not perceive the covariation between effort and outcome which normally occurs in the world). A study by Friend and Neale (1972) directly compared the causal perceptions of success and failure of black and white fifth-grade children. The results showed that white children judged ability and effort as a more important cause for their performance outcome than task and luck, while the reverse tendency was true of black children.

Also, attributional patterns of women appear to be an important factor which inhibits their achievement. Frieze, Fisher, McHugh, and Valle (Note 3) pointed out that "since people appear to have lower expectations for women and to make detrimental causal attributions about their successes

and failures, girls internalize these beliefs and form maladaptive patterns" (p. 35). In a recent study by Nicholls (1975), it was found that fourth-grade white girls tend to attribute failure to low ability and do not tend to attribute success to high ability. The study also found that girls perform "relatively poorly when the task is presented as an important ability measure" (p. 388). This latter finding was explained by the attributional pattern of girls. Perceiving a failure as caused by lack of ability causes a belief that effort cannot reverse the failure, while perceiving a success as caused by high ability causes a belief that "succeeding trend could be maintained easily" (p. 388).

These findings suggest that groups such as blacks and females and individuals with certain causal perceptions may perform in a classroom below their abilities because of their maladaptive patterns of attributions.

In the traditional classroom, the teacher assigns tasks in a largely undifferentiated way. Students often receive instructions and feedback as a group. Such practices ignore the individual needs of the students. The attributional approach to understanding of achievement behavior and achievement motivation indicates the necessity for approaching students more individually, taking into account their differing cognitive causal structures. The reviewed studies (Kukla, 1972; Weiner & Sierad, 1975) showed that individuals with different tendencies to ascribe causes also perform differently on achievement-related tasks. Thus, the evidence suggests that there is a possibility of maximizing achievement behavior by providing students with instructions and feedback which would encourage them to make internal attributions (ability and effort) for success and lack-of-effort attributions for failure (e.g., Dweck, 1975).

It should be emphasized that such practices should not be designed to perpetuate unrealistic perceptions of students. Thus, for example, it is not desirable to change one's belief that one is not able to do certain tasks

when in reality one is incapable of doing them. The purpose of training programs or teacher practices should be to establish realistic perceptions of self-ability and to emphasize the importance of effort in achieving outcomes. It seems that such a goal can be achieved in the best way in individualized programs. In individualized programs, students are given tasks which match their abilities, and, therefore, success is attributed to ability and effort while failure is attributed to lack of effort.

The use of individualized programs provides a suitable opportunity to design instructions which can be incorporated into teaching practices for teachers to deal with students who tend to disregard the importance of effort as a cause of success and failure, tend to ascribe success to external causes, and tend to attribute failure to lack of ability. On the basis of recent evidence that the attributional patterns are changeable and depend on situational factors (e.g., Bar-Tal, 1974), it is possible to assume that the teacher may succeed in changing maladaptive causal perceptions. Such an approach can be accomplished in several ways. For example, by providing tasks that are suitable to the person's own ability, he may experience successful outcomes. Only such experience of success can raise one's confidence in one's own ability (Resnick & Robinson, 1974). The teacher's feedback must emphasize that such successes are caused by internal factors such as ability and effort. Similarly, the teacher must point out that failure is caused by lack of effort. In addition to suitable feedback, the teacher should also provide suitable instructions prior to a task. Such instructions should emphasize the importance of effort in achieving a successful outcome. The teacher should also directly reinforce students for positive beliefs in their abilities and should encourage use of effort as a crucial determinant of the outcome.

An attribution of success to ability causes increased pride and high expectancy for future success, which increases the probability that the student will approach the next achievement task with much enthusiasm. Attributions of success to high effort lead to a high level of satisfaction

as well as to greater rewards from others, while attributions of failure to lack of effort, although associated with low satisfaction, induce greater trying in future attempts.

On the basis of the above analysis, it is assumed that the change of students' maladaptive causal perceptions of successes and failures should also improve their academic performance. A recent study by Dweck (1975) provides evidence for such an assumption. In his experiment, Dweck took children from elementary school who exhibited helpless behavior, that is, they were giving up a task in the face of failure. These children tended to attribute failure to lack of ability and did not persist in their efforts. Dweck taught the helpless children to attribute failure to lack of effort through feedback in training sessions. The results revealed that these children started to improve their performance, and at the same time, they started to attribute failure to insufficient effort. Dweck summarized this experiment by suggesting that the "results for the children receiving attribution retraining provide evidence for a change in behavior in that situation and for a greater emphasis on the role of motivation on determining failure in arithmetic" (p. 684).

Similarly, in a more recent study, Andrews (Note 4) found that with sixth-grade children (both male and female) there was high positive correlation between the persistence to perform and attributions of failure to lack of effort. Attributions of failure to lack of ability or task difficulty were negatively correlated with persistence. Male subjects who least frequently attributed failure to lack of effort were then trained to make effort attributions. They were reinforced for making effort attributions in situations of success and failure. The results of the study showed that the trained subjects started to use effort attributions, and moreover, their behavior changed in the direction of displaying more persistence.

When the evidence confirms that the change of causal perceptions has an impact on academic performance, teachers should be trained in how to

approach students. In this vein, Bar-Tal, Frieze, and Greenberg (Note 5) suggested the possibility of introducing training programs for students in order to change maladaptive patterns of attributions. Such training programs could be done in a formal way which could resemble the personal causation training done by DeCharms (1972). DeCharms' program, which aimed to change children's self-perception, resulted in academic improvement by participating students.

In summary, on the basis of the presented analysis, it is possible to conclude that educators and psychologists should take into consideration, in addition to cognitive skills as a source of individual differences, other characteristics which affect achievement behavior. Causal perceptions of success and failure were found to be related to performance on achievement-related tasks. Furthermore, it was suggested that it would be desirable to change students' attributions in the direction of emphasizing ability and effort as the causes for success and lack of effort as the cause of failure. These causal perceptions can maximize the academic performance of students.

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