DOCUMENT RESUME

ED 027 965 PS 001 618

By-MacKinnon, Donald W.

Identification and Development of Creative Abilities.

California Univ., Berkeley. Inst. of Personality Assessment and Research.
Pub Date 14 Mar 64
Note-20p.; Paper presented to Conference on Creativity and the Mentally Gifted, Fresno State College, Fresno, California, March 14, 1964
EDRS Price MF-$0.25 HC-$1.10
Descriptors-Creativity, *Creativity Research, Divergent Thinking, Educational Methods, Educational Practice, *Individual Characteristics, Individual Psychology, Intelligence, Originality, *Personality Assessment, Psychological Characteristics, Self Concept, Student Teacher Relationship
Identifiers-Terman Concept Mastery Test

At Berkeley, an assessment was made of representatives of artistic creativity (poets, novelists, and essayists), representatives of scientific creativity (engineers, research scientists, and inventors) and representatives of creativity which is both scientific and artistic (mathematicians and architects). Characteristics of all groups emphasized that (1) a certain amount of intelligence is required for creativity, but beyond that point, being more or less intelligent does not determine creativity, (2) creative persons are original, (3) they are independent in thought and action, (4) they are especially open to experience both of the inner self and of the outer world, (5) creative persons are intuitive, (6) they have strong theoretical and aesthetic interests, and (7) they have a strong sense of destiny which includes a degree of resoluteness and almost inevitably a measure of egotism. It was concluded that it is important for parents and teachers to recognize, stimulate, and develop creativity in children. (DO)

Identification and Development of Creative Abilities[1]

Donald W. MacKinnon

Institute of Personality Assessment and Research

University of California, Berkeley

There is a story, first told I believe by Mark Twain, which I have become fond of telling. It is about a man who sought the greatest general who had ever lived. Upon inquiring as to where this individual might be found, he was told that the person he sought had died and gone to Heaven. At the Pearly Gates he informed St. Peter of the purpose of his quest, whereupon St. Peter pointed to a soul nearby. "But that," protested the inquirer, "isn't the greatest of all generals. I knew that person when he lived on earth, and he was only a cobbler." "I know that," replied St. Peter, "but if he had been a general he would have been the greatest of them all."

I suppose all of us have often wondered how many of our children as well as our students would have become what they didn't, had only we and they recognized their potential talents and nourished their realization.

Our task as parents and educators is not to recognize creative talent after it has come to expression, but either through our insight or through the use of validated predictors to discover talent when it is still potential and to provide that kind of social climate and educational environment which will facilitate its development and expression.

My first task, before I can begin to discuss with you the implications of research on the creative person, for the identification and encouragement

1. A paper presented to the Conference on Creativity and the Mentally Gifted sponsored by the Fresno County Schools, Fresno State College, Fresno, California, March 14, 1964.

of creative potential is to say what I think creativity is, since creativeness has been so variously defined and described. As I see it, true creativity fulfulls at least three conditions. It involves a response that is novel or at least statistically infrequent. But novelty or originality of thought and action, while a necessary aspect of creativity, is not sufficient. If a response is to lay claim to being a part of the creative process, it must to some extent be adaptive to, or of, reality. It must serve to solve a problem, fit a situation, or in some sense correlate with reality. And, thirdly, true creativity involves an evaluation and elaboration of the original insight, a sustaining and developing of it to the full.

What I am suggesting is that creativity is a process which has a time dimension, and which involves originality, adaptiveness, and realization. It may be brief as in the jam session of a jazz band or it may involve a considerable span of years as was required for Darwin's creation of the theory of evolution.

There are distinguishable stages or phases of creativity: (1) a period of preparation during which one acquires the skills and techniques and discipline and the elements of experience which make it possible for one to pose a problem to himself, (2) a period of concentrated effort to solve the problem, which may be suddenly solved without much delay or difficulty, but which perhaps more often involves so much frustration and tension and discomfort that out of sheer self-protection one is led to (3) a period of withdrawal from the problem, a psychological going-out-of-the-field, a period of renunciation of the problem or recession from it, (4) a period of insight accompanied by the exhilaration, glow, and elation of the insightful experience, and (5) a period of verification, evaluation and elaboration of the insight which one has experienced.

The process has been well described by Bertrand Russell who has written that, "In all creative work that I have done, what has come first is a problem, a puzzle involving discomfort. Then comes concentrated voluntary application entailing great effort. After this a period without conscious thought, and finally a solution bringing with it the complete plan of a book. This last stage is usually sudden, and seems to be the important moment for subsequent achievement." (Quoted from Hutchinson, 1939).

The process of creativity is for most people not so easily come by as it is for Bertrand Russell, nor are all of its phases easy to endure. We should, perhaps then, be prepared to discover that those who have high creative potential as well as those who have demonstrated true creativity will show a disposition to undertake problems where the degree of difficulty and frustration is great, but where the drive toward completion or accomplishment is persistently strong.

Whatever light I shall be able to shed upon the problem of creativity comes in the main from findings of researches carried on in the Institute of Personality Assessment and Research on the Berkeley campus of the University of California.

In these investigations of creative work and creative workers in the arts, sciences, and professions, which have been aided by a grant from the Carnegie Corporation of New York, we have been seeking to discover those characteristics which differentiate highly creative individuals from less original and creative persons, and which distinguish creative people in one field from those in others; investigating the processes whereby fresh insights arise, inventive solutions are achieved, and new media for artistic expression are discovered; and searching those aspects of the life situation or social and cultural milieu of individuals which facilitate or inhibit the appearance of creative thought and action.

In these investigations we employ what has come to be known as the assessment method, that distinctive method of psychological research which was developed in the Office of Strategic Services during World War II for the purpose of studying the functioning of highly effective individuals. Its essential feature is that the persons to be studied are brought together for several days at an assessment center, where they meet with each other and with staff members, and participate in a series of experiments, psychological tests, and interviews covering the life history and professional career. In order to understand the development and functioning of highly effective and creative persons we believe it is necessary to observe, and if possible to measure, just as many aspects of personality as one can, and it is for this purpose that the highly varied, multidimensional observational and testing procedures of personality assessment have been developed and are being used in the Institute's study of creative persons.

As representatives of artistic creativity we have assessed poets, novelists, essayists; as representatives of scientific creativity, engineers, research scientists and inventors, and as representatives of creativity which is both scientific and artistic, we have chosen to work with mathematicians and architects. Thus we shall be in a position to say something about what characterizes the creative worker most generally, regardless of his special field of endeavor and type of creativity, as well as being able to delineate the characteristics of the creative worker and his mode of work in each of the areas studied.

Today, however, I shall limit my remarks to presenting a few of the most salient characteristics of all the creative groups we have studied, emphasizing what is most generally true of creative persons, and suggesting ways in which we might nurture creativity, while it is still potential, by

ourselves creating social environments and intellectual climates which are appropriate to the encouragement of creative talent and its realization.

1. I shall begin by reporting what you all know, namely, that creative persons are intelligent. But this, I believe, is not the most important thing to say about them. It is not surprising that no feeble-minded subjects turned up in any of our samples, but it is worthy of note that in our various groups, intelligence (as measured by the Terman Concept Mastery Test) is not significantly correlated with creativity. Among creative architects the correlation of the two variables is -.08, among research scientists -.07, values not significantly different from zero.

Obviously this does not mean that over the whole range of creative endeavor there is no relation between intelligence and creativity. It signifies rather that a certain amount of intelligence is required for creativity, but beyond that point being more or less intelligent does not determine the level of a person's creativeness, and the level of intelligence required for creativity is sometimes surprisingly low.

What is more important than the level of intelligence as measured by an intelligence test is the effectiveness with which one uses whatever intelligence he has. In a study of leisure-time inventors I discovered that the inventor who held more patents than anyone else in the group earned a score of 6.0 on the Terman Concept Mastery Test! (By way of comparison, average scores on this test are for creative writers 156, research scientists 118, architects 113, Air Force captains 60.) Let me hasten to add, though, that these are not IQs, and, obviously, the inventor in question is not so dumb as his score of 6 would suggest.

The Terman Concept Mastery Test, which consists of Synonyms-Antonyms (essentially a vocabulary test of intelligence) and Analogies (a test of

word knowledge, general information and reasoning ability) is scored number right answers minus number wrong answers. One who guesses on such a test when he is not certain of his answer is apt to be penalized, and will, of course, be penalized if his guess is wrong. If, for example, we count only the correct responses which our inventive inventor gave, he scores 87 rather than 6! He clearly has a fair amount of correct knowledge which he can record, but also a good deal of wrong information which he does not hesitate to give. He thus reveals in taking an intelligence test a willingness to take a chance, to try anything that might work, and this attitude also characterizes him in his inventive activity. He is typical of many who make up for what they lack in verbal intellectual giftedness with a high level of energy, a kind of cognitive flexibility which enables them to keep coming at a problem with a variety of techniques from a variety of angles; and being confident of their ultimate success, they persevere until they arrive at a creative solution.

This kind of person should remind us that creative giftedness is not to be equated with high verbal intelligence, and while the creativity of such persons may not be of the highest order, it is nevertheless worthy of respect and encouragement. It is easy to be impatient with persons of this type, but patient waiting for their solutions and sympathetic understanding of their persistence in arriving at them may well result in the appearance of creative behavior in the most unlikely individuals.

For those, on the other hand, who are truly intellectually gifted, I believe there is nothing which will so much contribute to their creativity as holding for them the highest standards of performance and repeatedly setting problems for them or, better still, encouraging them to set problems for themselves that are on the borderline of the limits of their

performance. To work just this side of frustration, when every bit of one's ability is required is the best way I know to maximize the creativeness of solutions which will be achieved.

2. Creative persons are original. This statement will strike you as a tautology if, like many, you conceive creativity to be essentially a matter of novelty or originality of response. With such a notion I would strongly disagree, for, as I have already indicated, originality as I see it, is only a part of true creativeness.

Originality of response, if we focus upon that for the moment, has two aspects which must be distinguished: the quantity or number of original responses which one can give vs. the quality or goodness of the responses. In our investigations we find that, in general, those who are most fluent in suggesting new solutions tend also to come up with the better ones. The quantity and quality of original responses correlate +.53 in one test (Consequences) and +.78 in another (Unusual Uses).

These correlations are low enough, however, to suggest, and indeed this is our finding, that some persons tend to make many original responses which are not very good, while others make fewer but generally better or more fitting ones.

These findings point to individual differences in creativity, some persons being strong in just those aspects of the creative process in which others are weak. The implications are obvious: there is no single method for nurturing creativity; procedures and programs must be tailor-made if not for individual students at least for the different types of student.

To nurture the fullest creativity in those most fertile with new ideas greater emphasis must be placed upon seeking the implications and deeper meanings and possibilities inherent in every idea. This is a matter of

pursuing ideas in depth and with scope, not criticizing and rejecting which is so easy to do and which is so crippling to creativity. Insights, however fresh and clever they may seem, do not enter the stream of creative solutions to important problems unless their consequences are tested in application and revised and extended to meet the requirements of the situation for which they were first devised. What I am suggesting is that mere fluency in unusual ideas will not alone make for fresh and creative solutions to problems, but in some persons rather for "freshness" in its worst sense.

Getzels and Jackson (Creativity and Intelligence, Time, Oct. 31, 1960) cite the story given by one of their subjects in response to a picture as evidence of creatvity (albeit creativity which they concede might drive a teacher dotty). The story reads as follows: "This man is flying back from Reno where he has just won a divorce from his wife. He coudn't stand to live with her anymore because she wore so much cold cream on her face at night that her head would slide across the pillow and hit him in the head. He is now contemplating a new skid-proof face cream."

Unlike Getzels and Jackson I would not interpret this story as indicative of "a mind that solves problems by striking out in new directions." Such fresh ideas as one finds in this story are not likely to lead to creative solutions, for they reveal too much freshness for freshness's sake, too much striving for shock effect and insufficient concern for reality problems. Students with this kind of originality, which I refuse to call creativity, need to be taught to pay more attention to the demands of reality and to sacrifice some of their fluency for greater attention to the quality and appropriateness of their ideas.

On the other hand, students who have few original ideas, but usually of a high order of excellence, may well be encouraged to seek to increase their

output. These tend to be the rather shy, withdrawn, more introverted persons. They more than the fluent individual are in need of understanding and encouragement, if their original ideas are to be made known to others. Indeed, there is some evidence to suggest that persons who produce few original ideas but of uniformly high quality, actually experience many more ideas than they are willing to make public.

3. Creative persons are independent in thought and action, and these traits are so characteristic of them it is difficult to believe that they were acquired after the school years. According to their own reports this independence of spirit was already theirs in high school though tending to increase in college and thereafter.

One can well believe that many creative students chafe under the discipline and group activities and requirements of the classroom. It is not that they are lazy, or that their level of aspiration is low, or that in their rebellious attitudes they are "rebels without a cause." The problem (if we permit it to become a problem) derives from their high level of energy which they seek to channel into independent, non-group-coordinated striving for extremely high goals of achievement which they set for themselves and which may well conflict with those goals which are set for the group.

Since it is a fundamental characteristic of creative subjects that they are strongly motivated to achieve in situations in which independence of thought and action are called for and have much less interest in or motivation to achieve in situations which demand conforming behavior, I can only conclude that teachers who are genuinely interested in nurturing creativity must be prepared to grant more autonomy to their abler students and even reward them for behaviors which at times may be disturbing of classroom

harmony.

For the most part, though, students with creative potential will not so much actively disrupt classroom activities as they will passively and at times stubbornly, resist efforts to integrate them into the group. Not infrequently students of creative potential, concerned with their own experiences of both inner life and outer world, more introvert than extravert, and more isolate than social, will pursue projects of their own making.

Here one comes up against the paradox and the problem that at just the time when increasing emphasis is being placed on the identification and development of creative talent which demands that the student be given more individual treatment, if not attention, the student-teacher ratio both in school and college is almost certainly bound to worsen as a result of the explosion in population.

A partial answer may lie in the use of automated teaching techniques which have the merit that they permit the student to pace himself. The very personality of the potentially creative student is almost ideally suited to self-instruction. At this suggestion I can hear howls of protest that it is just the creative student with his disposition to separateness and aloneness who needs for his own sake and for his healthy psychological development the special personal ministrations of another human being, his teacher, and more association with his peers if he is to develop into a well-rounded person.

To this I can only answer that many of the highly creative persons we have seen are not especially well-rounded. They have one-sided interests, and sharp edges to their personalities, and marked peaks and dips on their personality-test profiles. We will not create our able students in the image of the highly creative person if we always insist upon their being well-rounded.

Here we come face to face with a sharp conflict of values in our society and in our schools today: the emphasis, on the one hand, upon togetherness, the integration of the individual into the group and its activities, good group dynamics, and smooth inter-personal relations; and on the other hand, the nurturing of creative talent.

All our evidence points to the incompatability of these opposed values and goals. On one test of interpersonal behavior the subjects of a nation-wide sample of creative architects revealed even less desire to be included in group activities than that expressed by the naval and civilian personnel who volunteered to man the Ellsworth Station outpost in Antarctica during the International Geophysical Year.

It is conceivable, of course, that outstandingly creative persons develop their desire for aloneness and time apart from others for contemplative thinking as a result of the strong distaste for group participation which they acquired in being forced into group activities. If this were indeed the case, we might be depriving our able young people of much of their motivation for creative activity if we were to free them from participation in group activities and to grant them more time for their individual pursuits, including learning. This, I must say, seems unlikely to me and so I continue to think that one of the best methods for nurturing creativity is to de-emphasize group participation with its demands for conformity and to provide maximum opportunity for the able student to work out his own interests.

In recent years, it has been fashionable in industry, and in some schools, to think that "brain-storming" is one of the more effective ways to stimulate fresh and creative thinking. The method consists in having persons in a group suggest ideas in as rapid succession as possible. Under

the rules of the game criticism is taboo. Wild ideas are welcome. Quantity is sought, though there is some attempt to build upon and improve each other's suggestions. But a recent controlled study (Taylor, Berry, and Block, 1957) has found that this type of group process does not yield proportionately more ideas, more unique ideas, or ideas of higher quality. In fact, it appears that the group process under these conditions actually inhibits creative thinking.

It is not easy for a teacher or for anyone else who has always to deal with groups of individuals to welcome non-conforming behavior, and this is, of course, especially anxiety provoking for the inexperienced person. It is not non-conformity as such that is deserving of respect or even of acceptance, and certainly not non-conformity for non-conformity's sake which ends by being conformity in reverse, but rather that kind of non-conforming, independent behavior which is an expression of the whole-hearted commitment of the individual to truly creative goals.

4. Creative persons are especially open to experience both of the inner self and of the outer world. As between perceiving (becoming aware of something) and judging (coming to a conclusion about something) creative persons are on the side of perception, open to and receptive of experience and seeking to know as much as possible about life.

The perceptive attitude expresses itself in curiosity, and is the hallmark of an inquiring mind. The open mind can, of course, become cluttered, and may, until it goes to work ordering the multiplicity of experiences which it has admitted, reveal a good deal of disorder. And having to deal with confusion and disorder in one's own mind may be sufficient cause for anxiety, and especially so for the young until they have found higher order integrating and reconciling principles.

At such times a parent or a teacher or a friend may be of the greatest help in communicating an empathic understanding of the turmoil going on in the youngster and in conveying to him a quiet, even unspoken confidence that the anxiety which he is experiencing will pass.

The other way, the non-creative way, is the rigid control of experience repressing impulse and imagery, blinding oneself to great areas of experience, and never coming to know oneself.

To grow creatively is not the easiest way to develop, and for some it may be too risky and dangerous an undertaking. Those who succeed reveal a richness and actualization of the self which the judgmental person, who in the extreme case prejudges experience and thus becomes the prejudiced person, can never achieve. More than most, creative persons are able to recognize and give expression to most aspects of inner experience and character, including the feminine in the case of the male and the masculine in the case of the female, admitting into consciousness and behavior much which others would repress, integrating reason and passion, and reconciling the rational and irrational.

Young adolescents obviously will not often show these traits which are so characteristic of the mature creative person. Moreover, it can be safely assumed that many youngsters who will eventually be characterized by these traits are, during adolescence, troubled and disturbed, experiencing conflicts of role, crises in religious belief, uncertainty with respect to a multiplicity of possible life goals, and so on.

It is in respect to this aspect of creativity--the openness to experience and the necessity of finding integrating and reconciling symbols--that the subtlest and wisest skills of the parent and teacher as counselor are needed. My own thought is that when such counsel can be given

inconspicuously or casually in the directing of the teenager to more and more sources of knowledge out of which he can find the answers which he needs it will be most conducive to his creative development. Such non-directive counseling is not suited to all students, but it is, I believe, the type of guidance indicated for those with creative potential.

5. Creative persons are intuitive. Having stressed the perceptiveness of the creative person, I would now emphasize the intuitive nature of his perceptions. In perceiving one can focus upon what is yielded by the senses, the sense-perception of things as they are, the facts; and in the extreme case one can unimaginatively remain stuck there, bound to the stimulus, the presented material, or the situation. This I shall call sense-perception. Or one may in any perception be imaginatively more alert and responsive to the deeper meanings, the implications, and the possibilities for use or action of that which is experienced by way of the senses. This immediate grasping of the real as well as the symbolic bridges between what is and what can be, I shall call intuitive-perception.

One would expect creative persons not to be stimulus- and object-bound but alert to the as-yet-not-realized, in other words, characterized by intuitive-perception. And that is exactly what we find them to be in all our studies.

Whether the disposition to sense-perception or to intuitive-perception is constitutionally or temperamentally determined I cannot say with certainty. It is my impression that the preference in perception is at least in part so determined, but I also believe that the style of one's perceptions can also, at least in part, be learned and trained.

Rote-learning, learning of facts for their own sake, repeated drill of

material, too much emphasis upon facts unrelated to other facts, and excessive concern with memorizing, can all strengthen and reinforce sense-perception. On the other hand, emphasis upon the transfer of training from one subject to another, the searching for common principles in terms of which facts from quite different domains of knowledge can be related, the stressing of analogies, and similes, and metaphors, a seeking for symbolic equivalents of experience in the widest possible number of sensory and imaginal modalities, exercises in imaginative play, training in retreating from the facts in order to see them in larger perspective and in relation to more aspects of the larger context thus achieved; these and still other emphases in learning would, I believe, strengthen the disposition to intuitive-perception as well as intuitive thinking.

If the widest possible relationships among facts are to be established, if what Bruner (1960) has called the structure of knowledge is to be grasped, it is necessary that the student have a large body of facts which he has learned as well as a large array of reasoning skills which he has mastered. You will see, then, that what I am proposing is not that in teaching we should neglect acute and accurate sense-perception, but that we should use that to build upon, leading the student always to an intuitive understanding of that which he experiences.

6. The creative person has strong theoretical and aesthetic interests. On a test of values, the Allport-Vernon-Lindzey Study of Values, which measures in the individual the relative strength of the theoretical, the economic, the aesthetic, the social, the political, and the religious values as described by the German psychologist and educator, Eduard Spranger, all of our creative subjects hold most dear the theoretical and aesthetic values.

A prizing of theoretical values is congruent with a preference for intuitive-perception, for both orient the person to seek some deeper or more meaningful reality which lies beneath or beyond that which is actually present to the senses. Both set one to seek truth which resides not so much in things in themselves as in the relating of them one to another in terms of identities and differences and in terms of over-riding principles of structural and functional relationships.

Theoretical interests are carried largely in abstract and symbolic terms. In science, for example, they change the world of phenomenal appearances into a world of scientific constructs.

One is not on such firm ground in dealing with theoretical concepts and issues as one is in dealing with concrete objects. Accordingly, to be forced to deal with ideas rather than things can be an anxiety provoking experience for the student. Here the role of the parent and teacher in helping the youngster to gain self-confidence in dealing with "theory" rather than with "fact" can be of the greatest importance. A concern with theoretical ideas will appear as "unrealistic" to less gifted and tougher-minded students (and, of course, there is a sense in which they are right). Those who are developing such interests may experience another source of insecurity: the at-times hostile and rejecting attitudes of their less gifted peers. At such times they may find themselves more extreme "isolates" than even they wish to be. The parent or teacher who in his or her own mature and effective person shows a high evaluation of the theoretical provides the young person with a model with which he can identify and thus helps him more confidently to permit within himself the development of his own theoretical interests.

Although there may appear to be some conflict between the theoretical value with its cognitive and rational concern with truth and the aesthetic

value with its concern with form and beauty, these two values, as already indicated, are the two strongest values in our creative subjects. That they are both emphasized suggests that for the truly creative person the solution of a problem is not sufficient; there is the further demand that it be elegant. The aesthetic viewpoint permeates all of the work of a creative person, and it should find expression in the presentation of all subjects if creativity is to be nurtured in the home and in the school. Aesthetic values are stressed in art and music and perhaps to a lesser degree in the language arts; it is no less important that they be recognized and emphasized in mathematics, in physics and chemistry, in history, in shop work--indeed, in all subjects.

By way of a footnote, it should be noted that the economic value is the least esteemed value of most of our creative subjects. I shall believe that society and the schools are really committed to the nurturing of creativity when, if not in substitution for Business Education Day at least along with it an Art and Science Education Day is established, permitting teachers to have a restimulation of their aesthetic and theoretical interests and values through participation in programs prepared expressly for them by the art centers and the research laboratories of the community.

7. The creative person has a strong sense of destiny which includes a degree of resoluteness and almost inevitably a measure of egotism. But over and above these traits there is a belief in the foregone certainty of the worth and validity of his creative efforts. This is not to say that our creative subjects have been spared periods of frustration and depression when blocked in their creative striving, but only that overriding these moods has been an unquestioning commitment to their creative endeavor.

Another, probably related, characteristic of the creative person is that he knows who he is, where he wants to go, and what he wants to achieve. In Erikson's (1950) phrase, the creative person has solved the problem of his own identity.

In Erikson's theory of ego development, however, the major problem of puberty and adolescence is to find one's own identity instead of losing oneself in a diffusion of conflicting roles.

Ego-identity and sense of destiny, though characteristic of the mature creative person, are not often likely to characterize even the most able students whom on other grounds we may believe to have great creative potential. One of our creative architects had already at the age of four decided that he would become an architect; but he was the exception. It was much more common to find our creative subjects struggling with the identity problem during the high school years, in conflict about themselves and their life goals, and even troubled by the fact that they possessed so many skills and interests. As a consequence they were pulled in many directions, and tempted by the possibility of several quite different careers. What the student needs in the face of such conflicts is a tolerance for ambiguity, and support in remaining tentative with respect to his life career and in resisting the dangers of premature closure which may cut off forever certain avenues of future development. Some of our creative subjects found their identity in high school, others not until after college.

Our several investigations suggest that there is no domain of interaction between student and teacher in which the teacher can so effectively nurture the creative potential of the student as in supporting him in his tentativeness and openness to career possibilities and in protecting him from pressures to solve prematurely his identity problem.

Parents often enough play an important role in shaping the identities which their children achieve, but with respect to the career aspect of the identity and whether it is followed creatively or in a banal fashion, the life histories of our subjects testify repeatedly to the signal importance of some one teacher during the high school or college years.

This teacher by his or her devotion to a field of study, exhibiting the excitement and satisfaction which come from a deep absorption in its problems and its challenges, stirring the imagination of the student by a clear exposition of the structure of knowledge in the subject, and seeking to respond creatively to its still unsolved problems offers the student a model with which he can identify. Often it is not the profession of teaching with which the identification is made but the field of study which is taught with so much skill, and devotion, and excitement, or the professional field to which it may later lead, e.g., medicine or law, and a host of others.

From observation of this kind of instructor, a true exemplar, the student learns something of the delight and joy and fresh insights which come from confidence in one's abilities and in the exercising of one's skills, and is motivated to acquire through study and hard work the knowledge, skills, and competence which alone provide grounds for a confident setting for oneself of ever more difficult problems in the field of one's interest.

The parent or teacher who does not try to force interest but rather encourages the youngster to explore many different paths until he has found the right one for himself will have contributed far more than he or she will ever know to the sense of destiny which will characterize this person when eventually he realizes that creativity which was only a potentiality within him when he was seeking to find his identity during his high school and college years.

Finally, there is an implication which has run through all of my remarks. Perhaps by way of summary it should be made explicit. It is that the parent or teacher who would nurture creativity in others can best do so by being himself a creative person.

My remarks have been general in character. I have not sought to suggest the specific techniques in the several subject areas which might be used to nurture the creativity of able youngsters. You will know more about these than I do. I would hope, however, that my observations may suggest that some techniques of instruction and some home and educational environments may be better suited than others to nurture the several aspects of the creative process and the traits of personality which seem to be most conducive to creative striving and to creative achievement.