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THE STUDY OF DEVELOPMENT OF CREATIVITY: RESEARCH PROBLEMS IN PARENTAL ANTECEDENTS.

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STANFORD CENTER FOR RESEARCH AND DEVELOPMENT IN TEACHING

Research Memorandum No. 29

The Study of Development of Creativity:  
Research Problems in Parental Antecedents

by

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### Abstract

This paper has reviewed knowledge to date on parental antecedents of "creativity" or divergent thinking in children, and reports discussion of this material by participants at the invitational conference of which these proceedings are a record.

Methods of establishing criterion measures for assessment of "creativity" consist, at the present time, of the following: (1) judgments by peers or experts; the judgments sometimes made on general behavior, sometimes on a production of the subject; (2) test procedures purporting to measure creativity; and (3) tests for personality characteristics thought necessary to creativity. Both the latter types of tests are shaky in terms of validity criteria; the difficulty lies partly in the problem of whether "creativity" is defined in terms of a creative product, or in a process of living and coping adaptively. Part of the difficulty is ascribed to the definition of either product or process in young children.

Available methods for assessing parental behaviors in the child-rearing process were also reviewed. Problems here include the fact that naturalistic as compared to experimental research is commonly and probably necessarily employed. This means that the direction of influence--parent to child or child to parent--is generally unclear. Interaction situations may standardize to a certain extent the natural situation, but precise definition of the causal effect is still a problem.

Such direct research as we have relating parental practices in child-rearing suggests that the following parent variables appear with regularity as associated with child divergent thinking: (1) support, satisfaction with self and with child, (2) low degree of punishment, (3) low pressure for conformity, (4) lack of intrusiveness. It is likely that these are necessary but not sufficient conditions for the development of true creativity; new research is needed to ascertain whether prediction is not improved by investigating the modelling influence provided by creative interests of the parents themselves.

In connection with the variable warmth and nurturance, the results are not clear at this time; it may be that a high degree of nurturance, especially for girls, interferes with the development of confidence in the self as an independent thinker. The influence of mother behavior on boys and father behavior on girls appears frequently in the research.

## The Study of Development of Creativity: Research Problems in Parental Antecedents

It is natural for those interested in the provocative field of creativity research to interest themselves in the earliest expressions of creativity. Thus Elizabeth Starkweather (1957) has devised tests for four and five year olds which show that even at these early ages, children differ widely in personality characteristics considered necessary for the expression of creative ability: freedom of expression, non-conformity, curiosity, willingness to try the difficult.

Baldwin (1967) explores children's ability voluntarily to adopt a determining set and to shift sets rather than being "captured" by one. The mother's role in stimulating the child's activity in possibly creative ways is examined.

From another stance, MacKinnon (1967) and Anne Roe (1967) have first selected highly creative adults or adolescents, and then asked for their subjects' own perceptions of the child-rearing they had undergone in their early years. And, Anderson (1967), Ruth Strang (1967) and Williams (1967) have examined possible characteristics of an environment responsive to creative expression in school and home.

These studies raise interesting and difficult questions as to strategies to be used in attacking problems in the early development of creative potential. Granted the difficulties, let us review methods of minimizing, or, hopefully, overcoming difficulties inherent in this research.

### Criterion Measures of Creativity

Three types of criteria have been used for judging the degree of "creativity" present in a given subject. These are (1) judgments by peers or others, (2) direct tests of divergent thinking, (3) tests which have apparent face validity in measurement of personality characteristics considered necessary for creativity.

1. Judgments of creativity. This criterion often emphasizes the achieved creative production of the subjects, as with MacKinnon's (1967) creative and less creative architects. Datta and Parloff (1967), reported here by Roe (1967) obtained judges' scores on projects submitted to a science talent search. This method of achieving a criterion

presupposes products to judge, competence on the part of the judges, and a clear definition of creativity.

Perhaps because these three conditions are not frequently met, judgments of creativity or creative potential by teachers (Holland, 1959) or classmates (Torrance, 1965) have not proven useful. But where careful attention is given to defining characteristics of a product along a creativity dimension, this method can be very sound. Two Stanford dissertations have employed this: Sherman (1964) on creative writing, and Vint (1965) on art productions.

Not much has been done on judgments of creative production by very young children. The consensus at the Macalester Conference was that this is a feasible procedure. Dr. Parnes suggested role-playing of problem situations to test adaptability, Dr. Strang a work sample type of test. Blocks or other materials that young children can create with could be standardized and criteria developed for judging creativity of their productions. The predictive value of such child measures to adult creativity would have to be assessed by longitudinal study.

An objection to the necessity of a creative product was raised by Dr. Starkweather. Her definition of creative potential involved the child living more creatively within his own world, adapting or coping in the face of change. This too, it was agreed, could be defined as a criterion measure for establishing concurrent validity of tests for creativity in young children.

2. Test procedures purporting to measure creativity. Guilford (1957), Torrance (1965), Getzels and Jackson (1962), Wallach and Kogan (1965) and Starkweather (1967), among others, have devised tests for the measurement of divergent thinking, originality, flexibility, fluency and other aspects of expression thought to represent "creativity." These tests have face validity, correlate with each other and, in some studies (Wallach and Kogan, Starkweather), are independent of intelligence. Whether they relate either to child or to adult creative production has not been determined.

3. Tests for personality characteristics thought necessary to creativity. One can take a somewhat more tangential approach; reasoning from personality characteristics of creative adults one can

say that cognitive control, field independence, perception of internal rather than external control of reinforcements, ability at problem solving, complexity of thinking and perhaps many other characteristics are strong in creative persons. Therefore measurement of these processes will be a useful lead into the problems to be unravelled.

Certainly all these approaches to the criterion problem have their uses. For better understanding of what is involved at various ages in ability for (1) creative productivity, or (2) creative living and coping, we need many kinds of researches. The work will be the more productive as we define our terms and stay aware of what we are and are not doing in predictive validity of "creativity."

#### Child-Rearing Measures

At this Conference our aim was to relate early child-rearing to later creativity, and thus perhaps eventually to approach some desirable parent behavior as antecedent to later child "creative" behavior. Much work has been done on parental behavior as related to such child characteristics as aggression, dependency, achievement motivation, adult role-taking; more recently cognitive behaviors of children have been explored as related to the child-rearing practiced by their parents. What leads and hazards are represented by the work on child-rearing to date?

1. Naturalistic versus experimental research. Work with human children's abilities as influenced by human child-rearing must generally be carried on in the natural setting; i.e., study is made of what parents naturally do with their children, and how the children subsequently develop. Experimental manipulation of parent behavior is very little involved.

The consequence of this fact is that work is chiefly correlational in nature, without clear statement as to whether parental behavior causes child behavior or vice versa. It is possible that a child is born with characteristics strongly predisposing him toward creativity: his behavior then impels his parents' behavior toward their creative child. With experimental design including manipulation of the independent variable, the direction of influence could be ascertained but this so far has not

seemed generally feasible.

2. Mother-child interaction situations, such as described by Baldwin (1967), standardize the natural situation but probably cannot clearly distinguish whether parent or child primarily influence the other.

3. Selection of extreme groups of subjects by creativity tests or other means, with child-rearing practices of the subjects' parents then examined, is another method for looking at the relations between child-rearing and creativity. This approach is exemplified by the work of Getzels and Jackson (1962) and MacKinnon (1967).

4. Child-rearing practices may be estimated in various ways: report of parent in an interview or via questionnaire, report of child or adult subject as to his perceptions of his upbringing, observation of parent and child in an interaction situation. The first two are subject to difficulty in conscious or unconscious distortion of fact; this may become more serious with adult subjects for whom the child rearing goes far back in time.

The interaction situation has a ring of authenticity in that actual behavior rather than reported behavior is observed and measured. In order to generalize this small sample of behavior to longer term practices, the assumption must be made that the observed behavior is characteristic of both parent and child.

#### Child-Rearing Practices for Developing Creativity

Having marked out the methodologies presently available for measuring creativity in the young and those for ascertaining child-rearing practices, we now proceed to research relating the two sets of variables. What do we find are behaviors of parents whose children are found to be more and less creative? Two studies are relevant here.

The first is well-known. Done by Getzels and Jackson (1962) at the Chicago Laboratory School, the subjects were selected from over 500 students from sixth grade through high school. A high creativity group obtained scores in the upper twenty percent on five creativity

tests but were below the upper 20 percent in IQ (although their mean IQ was 127). A high intelligence group scored in the upper 20 percent on IQ (mean IQ 150) but below the top 20 percent on the creativity measures.

Parents of most of these subjects were given a questionnaire, and mothers were interviewed in a two to three hour free response conference at home. Results comparing parents of the high creative and high IQ children were compared by chi square. The findings follow.

Education and occupation. Although mothers of the high IQ children had more graduate training than mothers of the high creatives, fewer of them held full or part-time jobs. Thus the high IQ group mothers were more likely to be full time housewives with more time to devote to their children.

Finances in mothers' childhood. An interesting difference came out in the mothers' reports of their own childhoods. Financial hardships were described significantly more frequently by mothers of the high IQ children as compared to mothers of the high creatives.

Satisfaction with child and school. Both groups of mothers reported similarly on favorable and unfavorable qualities in their children as called to their attention by teachers; they differed on their own personal observations. High IQ mothers observed more unfavorable qualities in their children and also had more criticisms to offer of the school and teachers. However, when asked about satisfaction in their own child-training practices, the high IQ mothers reported themselves as satisfied more often than did the mothers of the high creatives.

The results cited here confirm those already reported by Roe (1967) and MacKinnon (1967). Creativity in children seems to be associated more with quiet affection of a non-intrusive, non-vigilant sort from the parents, rather than strong involvement and much protection. Mutual

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trust between parent and child, with considerable room for child's own autonomous interests, presents the most favorable picture for development of creativity. As Dr. Roe said at the conference: "Love 'em and leave 'em alone!"

Another study which relates child rearing to creativity test scores was done at Sanford by Florence Mote (1966). Three creativity tests were used: Thing Categories and Plot Titles, both scored for fluency and for originality. The third test was developed by June McFee, and is called Unusual Objects. The child is presented with a page on which are drawn six empty squares and is asked to sketch in objects or designs he thinks no one else will think of. These are scored for originality. The child subjects were 157 fifth and sixth graders; 79 boys and 78 girls.

For the child-rearing data, mothers of these children responded to a questionnaire designed to elicit information concerning parental attitudes, beliefs and practices in rearing the child. The questionnaire has 107 items, and on factor analysis proved to contain four factors: (1) parental contentment--warmth, (2) restrictiveness--conformity demands, (3) satisfaction with self and with child, and (4) pressure for achievement and independence.

The Mote study differs in several respects from the Getzels-Jackson research previously reported. Extreme creativity groups were not selected, but rather correlations were done over the whole range of creativity scores. Since the sample is large, this could be done for boys and girls separately, and some interesting sex differences emerged. Table 1 summarizes the significant correlations between originality scores and child-rearing as reported by the mothers. Very few significant relations were obtained for the fluency scores.

Insert Table 1 About Here

Here we see that warmth and satisfaction with the child relate positively to creativity, but warmth particularly from the opposite sexed parent seems important. A high degree of punishment is undesirable.

Pressure for achievement and independence appears to be a positive influence on boys, but depressing to girls' creativity. Can boys "take" pressure as impetus to original performance while girls at this age are driven toward conformity by higher parental pressure? Both Dr. Starkweather and Dr. Roe pointed out, at the Conference, that conformity pressures may work differently for boys and for girls. It may be that "pressure" turns out to be more for achievement in girls and more for independence in boys. This is an interesting lead to follow up in new research. Dr. Williams suggested that possibly girls, under pressure for achievement, withdraw their unconventional ideas into safe and conventional achievement. These suppositions may well be correct. Mote says herself that the "Pressure" scale was the poorest of her various scales: "the underlying problem in this scale lies in the attempt to combine pressure for achievement with pressure for independence. They may relate, as several studies have disclosed, but not to the extent of adding up to a unitary dimension." (1966, p. 65). Dr. Anderson commented on the importance of the items in the scale--"pressure for what?"

A puzzling finding is the negative relation, in girls, between originality and permissiveness. This means that the more restricted the girl is by her parents, the higher she scores on creativity. This appears to be contrary to the Getzels-Jackson results, in which mothers of creative children appeared to be less vigilant about their children's behavior, exercising less close supervision.

#### Personality Characteristics Thought Necessary to Creativity

Each participant in this Conference has described personality characteristics which have appeared fairly regularly in the study of creative persons. Studies have been made of child-rearing practices associated with such personality variables. While we cannot say that the presence of one of these guarantees creativity, it may be that such characteristics are necessary but not sufficient conditions for its development. The child-rearing conditions for these, then are of interest to our present review.

Cognitive control. In order to achieve new ways of organizing experience, the creative person must first, be open or sensitive to experience; second, show the adaptability to reorganize or transform stimuli into new patterns; and third, show a "sustaining persistence" (MacKinnon) in maintaining the new pattern.

A study by Heilbrun, Harrell, and Gillard (1967) is relevant here. Cognitive control is defined as the maintenance of a self-instructional set in the face of the more ordinary habituated responses. It was measured by the Stroop color naming test: the subject must name aloud the color in which a word is printed, but the printed word is that of a different color. The word black is printed in red and the subject must pronounce red, for example.

The experiment was conducted under conditions of social stress. Each subject had to perform in front of a small group, when errors (which were frequent) were made she was called "wrong"; competition between groups was promoted. The theoretical basis for this feature was social learning; the voluntary maintenance of the new set when socially aversive consequences accrue to failure. Subjects who do well under these conditions, it is likely, are those who have the cognitive control not to be devastated in their performance by the stressful social situation.

Subjects were 123 college girls. Perceived child-rearing of parents was assessed by having subjects fill out the PARI questionnaire twice; once as the father would do it, once for the mother's behavior. Scores were obtained for authoritarian-control and for nurturance. With each of these dichotomized, four groups were obtained:

1. High authoritarian-high nurturance ("overprotected").
2. High authoritarian-low nurturance ("rejected").
3. Low authoritarian-high nurturance ("accepted").
4. Low authoritarian-low nurturance ("ignored").

The results showed that the "ignored" group was best able to exercise cognitive control in this social situation and the "rejected" group performed most poorly. "Overprotected" girls were second, "accepted" third. These rankings held generally for the perceived child-rearing

attributes of father and of mother. However, the importance of the cross-sexed fathers of these girls comes out again: rejection by the father was more important than that of the mother in the daughters' poor cognitive control, whereas over-protection by father was associated with good cognitive control.

The discussion of these findings centered around first, the freedom allowed the child by the low authoritarian parental attitude. Second, Dr. Parnes suggested that low nurturance may mean that the child is more on his own to figure things out for himself. The social stress situation in this study must not be forgotten; if the experiment had been done privately without threat of public failure the result might have been different. Much creative realization must be done in private; possibly the group called "ignored" in the Heilbrun study had, because of their child-rearing, less investment in or worry about the social aspects. Hence, the ability to adapt flexibly to the new requirements of the color naming.

Field independence. Conceptually somewhat similar to cognitive control is Witkin's (1962) idea of field independence. Adaptive flexibility requires that parts be separated from the context in which they are embedded and brought to new relationships. He has done some work on child-rearing associated with field independence, as measured by Embedded Figures and other tests. Witkin quotes a study done by Judith Seder (1957) which sheds some light on our problem. She worked with 60 boys and 60 girls ten years of age. They were given the Embedded Figures Tests as a measure of field dependence, and their mothers reported child-rearing via questionnaires. The chief findings are in line with those previously reported: field dependent subjects had been, more than field independent children, exposed to:

(1) Authoritarian discipline, with stress on conformity and punishment for aggression.

(2) Parental pressure toward goals and standards which parents, rather than children, had set.

(3) Anxious mothers who were insecure in their own judgments about child-rearing.

Belief in internal-external control of reinforcements for intellectual achievement. It seems likely that the more creative person is more independent of environmental pressures, whether these are perceptual or social in nature. Reinforcements for achievements come from the person himself, in terms of his goals and on his own terms, rather than from persons (parents, teachers) external to the self. Children's beliefs in internal-external control have been shown to be well established during childhood.

Parental antecedents to such beliefs were studied by Katkovsky, Crandall, and Good (1967). Children used were from second, third and fourth grades. Scores were obtained on an intellectual achievement responsibility questionnaire, which taps the child's belief that (a) a positive (successful) intellectual experience was either caused by the child's own behavior or by an external source and (b) that a negative (failure) experience was internally or externally caused.

Mothers' and fathers' child-rearing practices were assessed by interaction, interview and questionnaire methods. Findings generally indicated, as expected, that parent behaviors characterized as warm, praising, protective and supportive were positively associated with children's beliefs in internal control, i.e., they themselves were responsible for the success or failure. Conversely, "negative" parental behaviors, such as dominance, rejection, and criticality were negatively associated with beliefs in internal control.

Again the influence of the father on the girl child comes out as an exception: when a father is exceptionally affectionate and nurturant toward his daughter, the girl does not develop her abilities to assume responsibility for her own failures (she does assume responsibility for her successes!) the authors say that a father who is highly loving and helpful to his young daughter may intentionally or inadvertently encourage external thinking to provide her with a cushion to defend herself against failures. Thus, someone was unfair, or she had bad luck when she failed.

Reports of the work habits of creative people have brought out the point that they were never quite satisfied with their work; that is, they frequently suffered mild failure in their efforts. Yet they think

they can go on to improve their work. From this it seems highly probable that they could tolerate self-responsibility for the failure without curling up and dying or blaming others for the failure. This would promote the "sustaining persistence" that MacKinnon has talked about. It would also, it seems to me, promote the "willingness to try the difficult" which Dr. Starkweather has studied. And it is easy to see why supportive, non-critical parents would provide the child with the external atmosphere which permits him to internalize his own failures without devastation.

Values of parents. Very little research has considered the influence of values of parents in their own approach to life. There are suggestions in Getzels and Jackson (1962), MacKinnon (1957), Helson (1967), that parents of creative persons themselves have creative interests, are intellectually oriented and place value on moral integrity.

Further, Helson (1967) has found that creative women have better relations with their fathers than with their mothers. A lack of differentiation by sex may be a feature of both creative women and of men. More masculinity in women may promote the independence and autonomy necessary for creativity; more femininity in men the sensitivity to the environment which permits free ranging divergent thinking.

Table 1

Significant Correlations between Creativity (originality)  
Scores of Children and Child-Rearing Practices of Parents

	Boys	Girls
Mother self-esteem		+
Mother warmth	+	
Father warmth		+
Parental satisfaction with child behavior and learning		+
Permissiveness		-
Degree of punishment	-	-
Pressure for achievement and independence	+	-

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Parental Punishment  
Parental Pressure  
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## IDENTIFIERS

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Continuation of Abstract

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