THE RELATIONSHIP BETWEEN ANXIETY AND CREATIVITY IN AN OPEN CLASSROOM--
A FEASIBILITY STUDY

by
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1972
STATEMENT BY AUTHOR

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SIGNED: Kathleen Lee Flaherty

APPROVAL BY THESIS DIRECTOR

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Date

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ABSTRACT

This thesis represented an attempt to assess the effects of anxiety upon creativity within the framework of an open classroom. Creativity was seen as a necessary component for success in our increasingly complex society. Anxiety was viewed as a personality variable which might influence creativity, and the open classroom was seen as an environmental variable.

The Torrance Tests of Creative Thinking, Figural Form A, and the General Anxiety Scale for Children (GASC) were administered to twenty-six children, including thirteen girls and thirteen boys, who were attending an open classroom at the second grade level. A correlation matrix was produced from the resulting scores.

The results indicated that anxiety did not have a statistically significant effect upon creativity in this sample. Although different results were obtained when the boys' and girls' scores were correlated separately, they did not reach statistical significance. Trends involving age and sex of the subjects, as well as the correlated anxiety and creativity scores, were discussed.

A list of questions raised by the study were presented. Educational implications of the study focused on recommendations for further research.
CHAPTER 1

STATEMENT OF THE PROBLEM AND HYPOTHESES TO BE TESTED

Introduction

The fostering of creativity has become an area of increasing concern for educators during the past decade. The explosion of books on this subject should provide more than adequate proof of this concern. Writers in the field of education seem to agree that creativity is a necessary component for success in our increasingly complex society. Torrance saw creativity as necessary for mental health; as a valuable resource for coping with stress; as vital to the development of fully functioning persons; as important for the acquisition of knowledge and skills; and as essential for vocational success. He concluded, "It takes little imagination to recognize that the future of our civilization - our very survival - depends upon the quality of the creative imagination of our next generation (1962, p. 6)."

The investigation of creativity takes many directions. One approach is the analysis of the influence of personality variables on creativity. In recent years, there has also been an upsurge in the study of anxiety in children (Ruebush 1963). One
focus has been the behavioral correlates of anxiety, including creativity. Investigations have considered a relationship between anxiety and creativity.

Another approach to the investigation of creativity focuses on the role of the environment, including the educational environment, on the fostering of creativity. An innovative movement on the American educational scene, generically known by the phrase "open education," involves a restructuring of the educational environment to accommodate changed ways of thinking about children, learning, and knowledge. Limited research has been done in this area of open education. This study represents an investigation of the influence of anxiety on creativity within the framework of an open classroom.

Statement of the Problem

What is the relationship between anxiety and creativity in an open classroom?

Significance of the Problem

Several studies report that anxiety is negatively related to creativity (Ruebush 1963, Roweton 1970, Soar 1968, and Sarason, Davidson, Lighthall, Waite, and Ruebush 1960). Literature on open education suggests that creativity might be significantly increased by the classroom organization and atmosphere. At the same time, this atmosphere might serve to reduce anxiety which exceeds the optimal limit for effective learning. It then
becomes interesting to investigate the relationship between anxiety and creativity within the framework of an open classroom, and to evaluate those results in terms of the openness of the classroom.

Hypotheses to Be Tested

For purposes of research design, the hypotheses are stated in null form:

1. There is no relationship between anxiety and creativity in an open classroom.
2. There is no relationship between anxiety and creativity for boys in an open classroom.
3. There is no relationship between anxiety and creativity for girls in an open classroom.
CHAPTER 2

DEFINITIONS, LIMITATIONS, AND DELIMITATION

Definitions

Anxiety: Anxiety is "a feeling of threat, especially of a fearsome threat, without the person's being able to say what he thinks threatens (English and English 1958, p. 35)." For purposes of this study, anxiety is viewed within a psychoanalytic framework.

Creativity:

"...is a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies; testing and retesting these hypotheses and possible modifying and retesting them; and finally communicating the results (Torrance 1966, p. 6)."

Fluency: Fluency is "the production of as many ideas as possible, not bothering at first about quality (Michael 1968, p. 9)."

Flexibility: Flexibility is "shifting to a variety of approaches or categories (Michael 1968, p. 9)."

Originality: Originality is "unusual or uncommon ideas, away from the obvious (Michael 1968, p. 10)."

Elaboration: Elaboration is "working out the details of an idea or planning steps (Michael 1968, p. 10)."
Open Classroom: An open classroom involves changed points of view about children, learning, and knowledge. It can best be defined in terms of its underlying assumptions, which will be developed later in this study.

Limitations
Generalization from this study is limited for the following reasons:

1. The sample is taken from one grade level, the second grade.
2. The sample is taken only from one model of an open classroom.
3. The sample represents only the upper middle and upper socio-economic classes. Therefore, generalizations cannot be made for groups other than the group involved.

Delimitation
This study is delimited by the fact that no comparable study has been found in the research literature.
Creativity

Creativity has as many definitions as there are writers in the field. For purposes of this study, we will use Torrance's definition:

"... a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, dis-harmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies; testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results (1966, p. 7)."

The definition involves a human process, and human needs are evident at every stage. Creative abilities include "fluency, flexibility, originality, and ability to sense deficiencies, elaborate and redefine (Torrance 1966, p. 7)."

Many authors have focused on an environment that enhances creativity. Smith (1966) emphasized that, in order to enhance creativity, children should be free to move around classrooms, to manipulate materials and ideas, to be stimulated by centers where various parts of the room are designated for various activities. Democratic classrooms where children share in the teaching process and learn from each other as well as from the teacher are also necessary. Cohen (1971) emphasized a need to de-emphasize
evaluation; also, the classroom should be student-centered, not goal oriented. The 1970 White House Conference on Children stated, "The growth of a child's creative potential demands emphasis on freedom, individual choice, small groups, experimentation, and other such qualities (ED 046 525)." Gaier and Dellas (1971) stated that a relatively unstructured setting appeared to be important in the development of creativity. Marie Hughes (1967) reiterated the importance of self-directed and self-initiated behavior for creativity, and also the need to introduce more occasions for choice. Torrance (1963) stated that, in general, creativity is encouraged by heterogeneous grouping. Finally, Combs emphasized, "When students are accepted as basically active, responsible and trustworthy human beings, they are given hope that they are fully capable of creative behavior (1962, p. 146)."

Creativity and Classroom Environment

The limited research on the role of the environment, including the school environment, on the development of creativity indicates that a relationship might exist. Cohen (1971) stated that research on learning processes in the classroom indicates a strong relationship between teacher attitude and practice and student creativity. Gowan, Demos, and Torrance mentioned implications for creative learning based upon theoretical modes which suggests "a change in classroom climate and procedures in a direction of more 'openness' and more concern over mental health
(1967, p. 79)." Combs (1962) suggested that an atmosphere for encouraging creativity should include provisions for choice, cooperation and the feeling of belonging, and the encouragement of communication. Teacher attitudes should value openness and flexibility, and individuality, especially the uniqueness of each person. He theorized that an attitude of trust and an emphasis on the learning process instead of the product would encourage the development of creativity. He saw openness to experience as a prerequisite to creativity. Clark and Hamburg (in Torrance 1966) conducted studies on the relationship between creative thinking and preferences for open structure learning experiences. The results of both studies indicated a significant positive correlation between creative thinking ability and preferences for open structure learning experiences. MacDonald and Raths (in Torrance 1966) found less creative children to be less productive in closed tasks. The limited research available seems to indicate that the classroom environment does influence creativity.

**Anxiety**

Other authors have focused on the relationship of personality variables to the development of creativity. The role of anxiety in creative thinking has been explored. Within the framework of psychoanalytic theory, anxiety is defined as an experiential phenomena. It is developmental in nature and begins with the birth trauma. As the infant matures, the anxious reaction begins to occur before the onset of painful stimulation,
signifying that the ego has begun to function. The ego learns to react to anxiety in various ways. These early learned reactions are the basic determinants of personality. Anxiety then generalizes to a "moral anxiety" or "social anxiety" when the child internalizes the values of the parents. This signifies the development of the super-ego (Sarason et al. 1960).

Anxiety and fear in psychoanalytic theory are distinguished in terms of danger originating from inside and outside the individual, respectively. However, children do not make clear cut distinctions between real or imagined dangers or inner or outer events (Wallach and Kogan 1965). Sarason et al. pointed out:

The majority of the specific fears reported by children have little or no basis in reality . . . these specific fears seem to serve as focal points or screens for anxiety about situations, impulses, and conflicts which possess extremely difficult implications for the child's security (1960, p. 47).

These circumstances provide the basis for the present day emphasis on anxiety in children (Wallach and Kogan 1965).

Psychoanalytic theory views anxiety as a warning function of the ego. According to the theory "mildly threatening situations are likely to energize performance, increase effort, raise aspirational level (Hadley 1965, p. 8)." Responses made under these circumstances are usually task-relevant. That is, they aid in solving the problem, which in turn removes the threat and lowers the anxiety level. However, severely threatening situations require a response to anxiety, instead of to the task.
The response then becomes task irrelevant in that it interferes with problem solution. Thus, every individual has an optimal level of anxiety for effective performance, which varies from situation to situation (Hadley 1965).

**Anxiety and Creativity**

A few studies have focused on the relationship between anxiety and creativity. Sarason et al. scored human figure drawings from high anxious and low anxious children. The low anxious children "possessed a degree of freedom to become involved in a creative task in a pleasurable, expressive and non-restricted fashion;" on the other hand, the high anxious children "responded as if their accuracy, spontaneity, and expressiveness were interfered with (Sarason et al. 1960, p. 164)." Reid, King, and Wickwire reported a study in which the measurement of creativity was based upon peer nominations of those classmates who "have good imaginations. They have new ideas and new ways of doing things (1959, p. 735)." They found creative children to be less anxious.

Hadley (1965) found a curvilinear relationship between test anxiety and creativity scores on the Torrance Tests of Creative Thinking. There was a sharp increase in slope on the Torrance scores until the amount of anxiety necessary for maximum performance had been reached, followed by a sharp fall-off. A more linear relationship was found on the Barron Anagrams Test. No significant relationship was found to exist for general anxiety.
Fleischer (1964) found that two of four measures of creativity discriminated significantly between high and low anxious college subjects. The relationship was more significant between ambiguous divergent tests and anxiety. Anxious college subjects were found to be less original by Dentler and Mackler (1964). Zdep (1966) also found highly creative college subjects to be less anxious than low creative subjects.

College freshmen with relatively low levels of anxiety performed significantly better on tests of divergent thinking in a study conducted by White (1968). On the other hand, Feldhusen, Denny, and Condon (in Wallach and Kogan 1965) found no significant relationship between general anxiety and four measures of creativity in seventh and eighth graders.

Sixth graders were used to explore the "reasonable proposition that anxiety plays an intervening role in creativity production" by Flescher (1963, p. 263). The results indicated that neither general nor test anxiety significantly influenced performance on creativity tasks. Wallach and Kogan (1965) discovered that test anxiety enhanced creativity in boys but had no significant effect in girls. The limited research available is inconclusive as to the existence of a relationship between anxiety and creativity, and as to the directionality of the relationship, if one exists. More studies should be conducted to further examine this relationship.
Anxiety and Classroom Environment

The author has been able to locate only three studies which examine the relationship among anxiety and classroom organization and atmosphere. Phillips (1966) found a significant reduction in anxiety in team taught third, fourth, and fifth graders. Schmidt and Gallessich (1971) tested first and sixth grade children in self-contained and team taught classrooms; the first and sixth grade children appeared more anxious in the self-contained classrooms. Soar (1968), in a study of the effects of teacher indirectness, found that both high and low anxious children continued to increase in creative growth with increasing teacher indirectness. However, there was a steeper rate of increase for low anxious children. Again, the limited research available seems to indicate a relationship between anxiety, creativity, and classroom organization.

Open Education

Open education expresses a new point of view about children, learning, and knowledge which results in a changed classroom organization and atmosphere. This author contends that this changed classroom might possibly affect both anxiety and creativity in children. The principles and characteristics of open education then become relevant here.

Open education resists specific definition. No one definition exists because there is no one specific model. It is best understood in terms of certain underlying assumptions. Many of
these assumptions are attributable to the work of Swiss genetic epistemologist Jean Piaget. Others involve points of view about children and about the nature of knowledge.

Assumptions about children, underlying open education, include:

1. Children are competent, desirous of learning, and trustworthy.
2. They can take responsibility for their own learning.
3. They are innately curious, and can initiate their own learning.
4. Children develop physically and intellectually at their own rate.
5. They learn at their own speed, in their own way.

Assumptions about learning include:

1. Learning proceeds from the concrete to the abstract through active exploration of and interaction with a rich learning environment.
2. Play is the principle mode of learning in childhood, and as such is not distinguished from work.
3. Self-motivated learning is self-perpetuating and more lasting.
4. Expression is an important source of learning, and feelings have their place in the classroom.
5. Learning which is most important is not necessarily that which can be measured.
Assumptions about knowledge include:

1. Little or no knowledge exists which it is essential for everyone to acquire.

2. It is important to help children learn how to acquire knowledge, what is worth knowing.

3. The thinking process is more important than the product.

4. In our increasingly complex world, a problem-solving approach is more appropriate than rote memory of facts.

5. The emphasis should be on learning instead of teaching, should be person-oriented instead of subject-oriented.


Not all of the above assumptions about children, learning, and knowledge are met in every open classroom. However, a similar list of twenty-nine assumptions was compiled by Roland Barth. Most of his assumptions are in the above list, although not necessarily in the exact form, since this list was compiled from many different sources. Barth found that most open educators, both British and American, strongly agreed with most of the underlying assumptions. He stated, "Although many qualifications in language have been suggested, there has not been a case where an individual has said of one of the assumptions, 'No, that is
contrary to what I believe about children, learning, or knowledge' (1971, p. 99)."

Open education has certain characteristics implicit in the underlying assumptions. First, teachers and children share in the decision-making processes. The teacher does not automatically decide what, how, and when specific learning will take place. However, the amount of freedom of choice involving learning varies greatly from classroom to classroom. But children have some freedom to move about and choose their own activities. The classroom is characterized by a rich learning environment. Usually, an open classroom includes many learning centers, or interest areas. They are also characterized by small group or individual activities. There are few large group activities.

The role of the teacher is also changed. He becomes a manager, observer, director, facilitator of learning. He is usually supportive, non-authoritarian.

It seems evident to this author that research on anxiety and creativity indicates that an open classroom, as defined by its underlying assumptions and characteristics, would have a profound influence on both variables.
CHAPTER 4

RESEARCH DESIGN

Sample

This research was conducted at the second level at the Sunrise Drive Elementary School, Catalina Foothills District, Tucson, Arizona. There are four teachers, one aide, and approximately ninety children in the classroom. The room is structurally open. For diagnostic and evaluative purposes, each child has one teacher who is responsible for him. The classroom is team taught and involves primarily individual and small group work. Interest centers for some self-directed and self-selected activities are available.

Before the beginning of the school year, the teachers met to determine their responsibilities for the coming school year. The following lists which they prepared provide a reliable indicator of the classroom environment:

The child has:

1. A variety of instructors and subjects or skill levels as determined by him with the guidance of his GM (General Manager).

2. The commitment of each team member (2nd year GM's) to assist his program to the fullest degree as directed by his GM.
3. Freedom within structure developed by consistency and knowledge of class standards.

4. Wise choices encouraged by many opportunities to seek information through a variety of media.

5. Opportunities to gain many processes through activities developed in the curriculum.

6. One GM that accepts the complete directorship and accountability for his program, selecting the learning setting, and communicating his progress to parents.

Each GM has:

1. Full responsibility
   a. For determining the program and commitment for each child assigned to her.
   b. For communicating to parents for these children.
   c. For record keeping for these children.

2. Shared responsibility
   a. For team planning and evaluating.
   b. For assisting all second year children to meet behavior standards.
   c. For determining room functioning and scheduling.
   d. For keeping materials and room in order and insuring proper use.

3. Major responsibility
   a. In planning as key person in the subject areas assigned.
b. In preparing materials for discipline areas assigned.

c. In setting up and maintaining interest centers for areas assigned.

The school population is reported to be upper middle to upper socio-economic class. The school district spends approximately twelve hundred dollars per year per child in the elementary school, an expenditure considerably above the state average.

**Instruments Used**

The Torrance Tests of Creative Thinking include both a verbal and figural battery. For purposes of this study Figural Form A was used. The figural tests included three activities which required an overall time of thirty minutes to administer. The tasks involved included picture construction designed to stimulate originality and elaboration; incomplete figures and repeated figures designed to elicit increasingly greater variation in fluency, flexibility, originality, and elaboration. The tests are the only available instruments for the measurement of creativity with reported reliability and validity (Torrance 1966).

The General Anxiety Scale for Children (GASC) is a self-report anxiety scale involving a yes or no answer to forty-five questions, eleven of which constitute a lie scale. It required approximately one-half hour to administer. The tests are valid and reliable (Ruebush 1963).
Procedure

A group of twenty-six children, thirteen boys and thirteen girls, was randomly selected from the second level classroom using a table of random numbers (Minium 1970). One-half of the group was administered the Torrance Tests of Creative Thinking, Figural Form A. On the same day the other half of the group was administered the GASC. Two days later, the groups were reversed. The GASC was scored for one anxiety score and one lie score. The Torrance Tests of Creative Thinking were scored for originality and elaboration in activity one, and for fluency, flexibility, originality, and elaboration in activities two and three. A total score for each of fluency, flexibility, originality, and elaboration was then obtained.

A correlation matrix using a computer program (Veldman 1967) was then run on all of the obtained scores, with the addition of age in months. The matrix was run with the total group, and with boys and girls separately. In addition, means and standard deviations were obtained for all scores. A T Test was applied to see if the differences between the means was significant (Minium 1970). A significance level of .05 was established.

The four teachers completed the questionnaire Assumptions About Learning and Knowledge (Barth 1971) to assess the openness of the classroom. The results were then interpreted in relation to the degree of openness.
CHAPTER 5

INTERPRETATION OF THE DATA

An initial interpretation of the data indicated few statistically significant results. In interpreting the data, however, the small sample size must be considered. The subjects included a total group of twenty-six with thirteen boys and thirteen girls. The small sample size influenced the correlation required for statistical significance. All of the significant results involved the anxiety scores. For coding purposes, boys were assigned a one and girls a two. The correlation matrix yielded a +.75 correlation between six and anxiety, indicating that the girls tended to be more anxious than the boys. The mean score of the boys on the GASC was significantly lower than the girls ($p>.01$). For both boys and girls separately, and for the total group, there was a statistically significant negative correlation between the anxiety score and the lie score on the GASC. This finding indicates that a low reported anxiety score tended to be associated with a high lie score and that high reported anxiety scores tended to be associated with a low lie score. This coincides with the findings of Sarason et al. (1960). The scores also yielded a statistically significant difference ($p>.01$) between the mean lie score of the boys and the girls, with the boys scoring significantly higher than the girls (Table 1).
The correlations between age (in months) and anxiety produced divergent results, although they were not statistically significant. Interpretation of the correlations must take into account the restricted range. The ages of the subjects ranged from eighty-six months to 106 months, with a mean of 92.8 months and a standard deviation of 9.88 months. The mean age of the girls was 91.8 months with a standard deviation of 11.1 months, while the boys had a mean of 93.8 months with a standard deviation of 8.7 months. The boys' correlation matrix indicated a nearly significant positive correlation between age and anxiety, suggesting that anxiety tended to increase with age. In contrast, the correlation of the same variables for the girls indicated a low negative relationship. The correlation for the total group was so low that no inferences can be made from it (see Table 2).
Table 2. Age: Correlations

<table>
<thead>
<tr>
<th></th>
<th>Flu.</th>
<th>Flex.</th>
<th>Orig.</th>
<th>Elab.</th>
<th>Anxiety</th>
<th>Lie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 13</td>
<td>-.42</td>
<td>-.42</td>
<td>-.04</td>
<td>-.20</td>
<td>.54</td>
<td>-.23</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 13</td>
<td>.30</td>
<td>-.37</td>
<td>.46</td>
<td>.34</td>
<td>-.10</td>
<td>.01</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 26</td>
<td>-.24</td>
<td>-.43</td>
<td>.11</td>
<td>-.01</td>
<td>-.01</td>
<td>.02</td>
</tr>
</tbody>
</table>

A comparison of the means of the creativity scores indicated some interesting trends. On all creativity measures except elaboration, the girls' mean scores were higher than the boys. However, the difference between the means was not statistically significant for any of the measures (see Table 3).

Table 3. Creativity: Means and Standard Deviations

<table>
<thead>
<tr>
<th></th>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
<th>Elaboration</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>$\bar{X}$</td>
<td>S.D.</td>
<td>$\bar{X}$</td>
<td>S.D.</td>
</tr>
<tr>
<td>Boys</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 13</td>
<td>20.07</td>
<td>8.35</td>
<td>14.53</td>
<td>5.73</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 13</td>
<td>26.15</td>
<td>4.70</td>
<td>19.00</td>
<td>5.89</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 26</td>
<td>23.11</td>
<td>7.84</td>
<td>16.77</td>
<td>6.25</td>
</tr>
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</table>
Correlations between age and creativity scores were also not significant. In general, with the exception of originality, age appeared to be negatively related to creativity for the total group. However, when the boys' and girls' creativity scores were correlated separately, some interesting results appeared. With the exception of flexibility, the girls had positive correlations between the creativity measures and age. The boys, however, had negative correlations.

The correlations between anxiety and creativity were not statistically significant and showed no conclusive pattern. For the total group, fluency and flexibility had a low positive correlation with anxiety, while the originality and elaboration correlations were so low as to provide no basis for inference. However, when the scores were correlated separately for boys and girls, an interesting trend appeared. The boys' correlations were all indicative of a negative relationship between anxiety and creativity, while the girls' correlations, with the exception of originality, indicated a positive relationship. However, some of the correlations were so low as to suggest the possibility that no relationship exists between the two variables (see Table 4).
Table 4. Creativity-Anxiety: Correlations

<table>
<thead>
<tr>
<th></th>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
<th>Elaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 13</td>
<td>-.15</td>
<td>-.15</td>
<td>-.02</td>
<td>-.14</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 13</td>
<td>.18</td>
<td>.14</td>
<td>-.01</td>
<td>.06</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 26</td>
<td>.28</td>
<td>.27</td>
<td>.10</td>
<td>-.09</td>
</tr>
</tbody>
</table>

Barth's (1971) questionnaire, Assumptions About Learning and Knowledge, was administered separately to the four teachers in order to assess the degree of openness of the classroom (see Appendix B). On the section of the questionnaire title "Assumptions About Learning" the four teachers all agreed or strongly agreed with the assumptions involving motivation and conditions for learning with the exception of Assumption 7. This assumption states, "Children have both the competence and the right to make significant decisions concerning their own learning." One teacher disagreed with this statement and one strongly disagreed. All of the teachers agreed or strongly agreed with the assumptions about social learning. In the section on intellectual development, two of the teachers disagreed with Assumption 13 which states, "Concept formation proceeds very slowly." In the section on evaluation one teacher disagreed with the statement "The preferred source of verification for a child's solution to a problem
comes through the materials he is working with." The teachers agreed or strongly agreed with the other assumptions involving intellectual development and evaluation. All teachers agreed or strongly agreed with all of the assumptions about knowledge. The teachers commented on the lack of clarity of many of Barth's assumptions. Any interpretation of the data from this study must consider the openness of the classroom, as assessed by the teachers' responses to Barth's questionnaire.
CHAPTER 6

DISCUSSION

The purpose of the study was to test the following hypotheses, stated in the null form:

1. There is no relationship between anxiety and creativity in an open classroom.
2. There is no relationship between anxiety and creativity for boys in an open classroom.
3. There is no relationship between anxiety and creativity for girls in an open classroom.

The following decisions regarding the hypotheses were made:

1. Hypothesis one was accepted. No significant correlations were found between anxiety and creativity in an open classroom.
2. Hypothesis two was accepted. No significant correlations were found between anxiety and creativity for boys in an open classroom.
3. Hypothesis three was accepted. No significant correlations were found between anxiety and creativity for girls in an open classroom.
An initial discussion of the data must include commentary on the fact that few significant results were obtained. Several possible reasons for this emerge. First, the extremely small sample size might have influenced the results. In addition, the sample was chosen from one grade level, only, and from one school, only. The fact that the children taking the tests were all from one classroom, and knew each other well, might have influenced the results. Indeed, this investigator noticed a difference in atmosphere between the two groups. One group was noisy and excitable, while the other appeared to be quieter and less exuberant. It would be interesting to replicate this study with groups from different classrooms to see if this might affect the test results.

Another variable influencing the test results might be the age of the subjects. No research relating anxiety and creativity and using the tests used by this experimenter, or similar tests, has been reported for children below the fifth grade level. Perhaps, the creativity measures are not as reliable for children at this age level. Also, a projective anxiety test might be more reliable than a self-report scale for children of this age. An experimental relationship between anxiety and creativity based upon the instruments utilized in this study, or similar instruments may not exist for children this young. And one must also consider the possibility that for this age group anxiety has no significant effect upon creativity.
Another focus of discussion centers around the type of anxiety measured by the GASC. Several investigators have theorized that the Torrance Tests of Creative Thinking carry with them an evaluative or test-like emphasis. Hence, the Test Anxiety Scale for Children (Sarason et al. 1960) which measures situational test-anxiety might serve to be a more accurate measurement of the type of anxiety which inhibits creativity in a school situation. Again, the problem involves whether or not one is assessing the possible effects of anxiety on creativity, or the experimental relationships between tests of anxiety and tests of creativity. The investigator is limited by the instruments available. Certainly, this is a dilemma confronted by nearly all who are engaged in educational research.

Certain of the trends evidenced in the data warrant discussion. The possible relationships between age and anxiety and age and creativity provide areas for further research. The positive correlations between age and anxiety for the boys suggest that anxiety might increase with age. If this finding is supported for general anxiety, what might the effect be on situational school anxiety or test anxiety. On the other hand, the girls' correlation indicated a negative relationship between anxiety and age. Perhaps girls might better adapt to the school situation, and their anxiety in the school environment might then decrease. Or perhaps the school situation adapts better to girls. The relationship between age and anxiety warrants further investigation.
The relationship between age and creativity is less definitive. Again, the apparent divergent results between the boys and girls could be clarified by further investigation. The negative correlations between age and creativity for the boys, when considered with the positive correlation between age and anxiety, might indicate some possible effect of the educational climate on boys. The opposite relationship between both age and anxiety and age and creativity for girls might again indicate a more favorable educational climate for girls. The relationship of age to both variables certainly warrants further investigation.

The relationship between anxiety and the lie scale again differentiates between the sex of the subjects. Girls scored higher on the anxiety scale and lower on the lie scale than the boys, both at statistically significant levels. The relationship of a lie scale as a measure of defensiveness to a self-report anxiety scale poses an interesting area for further research.

The differences in the mean creativity scores of the boys and girls also provide a challenging area for further study. On the creativity measures, the boys were lower than the girls on all measures except elaboration. This is contrary to the findings of Torrance who reported that boys were increasingly more creative than girls through the third grade (Gowan et al., 1967). Further replication of this portion of the study appears advisable.

Although an extensive discussion of factors influencing anxiety and creativity might appear superfluous here, it is
indeed necessary. It is impossible to examine the relationship between anxiety and creativity without assessing the other variables which might affect them, and therefore, their relationship.

Although the correlations between the anxiety score and the creativity measures were not significant, certain trends might warrant further consideration. Since no total creativity score is available, the composite scores must be examined. Since anxiety appeared to have the greatest effect on the fluency and flexibility scores, further exploration of these areas seems advisable. Also, the directionality of the relationship warrants further study. The negative correlations between anxiety and creativity for the boys and the positive correlations for the girls raise questions about task irrelevant versus task relevant responses. Perhaps a certain level of anxiety functions to enhance task performance in girls while it serves to retard it in boys. Although the correlations in this study are too low to provide definitive results, replication of the study does seem warranted to determine if these trends consistently occur and to further examine any possible relationships.

Implications for the open classroom's effect on both anxiety and creativity are difficult to assess. Both variables are extremely complex, and relationships between them difficult to examine. Few studies of the relationships of anxiety and creativity have focused on the influence of the classroom environment on either or both variables. In short, there is a
dearth of research involving the whole area of variables of children's behavior and the classroom environment. This study indicates that further exploration in this area is both feasible and necessary. Recommendations for further research include replication of this study with a larger sample, with different age and grade levels, classroom climates, organizational schemas, teacher philosophies, and socio-economic levels, among others. More research is definitely necessary to evaluate the effect of the school environment on these and other variables of children's behavior.
CHAPTER 7

SUMMARY AND CONCLUSIONS

This study represented an attempt to assess the relationship between anxiety and creativity within the framework of an open classroom. Anxiety was seen as a personality variable which might affect creativity while the open classroom was seen as an environmental variable.

The study produced few statistically significant results, although certain trends were observed. However, many questions concerning anxiety, creativity, and open education were raised. Although the following list is not exhaustive, it details many of the questions raised:

1. Does anxiety influence creativity in the classroom?
2. Is the influence of anxiety upon creativity different for boys and girls?
3. Does anxiety have a positive influence or a negative one upon creativity in young children?
4. Does the effect of anxiety upon creativity vary from situation to situation within the classroom environment?
5. Does the age of the children influence the relationship between anxiety and creativity?
6. Does the classroom environment influence the relationship between anxiety and creativity?

7. What influence does the teacher variable have on the relationship between anxiety and creativity?

8. Does the age or sex of the children affect anxiety in the school setting?

9. Does the age or sex of the children affect the development of creativity?

10. Does the open classroom increase or decrease anxiety or creativity?

11. What is the influence of the open classroom on other behavior variables of young children?

Educational implications of the study focused primarily on the area of further research. Recommendations included the following:

1. Replication of the study with a larger sample to determine if similar trends are observed.

2. Replication of the study with different age levels, and in heterogeneous and homogeneous age groupings to determine the effects of age upon anxiety and creativity and their relationships.

3. Replication of the study in classrooms utilizing different organizational patterns, including team teaching, non-grading, self-contained classroom, open classroom, and departmentalization to assess their influence on anxiety and creativity and their relationships.
In all of the suggested replications of the study, consideration must be given to differences in anxiety, creativity, and their relationships that might be attributed to sex.

In conclusion, there is a paucity of research in the area of the effect of personality variables and environmental variables on creativity in young children. If, as many writers suggest, creativity is a necessary component for success in our increasingly complex society, then further studies in this area are not only important but imperative.
APPENDIX A

THE GENERAL ANXIETY SCALE FOR CHILDREN

Name: __________________________

1. When you are away from home, do you worry about what might be happening at home?
   Yes  No

2. Do you sometimes worry about whether your body is growing the way it should?
   Yes  No

3. Are you afraid of mice or rats?
   Yes  No

4.* Do you ever worry about knowing your lessons?
   Yes  No

5. If you were to climb a ladder, would you worry about falling off it?
   Yes  No

6. Do you worry about whether your mother is going to get sick?
   Yes  No

7. Do you get scared when you have to walk home alone at night?
   Yes  No

8.* Do you ever worry about what other people think of you?
   Yes  No

*L preceding the number designates the items which constitute the Lie Scale.
9. Do you get a funny feeling when you see blood?
   Yes   No

10. When your father is away from home, do you worry about whether he is going to come back?
    Yes   No

11. Are you frightened by lightning and thunderstorms?
    Yes   No

12. Do you ever worry that you won't be able to do something you want to do?
    Yes   No

13. When you go to the dentist, do you worry that he may hurt you?
    Yes   No

14. Are you afraid of things like snakes?
    Yes   No

15. When you are in bed at night trying to go to sleep, do you often find that you are worrying about something?
    Yes   No

16. When you were younger, were you ever scared of anything?
    Yes   No

17. Are you sometimes frightened when looking down from a high place?
    Yes   No

18. Do you get worried when you have to go to the doctor's office?
    Yes   No

19. Do some of the stories on radio or television scare you?
    Yes   No
L20. Have you ever been afraid of getting hurt?
   Yes    No

21. When you are home alone and someone knocks on the door, do you get a worried feeling?
   Yes    No

22. Do you get a scary feeling when you see a dead animal?
   Yes    No

23. Do you think you worry more than other boys and girls?
   Yes    No

24. Do you worry that you might get hurt in some accident?
   Yes    No

L25. Has anyone ever been able to scare you?
   Yes    No

26. Are you afraid of things like guns?
   Yes    No

27. Without knowing why, do you sometimes get a funny feeling in your stomach?
   Yes    No

28. Are you afraid of being bitten or hurt by a dog?
   Yes    No

L29. Do you ever worry about something bad happening to someone you know?
   Yes    No

30. Do you worry when you are home alone at night?
   Yes    No
31. Are you afraid of being too near fireworks because of their exploding?
   Yes    No

32. Do you worry that you are going to get sick?
   Yes    No

33. Are you ever unhappy?
   Yes    No

34. When your mother is away from home, do you worry about whether she is going to come back?
   Yes    No

35. Are you afraid to dive into the water because you might get hurt?
   Yes    No

36. Do you get a funny feeling when you touch something that has a real sharp edge?
   Yes    No

37. Do you ever worry about what is going to happen?
   Yes    No

38. Do you get scared when you have to go into a dark room?
   Yes    No

39. Do you dislike getting in fights because you worry about getting hurt in them?
   Yes    No

40. Do you worry about whether your father is going to get sick?
   Yes    No

41. Have you ever had a scary dream?
   Yes    No
42. Are you afraid of spiders?
   Yes    No

43. Do you sometimes get the feeling that something bad is going to happen to you?
   Yes    No

44. When you are alone in a room and you hear a strange noise, do you get a frightened feeling?
   Yes    No

45. Do you ever worry?
   Yes    No
APPENDIX B

ASSUMPTIONS ABOUT LEARNING AND KNOWLEDGE

INSTRUCTIONS: Make a mark somewhere along each line which best represents your own feelings about each statement.

Example: School serves the wishes and needs of adults better than it does the wishes and needs of children.

X

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
</tr>
</thead>
</table>

I. Assumptions About Children's Learning

Motivation

Assumption 1: Children are innately curious and will explore their environment without adult intervention.

<table>
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<tr>
<th>strongly agree</th>
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<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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Assumption 2: Exploratory behavior is self-perpetuating.

<table>
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<tr>
<th>strongly agree</th>
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<th>no strong feeling</th>
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<th>strongly disagree</th>
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</thead>
</table>

Conditions for Learning

Assumption 3: The child will display natural exploratory behavior if he is not threatened.

<table>
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<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
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</table>
Assumption 4: Confidence in self is highly related to capacity for learning and for making important choices affecting one's learning.

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<thead>
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<th>strongly agree</th>
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<th>no strong feeling</th>
<th>disagree</th>
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</table>

Assumption 5: Active exploration in a rich environment, offering a wide array of manipulative materials, will facilitate children's learning.

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<thead>
<tr>
<th>strongly agree</th>
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<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</table>

Assumption 6: Play is not distinguished from work as the predominant modes of learning in early childhood.

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<tr>
<th>strongly agree</th>
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<th>no strong feeling</th>
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<th>strongly disagree</th>
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</table>

Assumption 7: Children have both the competence and the right to make significant decisions concerning their own learning.

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<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</thead>
</table>

Assumption 8: Children will be likely to learn if they are given considerable choice in the selection of the materials they wish to work with and in the choice of questions they wish to pursue with respect to those materials.

<table>
<thead>
<tr>
<th>strongly agree</th>
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<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</thead>
</table>

Assumption 9: Given the opportunity, children will choose to engage in activities which will be of high interest to them.

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<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</thead>
</table>

Assumption 10: If a child is fully involved in and is having fun with an activity, learning is taking place.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</thead>
</table>
Social Learning

Assumption 11: When two or more children are interested in exploring the same problem or the same materials, they will often choose to collaborate in some way.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</table>

Assumption 12: When a child learns something which is important to him, he will wish to share it with others.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
</tr>
</thead>
</table>

Intellectual Development

Assumption 13: Concept formation proceeds very slowly.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</thead>
</table>

Assumption 14: Children learn and develop intellectually not only at their own rate but in their own style.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</table>

Assumption 15: Children pass through similar stages of intellectual development, each in his own way and at his own rate and in his own time.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
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<th>strongly disagree</th>
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</table>

Assumption 16: Intellectual growth and development take place through a sequence of concrete experiences followed by abstractions.

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<th>strongly agree</th>
<th>agree</th>
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</table>
Assumption 17: Verbal abstractions should follow direct experience with objects and ideas, not precede them or substitute for them.

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<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
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<th>strongly disagree</th>
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</thead>
</table>

Evaluation

Assumption 18: The preferred source of verification for a child's solution to a problem comes through the materials he is working with.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</table>

Assumption 19: Errors are necessarily a part of the learning process; they are to be expected and even desired, for they contain information essential for further learning.

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<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</thead>
</table>

Assumption 20: Those qualities of a person's learning which can be carefully measured are not necessarily the most important.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</thead>
</table>

Assumption 21: Objective measures of performance may have a negative effect upon learning.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</table>

Assumption 22: Learning is best assessed intuitively, by direct observation.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
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</table>
Assumption 23: The best way of evaluating the effect of the school experience on the child is to observe him over a long period of time.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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Assumption 24: The best measure of a child's work is his work.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
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II. Assumptions About Knowledge

Assumption 25: The quality of being is more important than the quality of knowing; knowledge is a means of education, not its end. The final test of an education is what a man is, not what he knows.

<table>
<thead>
<tr>
<th>strongly agree</th>
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Assumption 26: Knowledge is a function of one's personal integration of experience and therefore does not fall into neatly separate categories of "disciplines."

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<tr>
<th>strongly agree</th>
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<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
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</table>

Assumption 27: The structure of knowledge is personal and idiosyncratic; it is a function of the synthesis of each individual's experience with the world.

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<tr>
<th>strongly agree</th>
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Assumption 28: Little or no knowledge exists which is essential for everyone to acquire.

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<tr>
<th>strongly agree</th>
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<th>disagree</th>
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</table>
Assumption 29: It is possible, even likely, that an individual may learn and possess knowledge of a phenomenon and yet be unable to display it publicly. Knowledge resides with the knower, not in its public expression.

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>no strong feeling</th>
<th>disagree</th>
<th>strongly disagree</th>
</tr>
</thead>
</table>
LIST OF REFERENCES


46


Zdep, S. M. "Intelligence, Creativity and Anxiety Among College Students," Psychological Reports, Vol. 19 (October 1966).