AN EXPLORATORY STUDY OF A MEANS FOR ASSESSING BOTH CREATIVITY AND CONFORMITY OF FIRST GRADERS

Thesis for the Degree of Ph. D.

MICHIGAN STATE UNIVERSTIY

David Lyle Smith

1966

This is to certify that the

thesis entitled
AN EXPLORATORY STUDY OF A MEANS FOR ASSESSING BOTH CREATIVITY AND CONFORMITY OF FIRST GRADERS

presented by

David Lyle Smith

has been accepted towards fulfillment of the requirements for

Ph.D. degree in Education

Date November

102

~~APR 14 1953~~ 19

~~APR 14 1953~~ 14

JUL 14 1953

F — a42

B — B48

ABSTRACT

AN EXPLORATORY STUDY OF A MEANS FOR
ASSESSING BOTH CREATIVITY AND CONFORMITY
OF FIRST GRADERS

by David Lyle Smith

The problem for this study was to see if a bipolar instrument could be constructed which would be easily administered, easily scored, easily and meaningfully interpreted, and which would measure BOTH the variations of creativity and of conformity of first grade public school children.

The purpose of this study was to learn more about the relationship of creativity and conformity of first grade children through developing and testing a bipolar instrument called the Selection and Color In Test (S-CIT) designed by the investigator to assess variations of creative AND conforming behavior.

Three hundred and one children constituted the sample. They were drawn from twelve classes in six schools selected in certain ethnic and socio-economic areas in Lansing, Michigan. Their teachers administered the S-CIT over a period of five days, during two sessions of twenty-five minutes each per day. The children selected one drawing each session, from a possible six, ranging in completeness of drawing from a Coloring Book Type to a Stimulus Line Type, to which they added lines to express real or imaginary ideas and then colored them in. This test was to measure the variations of both creativity and of conformity of the children.

The investigator gave three non-verbal tasks of the Minnesota Tests of Creative Thinking (MTCT) recommended by Torrance to 284 of the first graders. Each child also was given a Test of Suggestibility (TS), devised by the investigator, in which the attempt was made to influence the children to shift their second response on the TS to the false norm contrived by the investigator to indicate the variations of conformity.

Teachers were asked to nominate their "most creative" and their "most conforming" students just prior to the testing.

Seven scores were obtained on the S-CIT: Selection (SEL), Flexibility (FLEX), Color (COLOR), Elaboration (ELAB), Originality (ORIG), Coverage (COVER), and Dispersion (DISP), as well as a total score. The MTCT yielded four scores: Fluency (FLU), Flexibility (FLEX), Originality (ORIG), and Elaboration (ELAB), as well as a total score. The TS obtained two scores: Positive Shift (PS) toward the false norm, and Negative Shift (NS) away from the false norm.

Seven hypotheses were concerned with the relationship of the above scores on the three tests as well as with the teachers' nominations. The statistical treatments used indicate that:

1. There was no relationship between the total creativity score of the MTCT and the children's shifting toward the false norm on the TS which assessed conformity. While it was possible to determine which children were creative on the MTCT, it was not possible to show that these same children were nonconforming or less conforming by using the TS.
2. Teachers who nominated their students as "most creative" and as "most conforming" were able to predict this quite well based on the

part scores of the three tests. The children so nominated scored either high on the creativity measures (MTCT and S-CIT) or high on the conformity measure (TS), so that the correlation between all of the part scores on the MTCT, the S-CIT, and the TS and the teacher nominations, as determined by the multiple regression analysis, was .55. After the least significant variables had been deleted, the scores of the remaining four most significant variables correlated .44 with the teacher nominations with 163 children; significant at the $<.005$ level.

3. The SEL score was considered the key to the S-CIT. It showed no significant relationship to the total score of the MTCT so that it was not possible to predict which students would be more creative based on which drawings of the S-CIT they selected to draw on and color in.
4. The method for scoring ELAB, devised by the investigator, is significantly related to the method developed by Torrance. The correlation was .48. It would be possible to use the former method for scoring ELAB.
5. The S-CIT is not particularly capable of predicting creative behavior when compared with Torrance's MTCT. The multiple regression coefficient was .31 between the part scores of the S-CIT and the total score of the MTCT. Perhaps the S-CIT is assessing different creative abilities not measured by the MTCT.
6. Three of the scores of the S-CIT are not particularly capable of predicting creative behavior when compared with their corresponding scores on the MTCT. Perhaps the scores on the S-CIT are predicting

different factors of creative behavior. The corresponding ELAB scores were somewhat related but they correlated only .30 with each other which is not capable of significant prediction.

7. The reliability of the S-CIT over a five day period varies depending on the particular part score. The seven morning scores were compared with the seven afternoon scores for the five days. AM COLOR correlated .68 with PM COLOR; AM ELAB correlated .46 with PM ELAB; and AM DISP correlated .41 with PM DISP. All were significant at the .001 level for 300 students. The other four AM and PM scores, including SEL, were not particularly reliable.

In conclusion, the S-CIT was easily administered but more research needs to be done on it before the scoring of the instrument will be easily accomplished. In addition, more work needs to be done to refine the S-CIT to increase its validity and reliability. If the S-CIT can be redesigned to assess creativity as well as conformity consistently, the test will be capable of greater prediction and better interpretations can be made from it.

A number of implications for education were discussed. The possibility exists that in the future people may be as intolerant of uncreative people as they are now of creative people.

Recommendations to schools, parents, and the community include setting up a coordinated program enlisting the services of a Consultant In Education Through Creativity and groups of interested teachers, parents, and students to work for fostering and enhancing creativity in education starting at the kindergarten level and working up each year for thirteen years.

AN EXPLORATORY STUDY OF A MEANS FOR ASSESSING BOTH CREATIVITY AND CONFORMITY OF FIRST GRADERS

By

David Lyle Smith

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

College of Education

1966

VITA

David Lyle Smith was born June 6, 1926, at Stamford, New York. He was raised on a Jersey farm in the Catskill Mountains.

He attended Brookdale Grade School for seven years; a one-room school with one devoted teacher. After graduating from Roxbury Central School in 1944 he worked with his father on the farm until September 1947.

Following a short stint in the U.S. Army he began his studies at the University of Michigan and was graduated in June 1951 with a Bachelor of Design from the College of Architecture and Design. He stayed on at the University of Michigan for another two years, completing his MA degree in Education and also receiving an AFROTC commission as a Second Lieutenant in the U. S. Air Force in June 1953.

His next two years were spent at Wright-Patterson AFB as an Educational Specialist with the USAF Institute of Technology.

From September 1955 until the present he has taught in the Lansing School District in Lansing, Michigan: eight years at the junior high level and nearly three years as an Elementary Art Helping Teacher, working in the elementary classroom with children and teachers from grades K through six in an in-service type of program.

His work experiences have been varied: (1) graphic artist for The University of Michigan Television Department; (2) clerk-typist for Kaiser-Frazer at Willow Run; (3) AYH bicycle tour leader for two summer

trips, one in the New England States in 1950, and one in Europe in 1952; (4) government advisor at Michigan Wolverine Boys' State; and (5) lettering of certificates for various organizations.

He started his doctoral program at Michigan State University in June, 1957, and completed the last requirements during the fall term, 1966.

He is active with his local church and with the USAF Reserve Program in Lansing. He is a life member of the Michigan Education Association and the National Education Association. He is a member of the Lansing Schools Education Association, the National Art Education Association, and the Association for Supervision and Curriculum Development.

He lives with his wife Alyce and their five children in Haslett, Michigan.

ACKNOWLEDGMENTS

The investigator wishes to acknowledge the support and cooperation of many people without whom this study could not have been made.

The support and encouragement of his wife, Alyce, and their five children: Matthew, Markalan, Elizabeth, Leigh, and Stuart; his close relatives; and numerous friends.

The patience of Dr. Charles A. Blackman, his Major Professor, who stimulated changes in the investigator over a period of time.

The members of his committee: Dr. Ernest O. Melby, Dr. Troy L. Stearns, Dr. John H. Suehr, and Dr. John H. Useem.

The assistance and words of wisdom of Dr. Fred Vescolani, the investigator's former Major Professor while he was still enrolled in the Department of Administrative and Educational Services doctoral program at Michigan State University.

Miss Grace Van Wert, Director of Elementary Education for the Lansing School District, who assisted in arranging for the study to be conducted in the six schools in Lansing selected by the investigator.

The Lansing Board of Education for granting the investigator a sabbatical during the Second Semester of the 1964-65 school year, which

gave him time to read, to study, to prepare the problem, and to collect the data for this study.

The six elementary principals and the twelve first grade teachers who cooperated so willingly to make it possible for the test instruments to be tried out with their 309 first grade students.

The four teachers and the several officials in the two school systems who cooperated in the pre-test portion of the study.

The assistance of Dr. Jean M. LePere, Dr. Robert B. Zajonc, Dr. Robert L. Trezise, Mr. John Anderson, and Mr. Bruce Rogers during vital phases of this study.

The various publishers and owners who granted permission for the investigator to include their drawings or paintings, which he adapted as part of the Selection and Color In Test, are acknowledged in Appendix B where all the drawings used in the S-CIT are included.

And my typist, Mrs. Jan McGiveron, for her task of transforming the material to finished form.

TABLE OF CONTENTS

Chapter Page

LIST OF TABLES

LIST OF APPENDICES

CHAPTER I

THE CONCERNS AND THE NEEDS

> It is thus creative education which best serves the needs and purposes of a democratic society. It is creative education alone that can produce individuals with the development and the social effectiveness needed for the success of freedom. It is thus in a creative learning process that we seek the role of the teacher.[1]

Introduction

The major concern of this study is with the attempt to assess the variations of creativity and of conformity found in first graders. The first grade level has been selected for study since these children are relatively new to the school environment as they will experience it in the future. The kind of atmosphere experienced in kindergarten begins to change in the first grade into a more formalized structure of specific skill attainment and knowledge intake which, for reasons known and unknown, will take its "toll" of these young people.

Another concern is with these young people as human beings. This latter concern is by far more important than any attempt at measuring their creative and conforming behavior. Hopefully, by measuring children's behavior educators may know better what appropriate opportunities to provide for meeting the problems of their future.

---

[1] Ernest O. Melby, The Teacher and Learning (New York: The Center for Applied Research in Education, Inc., 1963), p. 31.

Educators, psychologists, and other individuals are greatly concerned about the education of the children in this generation. This concern is evidenced by the increased interest, the increased writing, and the increased research done in the past six years. Much more needs to be done. The study of creativity is a whole new field in which there are great numbers of unanswered questions. Significant persons are struggling with the topic in order to create a body of knowledge which will be usable by the practitioners in the classroom as well as other places where peoples' minds are stretched. A number of researchers are involved in measuring or assessing the creative abilities of persons of all ages from pre-school children through the productive years of employment. Continued effort and support are vital to learning all that we can about this most precious asset.

In many books and articles on creativity there are statements about the need for creativity. The first section of this chapter will include some of the reasons why creativity is so vital as reported by various authors. The second section will list some of the reasons for the need for research. The problem of this study is given. The purpose is stated and the basic assumptions are given. The hypotheses are listed that are of concern: that creative children are more nonconforming and that conforming children are not as creative. The next section includes the theoretical aspects of creativity followed by sections on definitions of terms, the methods used, limitations of the study and finally, by an overview of the remaining chapters of this study.

The Need for Creativity

Introduction

While it may appear that the needs for creative behavior given here are mutually exclusive and segmented, in reality, they are an integral part of the total fabric of life. The analysis of these needs might be seen as differentiation or diversity within the total life style of a person in which all of these needs operate with unity.

Rugg maintains that everything we do is through the whole body; yet there is much more involved. Every act of man includes the integration of "mind," "purpose," and "will" all with and within the body.[2]

The reasons selected and listed here are not intended to be all inclusive but to show the relatively wide feeling that the need for creativity does exist.

Creativity, as broadly defined for this study, is thought of as a fresh independent response; unique to the creator, characterized by personal initiative and conscious effort, involving thinking and doing according to the need of the self, utilizing a variety of past and present experiences, and an openness for new and divergent relationships.[3]

On the other hand, conformity is viewed as the degree of completely consistent behavior which coincides with group or social norms as perceived by the individual. It implies a rigid and closed mind, a

---

[2]Harold Rugg, Imagination (New York: Harper & Row, 1963), pp. 98-99.

[3]Underlined portions are from the definition of creativity appearing in 1959 ASCD Yearbook: Toward Better Teaching (Washington, D.C.: Association for Supervision and Curriculum Development, 1959), p. 121.

dependent attitude, a usual feeling of inferiority, anxiety, and lack of basic self-confidence.

Here are a number of important needs which have appeared in the literature.

Beautification of the Environment

Rollo Walter Brown, speaking in 1929, emphasized that even though heredity may not be changeable, the environment can be changed by making it over for the better, if we give the creative minded people a chance.[4] Related to his concern for remaking the environment was his great interest in the cities. He felt that the problem of the city could be solved with much creative effort. The world needs the beauty of which creative people are capable. This was Brown's real interest. Ugliness stood as a monument to the efforts of most men as he looked across the United States in 1929.[5]

Unfortunately, the problem of the city never really has been solved by creative people or anyone else. We do continue to see evidences of creative architects in some of our cities and they appear as a golden ray of light. Most cities are getting uglier. No one wants to live in today's city if he can avoid it. In addition, the sprawling suburbias have compounded the difficulties of redesigning the cities.

There have been creators, as indicated by Brown, who have made gains in making the environment into a more beautiful place to live but

---

[4]Rollo Walter Brown, "Do We Want Creative Minds in America," Progressive Education, VI (April, May, June, 1929), 139.

[5]Ibid.

there are still too many forces which condone the ugly. Brown indicated that the "architect just now is having his inning as a creator."[6] MacKinnon, for one, has indicated indirectly the relative importance of the architect in solving today's urban problems by selecting the architect for his study and research of the creative person because "it seemed to me, and to my collaborator in this research, Wallace B. Hall, that architects might as a group reveal that which is most characteristic of the creative person."[7]

As more and more people become concerned about making our environment more aesthetically appealing by retaining the wonders of nature and blending them with the structures of creative man, perhaps overall advances will be made ultimately. For example, a recent UPI article from Washington, D. C. reported that John Kenneth Galbraith, formerly in the Kennedy administration, now teaching economics at Harvard, took aim at the idea "that while in the short run beauty may cost more than ugliness, it costs less in the long run."[8] If people say, when asked about the importance of beauty along our highways, that this makes the scenery more appealing and life more enjoyable, then people in the billboard business, for one, should take heed.

---

[6] Ibid., p. 136.

[7] Donald MacKinnon, "Personality and the Realization of Creative Potential," American Psychologist, XX (April, 1965), p. 274.

[8] The State Journal (Lansing, East Lansing, Michigan) "Quest for Beauty," August 21, 1966, p. E3.

As Synonymous with Individual Differences

More recently, Anderson considered that creativity is the stream of individual differences; the process of originality and uniqueness in each and every person. This is, as Anderson has written, a characteristic of protoplasm.[9] Much verbal effort has been expended to make an educational program more meaningful to more individuals through attempting to meet their individual differences.

The current National Education Association (NEA) Project on Instruction certainly points to the importance of this concept today. Miller writes that if all pupils are to have equal opportunity to grow, the curriculum needs to be differentiated to consider individual differences. He also expresses the idea that the development of creativity is as "important for the individual as for the nation."[10] The creative teacher more likely will be able to meet individual differences and, indeed, to help make life more meaningful for each and every individual child.

The Essence of Life Itself

Being creative has been likened to living; living a full and meaningful life each day. Anderson feels that the process of creativity is important "not because the product of each moment is such a gem but because the process is the essence of life itself."[11]

---

[9]Harold H. Anderson, "The Nature of Creativity," Studies in Art Education, I (Spring, 1960), 14.

[10]Richard I. Miller, Education in a Changing Society (Washington, D. C.: National Education Association, 1963), p. 129.

[11]Harold H. Anderson, "Creativity and Education," AHE College and University Bulletin, XIII (May 1, 1961), 4.

Maslow writes about this process which he refers to as "self-actualizing." He has found that trying to define self-actualizing creativeness is difficult because it seems to be coterminous with health itself as well as with essential humanness.[12]

Trezise, in a recently completed study, explains that the creative person is more than a highly skilled person; he is a person who has internalized certain moral and ethical commitments. Trezise then sums up his own orientation and that of Drews when he writes that "the creative process is more than the functioning of highly trained and disciplined abilities; it is a whole style of life."[13]

As a Social Need

Rogers sees creativity as a social need as he deplores the "dearth of creativity" in America. Conformists and stereotyped persons who can learn no more are turned out in the educational mill while the freely creative and original thinkers are not turned out. In every facet of our lives including the hours of leisure activity, the things we wear, what we eat, the books we read, and the ideas we believe, are all pulled toward the vortex of conformity. "To be original, or different, is felt to be 'dangerous.'"[14] Likewise, Stoddard wrote that

---

[12]Abraham H. Maslow, "Creativity in Self-Actualizing People," Creativity and its Cultivation, ed. Harold H. Anderson (New York: Harper & Brothers, 1959), p. 94.

[13]Robert L. Trezise, "A Descriptive Study of the Life Styles of a Group of Creative Adolescents" (unpublished Ph.D. dissertation, College of Education, Michigan State University, 1966), pp. 3-4.

[14]Carl R. Rogers, On Becoming a Person (Boston: Houghton Mifflin Co., 1961), p. 348.

"conformity rules, not because people crave it but because they fear deviation."[15]

Individualism Revalued

Another need for creativity concerns the importance of the individual in juxtaposition to society, to groupism, to impersonalization in industry and government, and to those hand-in-glove agents of mass - production and media. Trezise sees a widespread concern for the individual in society. The current interest in creativity is another indication of this societal trend "for the creative man is, above all, an individual."[16]

Perhaps the recent popularity of the existentialist's philosophy is due to its ontological concern for the meaning of life for the individual. Tillich, writing about "the anxiety of emptiness and meaninglessness," in The Courage To Be, offers that:

> Everyone who lives creativity in meanings affirms himself as a participant in these meanings. He affirms himself as receiving and transforming reality creatively. He loves himself as participating in the spiritual life and as loving its contents. He loves them because they are his own fulfillment and because they are actualized through him.[17]

David Reisman, author of The Lonely Crowd, writing in his Individualism Reconsidered, recognizes we must encourage people to develop their own private lives especially, ignoring groupism, but knowing that, in a few cases, people will use their freedom in ugly and/or

---

[15]George D. Stoddard, "Creativity in Education," Creativity and its Cultivation, op. cit., p. 181.

[16]Trezise, op cit., p. 15.

[17]Paul Tillich, The Courage To Be (New Haven: Yale University Press, 1952), p. 46.

idle endeavors.[18] Reisman insists that "no ideology, however noble, can justify the sacrifice of an individual to the needs of the group."[19]

Gardner believes that the single conception central to the consensus of today's society is the belief in "the dignity and worth of the individual." However, he cautions that individuality per se is meaningless without the social system that provides the means.[20] A discussion of the relationship of creativity and conformity follows page 96 in Chapter III. Gardner sees our task as enhancing the areas of modern society that promote the individual's integrity as a free and morally responsible being. At the same time the individual needs help to bridge the gap between what he finds meaningful to him and what society demands of him.[21] Miller adds that the nature of our mass society, impersonal and mechanistic as it is becoming, makes it vital for the school to demonstrate "greater concern for the individual, a task often spoken about but too infrequently provided for."[22]

For Better Mental Health

Torrance, along with his great involvement in creativity research and writing, has written about mental health. There is little doubt that creativity, which is silenced, adversely affects the way a

---

[18]David Reisman, Selected Essays From Individualism Reconsidered (Garden City, N. Y.: Doubleday & Company, Inc., 1954), p. 26.

[19]Ibid., p. 27.

[20]John W. Gardner, Self-Renewal: The Individual and the Innovative Society (New York: Harper & Row, 1963), pp. 86-87.

[21]Ibid., p. 94.

[22]Miller, op. cit., p. 128.

person lives. Eventually the tension becomes overwhelming and a breakdown often results. Torrance firmly believes "that one's creativity is his most valuable resource in coping with life's daily stresses."[23]

Anderson, in his concluding chapter in Creativity and its Cultivation, summarizes the ideas of those authors who agree about mental health and neurosis in relation to creativity. They indicate there is a close association between health and full use of one's creative potentials. These authors agree "that creativity is an expression of a mentally or psychologically healthy person, that creativity is associated with wholeness, unity, honesty, integrity, personal involvement, enthusiasm, high motivation, and action."[24]

For Keeping Up with a Changing World

A recent newspaper article by Joseph L. Myler begins with the statement that "remote control of human behavior by radio may one day be commonplace"[25] and goes on to discuss some of the promising possibilities for microminiaturization. Is America's educational fabric so strung that the youth of today will be able to cope with these fantastic advances of technology and not only be able to control them effectively but to think of equally fantastic ideas in the years ahead to continue the advance? In the near future, according to Ralph Dighton, an Associated Press Science Writer, we must decide the future

---

[23]E. Paul Torrance, Guiding Creative Talent (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1962), p. 2.

[24]Harold B. Anderson, "Creativity in Perspective," Creativity and its Cultivation, op. cit., p. 248.

[25]The State Journal (Lansing, East Lansing, Michigan) "Microelectronic Era Dawns in U.S.," December 6, 1965, p. C5.

developments of "genetic tinkering" in which the grotesque possibility exists, according to Dr. James Bonner, a biologist at the California Institute of Technology, of being able to "have four hands" or of having "the brain stay at home, concentrating on thought, while the sense organs roam the world, seeing, talking, listening, playing. We will enjoy a new freedom - freedom from carrying our heads around."[26]

Is it possible for educators to string the warp and weave the weft to create new open flexible patterns of perceiving, behaving, and becoming appropriate to the future climate of human activity? Miller sees tremendous forces today working with computer like speed. Man has not even been able to comprehend past adjustments much less being prepared for new ones. "Keeping abreast of developments requires running fast just to keep up."[27] Public education is right in the midst where the problems will be the greatest. Miller envisions the children in school now living as adults in a world as radical then as between the early 1900's and today.[28]

Brittain, in up-dating the late Viktor Lowenfeld's classic Creative and Mental Growth, indicates the importance of creativity in a changing world. Lowenfeld and Brittain postulate that "To teach toward creativity is to teach toward the future of society."[29]

---

[26]The State Journal (Lansing, East Lansing, Michigan) "Mankind Must Decide Future Course of 'Genetic Tinkering,'" August 12, 1966, p. B3.

[27]Miller, op. cit., p. 7.

[28]Ibid.

[29]Viktor Lowenfeld and W. Lambert Brittain, Creative and Mental Growth (4th ed.; New York: The Macmillan Co., 1964), p. 7.

As an Avenue for Self-Expression

As part of the "style of life" of a person he may paint, sing, sculpt, write, dance, speak, and in many other individual and specialized ways bring ideas and emotions into fruition. These specialized ways of self-expression have been part of the curriculum in schools for a number of years as art, music, modern dance, forensics, dramatics, and creative writing. Art education is perhaps the major area where the individual is encouraged to express himself in his own unique way. Lowenfeld and Brittain feel that for people to develop healthy personalities it is important that "a proper balance be kept between emotional and intellectual growth."[30] The authors conclude that the acquisition of knowledge should not smother the need for freedom in expression. They feel that "knowledge will remain unused, frozen, unless the child develops the urge and freedom to use it."[31]

D'Amico glows with the vision of the child as the potential creator:

> He is a free natural being. His creativeness is born of real enthusiasm and joy of expression. He has no competition to fight, no market to please, no price to set. He belongs to no cult and knows no "isms." He expends his energy on drawing and painting as he does in play. Art with him is a form of play, the spirit and imagination at play, revealing the true, innocent, child-like self.[32]

---

[30] Ibid., p. 65.

[31] Ibid.

[32] Victor D'Amico, Creative Teaching in Art (Scranton, Pa.: International Textbook Co., 1953), p. 241.

As an Avenue for Helping the Unmotivated
and the Motivated Student

In trying to find ways and means to make education more palatable for students it appears that many things can be learned better by creative methods than by methods of authority. More people would prefer to learn creatively if given the opportunity.[33] Melby, writing from the zenith of his experience, knows that education for creativity is important in helping children, youth, and adults to make the most of themselves. In seeking a creative education the point is not to create artists, but to enhance the growth of boys and girls into fully realized men and women - people who are equipped for maximum service to their fellow men.[34]

As educators are better able to help students gain, keep, and enhance their self images more students will want to "learn how to learn and [will] acquire a taste for learning" forevermore.[35] Melby, in writing and speaking extensively about the important role of the teacher and the learner, firmly believes that the creative teacher can help his students build their own world. He can increase their feeling of their own worth, as well as point out their contribution in relation to the contributions of others, and he can help get them started on a career. "In all of this, the attitude of the teacher toward his pupils is of prime importance."[36]

---

[33]Torrance, op. cit., p. 4.

[34]Ernest O. Melby, Education for Renewed Faith in Freedom (Columbus, Ohio: The Ohio State University Press, 1959), pp. 65-66.

[35]Ernest O. Melby, The Teacher and Learning, op. cit., pp. 19-20.

[36]Ibid., p. 69.

But even when helping a student plan a career in the field of science, for example, Melby maintains that educators should begin when the child is small and help make possible an exciting and creative life. But really, since scientists, statesmen, artists, or executives cannot be identified this early in life the consummate way to encourage creativity and develop it in all children is to give all of them the kind of education that permits them all to live creatively and gives them all a chance to learn what they can learn.[37]

Imagine schools then, where students, young and not-so-young, all with positive self images, wanted to learn how to learn and could do so creatively; where they had unlimited opportunities for their fullest self-realization; and where creative teachers facilitated their students to build their own worlds from kindergarten through graduate school. Would there be such a person as an unmotivated student? Would the dropout exist? Would the motivated student succeed just as well or better than at present? Would there need to be more educational facilities for more groups of people with the yen to learn more and more about many different things?

For the Continued Sovereignty of a Nation

The missile race and the race to the reaches of outer space, according to some people, have developed out of all proportion to their importance in relation to the many social problems of mankind which are in urgent need of extensive understanding and immediate solutions. Nevertheless, both areas of endeavor now require, and will continue to

---

[37] Ibid., p. 21.

require, many creative minds to cope with and control the forces of technology within our society. Taylor points out that there is "competition for the very minds of men."[38] He goes on to explain that creativity will be one of those significant factors which will indicate the final outcome of this competition. He continues:

> Because creative acts affect enormously not only scientific progress, but society in general, those nations who learn best how to identify, develop, and encourage the creative potential in their people may find themselves in very advantageous positions.[39]

Rogers gives us some sobering reasons for the need for creativity. He foretells that if individuals, groups, and nations are not able to imagine, build, and creatively integrate new relationships in our complex times "the lights will go out." If man cannot make new and unique adaptations to his environment as quickly as his science can "our culture will perish." Individual dishevelment and group tensions, along with international annihilation, will be the tremendous cost for not encouraging creativity.[40] As Rogers reviews the situation, it would seem to him "that investigations of the process of creativity, the conditions under which this process occurs, and the ways in which it may be facilitated, are of the utmost importance."[41]

There are many other reasons that might be added. The point that is so vital is that creativity IS important for every walk of life,

---

[38]Calvin W. Taylor, "Introduction," Creativity: Progress and Potential, ed. Calvin W. Taylor (New York: McGraw-Hill Co., 1964), p. 2.

[39]Ibid.

[40]Rogers, op. cit., pp. 348-349.

[41]Ibid., p. 349.

for every act of man, for everything that goes on in this universe.

The Need for Research on Creativity

In Widening Horizons in Creativity, Taylor is optimistic about the future of research on creativity. There is no longer any doubt that research into the many aspects of creativity can be fruitful. He writes that there are a number of leads available now for researchers to follow. Taylor suggests that first we need "to learn all we can about what it is and how to build measures to identify it, so that we can formulate sound educational, environmental, and other programs designed to be more favorable to creative talent."[42]

Highlights for Teachers, a quarterly professional service publication for teachers subscribing to Highlights for Children, edited by Myers, Myers, Barbe, and Witty, recently devoted its four-page issue to "Creative Thinking in the Classroom." A statement made in this issue is particularly appropriate here:

> There is no activity in the classroom in which we may not find opportunities to foster creative thinking. So the problem for the teacher is to identify creativity in the learner, especially in the elementary grades, and to find ways to further creativity in him and in as many classrooms as possible.[43]

In the NEA's Project on Instruction, Miller proposes that the school of today should encourage creativity by providing the materials and a place for each student to work since it is generally recognized that all students are creative, to a degree, in certain areas. The

---

[42]Calvin W. Taylor, "Preface," Widening Horizons in Creativity, ed. Calvin W. Taylor (New York: John Wiley & Sons, Inc., 1964), p. xv.

[43]Garry C. Myers, "Creative Thinking in the Classroom," Highlights for Teachers, XXI (March, 1966), 1.

schools can also help find the highly creative children and give them special attention.[44] However, this needs to be weighed along with Melby's point that the best way to encourage people to choose appropriate vocations is to see that all children have the kind of education that permits them to live creatively.

Beittel, summarizing one section of his article on "Art," reports that a number of test instruments have been devised between 1948 and 1958. The majority of these instruments were planned for specific problems and experiments and have made use of operationally defined variables, statistical analysis, and empirical separation of criterion groups. Most of these tests need further analysis so that it may be known just what they measure, what their statistical performance is, and their relationship to other instruments.[45] Beittel indicates that, in studying the creative process, researchers should give attention to isolating important variables and note how they interact.[46]

Brogden and Sprecher report a growing need for measures of creativity useable at the different levels of education from grade school to college and beyond. Research aimed at finding ways of identifying and measuring creative talent at the earliest age would be invaluable. Longitudinal studies 20 to 40 years in duration should be commenced now with children in elementary school so that evidence of creativity

---

[44]Miller, op. cit., p. 129.

[45]Kenneth Beittel, "Art," Encyclopedia of Educational Research, ed. Chester W. Harris (3rd ed.; New York: The Macmillan Co., 1960), p. 81.

[46]Ibid., p. 82.

in one's life work may accumulate.[47] Flanagan is involved with Project TALENT which includes 440,000 students to be followed up 1, 5, 10, and 20 years after they graduate from high school.[48]

Torrance outlines five of his own reasons for wanting to do research in measuring creative behavior in children:

1. As a means of obtaining a more complete understanding of the human mind and personality and their functioning.
2. As a possible basis for individualized instruction.
3. As a part of the process of guiding mental growth, as an indicator of mental health status, and as a source of clues for remedial or psychotherapeutic programs.
4. As a means of assessing the differential effects of various kinds of experimental programs, new curricular arrangements or materials, organizational arrangements, teaching procedures, and the like.
5. As indicator of growth potential and future guidance needs.[49]

Trezise is concerned about the characteristics of the creative student as well as the need for studies in the area of creativity primarily because "relatively little has been done with young people." He is concerned that teachers need to understand these creative young people because, for one thing, many teachers are not as fond of creative students as they are of gifted students as shown by the studies of

---

[47]Hubert E. Brogden and Thomas B. Sprecher, "Criteria of Creativity," Creativity: Progress and Potential, op. cit., p. 175.

[48]John E. Flanagan, "Implications of Research in Creativity," Future Implications of Creativity Research (A One Day Symposium Co-Sponsored by Los Angeles State College and Chouinard Art Institute, J. Leonard Steinberg, Coordinator, Pasadena: March 10, 1962), pp. 31-32.

[49]E. Paul Torrance, "The Measurement of Creative Behavior in Children," Productive Thinking in Education, ed. Mary Jane Aschner and Charles E. Bish (Washington, D. C.: National Education Association and the Carnegie Corporation of New York, 1965), pp. 201-203.

Getsels and Jackson, Torrance, and Drews.[50]

We need to keep in mind that no matter how valid and reliable a test might be, or whether the results of measurements are made known to the teachers or not, nothing will happen in the classroom without the vital key. Pencil and paper tests and measurements, by themselves, mean very little. The teacher is and always will be the key; what he thinks, what he believes, what he perceives, what he knows, and most important - what he actually does in the classroom is the vital link between whatever research may say and what happens with children. Goldberg acknowledges the fact that the already taxed teacher is not expected "to draw the inferences and create the procedures by which to incorporate psychological research findings into the work of the classroom."[51] Resistance on the part of educators comes because they want concrete procedures which are guaranteed to produce results which are valuable and practical in their own educational system. She suggests that perhaps representatives of psychology and education or persons trained in both disciplines will be able to translate the theory, the research materials, and the results into practical examples for the classroom teachers to begin to use on an experimental basis. Goldberg ends by explaining that many people are agreed that the task of translation and dissemination urgently needs to be done.[52]

Fortunately, steps are being taken now in some regions to give

---

[50]Trezise, op. cit., pp. 17-18.

[51]Miriam Goldberg, "Preface," Productive Thinking in Education, op. cit., p. vi.

[52]Ibid.

aid in this area of concern. One such organization, the Michigan-Ohio Regional Educational Laboratory (MOREL), a recently established independent non-profit corporation, has as its major aim the improvement of learning opportunities for pupils in the two states through the process of continuous interplay of ideas with needs in making the educational programs stronger in as many school systems as possible. A major difficulty in trying to do this has been the disparity between idea generation and clearly outlined problems. Written in the experimental draft is the statement that:

> MOREL has accepted as one of its major tasks an examination of the process by which ideas are brought to bear on educational problems in such a way that change occurs; obviously a dimension of this process involves a look at the communication between the researcher and the practitioner. Through these particular efforts more may be learned about the nature of educational change.[53]

Guilford, speaking in 1962, discussed the future implications and applications of our knowledge of the creative disposition. He indicated that numerous problems in connection with education, the arts, our economy, our government, our personal living, and with society in general, call for imaginative, creative solutions. In concluding he said:

> . . . my impression is that scientific research during the past decade has brought creativity down from the clouds and out of the mists, giving it dimensions the knowledge of which enables us to do something about it. Although a general increase in creative productivity in our populations should naturally introduce some new social problems,

---

[53]"The Concept of the Laboratory," (A statement by the planning and development team of the Michigan-Ohio Regional Educational Laboratory, Stuart C. Rankin, Director; Detroit, Michigan: June 30, 1966), p. 2.(Mimeographed.)

these problems can also be solved imaginatively.[54]

He ends by agreeing with Rogers: "We can and must learn to live with increased creativity for without it we should probably not live at all."[55]

The Problem

Can a bipolar instrument be constructed which can be easily administered, easily scored, and easily interpreted, and which will measure BOTH the variations of creativity and of conformity of first grade public school children?

The Purposes

The primary purpose of this study is to learn more about the relationship between creativity and conformity in first grade children through developing an instrument, bipolar in nature, which may be used by the elementary classroom teacher, to assess variations of creativity and conformity in his students.

It is hoped that, with an appropriate measuring instrument developed, one which is easily administered, scored, interpreted, and with suitable validity and reliability determined, the elementary teacher will become more sensitive to the creative needs of students and become more aware of and aroused about the need to teach more creatively.

It is assumed that creativity can be measured, that it can be

---

[54]J. P. Guilford, "Creativity and Our Future," The Future Implications of Creativity Research, op. cit., pp. 31-32.

[55]Ibid., p. 32.

developed as well as squelched. Measuring instruments have been developed which have moderate validity thus far. It must be remembered that as soon as creativity is standardized to the point where it can be measured precisely it ceases to be creativity and becomes something else; perhaps conformity. In a sense creativity can never be measured, for the act of measuring implies a constancy which is certainly not an innate quality of creative behavior. Creativity is a fresh response unique to the creator. People can be creative consistently but their respective behaviors are never the same between each other nor from one moment to the next for any single individual.

The instrument developed in this study was designed to be used by the classroom teacher to assess the general occurrence of creative and conforming behavior of first grade students and is quite imprecise at best without further research. But once a teacher realizes which children have the spark and those that need the spark rekindled he should be in a better position to do more for each one, urging some on to greater achievements and getting others to respond in simpler ways at first.

This instrument should be only one of a number of different ideas needed to make a simultaneous direct approach in the improvement of the creative climate of the elementary classroom. Pertinent information about creativity and specific methods of implementing the current relevant ideas into practice are just as important as "waking the teacher up to a need." Administrators must be part of the "waking up." The general public, and especially the parents of children in school, should be approached with the positive benefits which accrue when creative opportunities are provided for children at school and at home.

Another purpose is to conduct research in an area related to art education; an area where the need for research is great, if not greater, than in any other educational area.

Basic Assumptions[56]

1. Creativity should be an important behavior in our society.
2. The fullest development of creativity in human beings is important. Creativity has vital significance right now for every person so that he can live a full meaningful life and is ready to meet and initiate the inevitable changes in life.
3. Creativity exists in all people to some degree both qualitatively and quantitatively.
4. Creativity in children should be greater and more evident than it is.
5. Creative behavior of people can be fostered, developed, and enhanced under both favorable and unfavorable conditions but the latter instance is considered less ideal. Likewise, creativity can be obstructed, blighted, or denied.
6. Creativity can be measured, to a certain degree, in adults as well as in children. The tests are yet inadequate and only measure a fraction of that which is possible.
7. The conditions for creativity are worthy of serious study and inquiry.
8. Creativity is not limited to the arts nor to some special aspect of living.

---

[56]Built around the Basic Assumptions presented by Laura Zirbes in her book Spurs to Creative Teaching (New York: G. P. Putnam's Sons, 1959), pp. 3-4.

9. Conformity is a tremendous force in our society.
10. Conformity can be minimized as creativity is maximized.
11. Conformity can be measured to a certain degree.
12. Conformity is a social construct also worthy of serious study and research.
13. Conformity exists in every thread in the fabric of our society.
14. Every individual in our society needs to maintain a flexible balance between the forces of creativity and the forces of conformity.

Basic Hypotheses

1. There will be a significant negative correlation between the total score of the Minnesota Tests of Creative Thinking (MTCT) and the Positive Shift (PS) score of the Test of Suggestibility (TS).
2. The part scores on the MTCT, the part scores of the Selection and Color In Test (S-CIT), the PS-TS score, and the Negative Shift (NS) of the TS will differentiate between the creative and the conforming groups as identified by the classroom teachers.
3. The Selection (SEL) part score of the S-CIT will have a significant positive correlation with the total score of the MTCT.
4. The Elaboration (ELAB) part score of the Picture Construction Task of the MTCT scored by Torrance's method will have a significant positive correlation with the same task and part score scored by the Smith method.
5. The S-CIT part scores will yield a significant positive correlation with the total score of the MTCT.
6. The part scores of the S-CIT will have a significant positive correlation with the corresponding part scores of the MTCT:

Flexibility (FLEX), Originality (ORIG), and Elaboration (ELAB).

7. There will be a significant positive correlation between the AM part scores and the PM part scores of the S-CIT in order to see how reliable the test was over the period of five days that it was used.

Theory

Rogers, in his chapter "Toward a Theory of Creativity" writes that the "mainspring of creativity" appears to be:

> . . . - man's tendency to actualize himself, to become his potentialities. By this I mean the directional trend which is evident in all organic and human life - the urge to expand, extend, develop, mature - the tendency to express and activate all the capacities of the organism, or the self . . . . that it exists in every individual and awaits only the proper conditions to be released and expressed. It is this tendency which is the primary motivation for creativity as the organism forms new relationships to the environment in its endeavor most fully to be itself.[57]

He likens the urge or need for creativity to be the "same tendency which we discover so deeply as the curative force in psychotherapy."[58]

Getzels and Jackson explore the findings on creative thinking in the theoretical and educational context. They deal in quite some detail with five theories which represent somewhat distinct and quite significant orientations.[59] In their own work they have an affinity for the writing of Schachtel who believes that the most fruitful approach to the riddle of creativity is through the framework of

---

[57]Rogers, op. cit., pp. 350-351.

[58]Ibid., p. 350.

[59]Jacob W. Getzels and Philip W. Jackson, Creativity and Intelligence (New York: John Wiley & Sons, Inc., 1962), p. 77.

perceptual theory rather than through psychoanalytic theory.[60]

Taylor and Holland briefly mention possible avenues researchers have taken, in a limited way, to attempt to develop a theory of creative performance. At that time there was no single, overall statement about the nature of creative behavior and related theory. They indicate that Stein and Heinze have approached this goal.[61]

Published in 1960, Creativity and the Individual by Stein and Heinze does not contain one organized theory of creativity, but reviews of books and articles in which the various authors present their own theories. Stein and Heinze have categorized these various theories together.[62] Two years later Stein discussed thinking and problem-solving and the several theories related to them: associationism, Gestalt theory, and psychoanalytic theory.[63]

Wonderly discussed the evaluation of the creative process theories in an article in 1964, including the psychoanalytic interpretation of Freud and others and the two outgrowths from Bergson's intuitionist interpretation.[64]

---

[60] Ibid., p. 112.

[61] Calvin W. Taylor and John Holland, "Predictors of Creative Performances," Creativity: Progress and Potential, op. cit., p. 45.

[62] Morris I. Stein and Shirley J. Heinze, Creativity and the Individual (Glencoe, Ill.: The Free Press, 1960), pp. 191-192.

[63] Morris I. Stein, Survey of the Psychological Literature in the Area of Creativity with a View Toward Needed Research, Cooperative Research Project No. E-3 (New York: Research for Human Relations, New York University, 1962), p. 42.

[64] Donald M. Wonderly, "The Evolution of Theories Concerning the Creative Process," The Gifted Child Quarterly, VIII (Spring, 1964), 27.

The break with the traditional psychoanalytic theory has been increasing. The perceptual theory, as interpreted by Schachtel, is composed of two basic modes of perceiving the world: the autocentric and the allocentric. The former is confined to early self-indulgent behavior, the latter to being open to all those persons around oneself.[65] Schachtel spells out what he means:

> The main motivation at the root of creative experience is man's need to relate to the world around him, a need which, as we have seen, becomes particularly strong and striking when urgent physical needs such as food and rest have been stilled.
>
> The quality of the encounter that leads to creative experience consists primarily in the openness during the encounter and in the repeated and varied approaches to the object, in the free and open play of attention, thought, feeling, perception, etc.[66]

Recently, MacKinnon acknowledged having overlooked Otto Rank in his own reviews of the theories of creativity. He had considered Freud's theory of primary and secondary process and his concept of sublimation, Kris's ideas about regression in the service of the ego which Torrance mentions occasionally, and Kubie's concern with the role of the preconscious processes in creative thought and action.[67] He goes on to recall vividly:

> . . . Jung's ideas on the reconciliation of the opposites: the dichotomies of conscious-unconscious, rational-irrational, sensation-intuition, thinking-feeling, extraversion-introversion, persona-anima, the individual versus the collective and the archetypal images and the processes of individuation. And, of course, I thought of Maslow's notion of the self-actualizing

---

[65]Ernest G. Schachtel, Metamorphous: On the Development of Affect, Perception, Attention, and Memory (New York: Basic Books, Inc., 1959), p. 241.

[66]Ibid.

[67]MacKinnon, op. cit., p. 273.

> person, of Roger's concept of the fully functioning individual, and of Allport's description of becoming. I was aware of the influence of all these ideas on my own thoughts as I planned and undertook my research on creativity. I even vaguely recalled Adler's concept of the creative instinct, but found not much help in that. But no once did I consciously think of Rank's theories.[68]

What MacKinnon found so significant about Rank's theory is his "conceptualization of three stages or phases in man's winning his own individuality and in realizing his own creative potential." Rank labeled these three stages: as the average or normal man, the conflicted or neurotic person, and as the artist or man of will and deed.[69]

MacKinnon presents the pertinent portions of Rank's theory and makes it central to his rationale for selecting the three groups of creative architects used in his well known and widely referred to study. Indeed, after reviewing a number of theories, some of which seem equally compelling, this approach of Rank, as presented by MacKinnon, seems to have some application in this present study with first grade boys and girls. This will need to be spelled out in future extensions of this work. The perceptual theory offers some possibilities also.

Then there are various models which have been created to represent theories. Among them is Guilford's Structure-Of-Intellect which has been widely pictured and described since it was first presented by him at the Paris International Conference of Factor Analysis in 1955.[70] Another is Mooney's conceptual model of the essential conditions for

---

[68] Ibid.

[69] Ibid., p. 274.

[70] Wayne S. Zimmerman, "Introduction and Overview," The Future Implications of Creativity Research, op. cit., p. 3.

the existence of man in his world.[71]

Definition of Terms

Creativity

Broadly speaking, creativity, for purposes of this study, is seen as a fresh independent response; unique to the creator; characterized by personal initiative, conscious searching, and flexibility; involving thinking and doing according to the need of the self in becoming realized and actualized; utilizing a variety of past and present experiences; and an openness for newness and divergent relationships.

Operationally narrowed, for purposes of this study, creativity is viewed as the particular behavior of children which causes them to select a Stimulus Line drawing on which they can then express their own ideas maximally.

Conformity

Broadly speaking, conformity is the degree of completely consistent behavior which coincides with group or social norms as perceived by the individual. It implies a rigid and closed mind, a dependent attitude, an avoidance of newness, a usual feeling of inferiority, rigidity, anxiety, and lack of basic self-confidence.

Defined operationally, conformity is the particular behavior of the first graders in this study which causes them to select a Coloring Book drawing on which they can only express a minimum of their own ideas.

---

[71]Ross L. Mooney, "A Conceptual Model for Integrating Four Approaches to the Identification of Creative Talent," A Source Book for Creative Thinking, ed. Sidney J. Parnes and Harold F. Harding (New York: Charles Scribner's Sons, 1962), pp. 76-78.

Suggestibility

Suggestibility, as defined by Coffin, usually implies:

> . . . some sort of "uncritical" acceptance of a proposition of course of action and the observer or experimenter usually notes or sets up a situation offering possibilities of "right" or "appropriate" responses and of "wrong" or "inappropriate" responses, together with a "proposition" to the subject that he make the "inappropriate" response. If he does so, the observer considers this "suggestion"; if he makes the "right" response, it is considered "non-suggestibility," or "thought" or "critical response."[72]

Of the Part Scores on the Selection and Color In Test - (S-CIT)

The abbreviated titles in parenthesis will be used often to designate the terms when referring to them in the remainder of this study.[73]

Selection - (SEL). - the number of points given to each type of drawing a student selected each morning and each afternoon for the five days. A low number was given for each Coloring Book Type drawing selected. A few more points were given for the Geometric Design Type and the Dot drawing. A larger number of points were given if a Stimulus Line Type of drawing was selected by the student. On Thursday, a Blank Sheet of Paper Type was offered in the morning and in the afternoon. This type received the highest number of possible points.

Color - (COL). - the number of basic crayon colors used by each student

---

[72]Thomas E. Coffin, "Some Conditions of Suggestion and Suggestibility," Psychological Monographs, ed. John F. Bushnell, LIII (1941), vii.

[73]The definitions of the part scores are given here so the reader willunderstand them as he reads along even though they might have been placed in Chapter IV where the test instruments are described.

on each drawing counting only the following: red, orange, yellow, green, blue, violet, black, white, gray, brown, gold, silver, and any mixtures.

Flexibility - (FLEX). - the difference between each of the SEL scores for the morning and afternoon for each of the five days. If the student kept selecting the same type of drawing time and time again he would receive a low FLEX score. If he selected a Stimulus Line drawing first, with a high SEL score, and then a Coloring Book drawing in the afternoon, with a low SEL score, his FLEX score for that day would be high since it would be the numerical difference between the AM and the PM SEL score.

Elaboration - (ELAB). - the number of lines, either in pencil or crayon, drawn by the child. A continuous line, with no breaks or definite changes of direction, would be counted as one line. If the line zigged and zagged and changed directions many times, each change of direction would constitute a different line and a higher score. Obvious scribble lines or areas were given an arbitrary ten points. Each separate color was counted as one point for ELAB even though it may have been repeated any number of times as long as another color separated the same color each time.

Originality - (ORIG). - the score based on the relative frequency of the name or the title of the drawing as told by the student and written down by the teacher. The titles were classified and each classification resulted in a frequency distribution. The least frequent responses received 15 points; the most frequent 5 points; and those in between were given 10 points. Not all drawings were titled nor did all

teachers write all responses down since the investigator's instructions called for titles on only the drawings of the latter three types: Geometric Design, Dot, and Stimulus Line.

Coverage - (COVER). - the number of square inches the drawing covered as drawn by the child. A clear plastic grid, marked off with one inch squares, was placed over each drawing and the number of squares was counted in which the child's own lines appeared. No score was given to the squares over lines already part of the original drawing. This constituted a handicap score and was subtracted from the COVER score.

Dispersion - (DISP). - the number of square inches around the perimeter of the four sides of the drawing that included lines drawn by the student. Again, any line originally on the drawing did not count even if the child went over the line again heavier or with a colored crayon. The line had to be originated by the child and to be in areas not covered by lines on the drawing originally.

Of the Part Scores on the Minnesota Tests of Creative Thinking - (MTCT)

Fluency - (FLU). - the number of separate responses to each task given by the student which are non-repetitious.

Flexibility - (FLEX). - the number of shifts in the flow of a student's responses between a variety of ideas on each task.

Originality - (ORIG). - the weighted score given to the student's response of name or title according to the frequencies of their occurrence among the particular population tested thus far.

Elaboration - (ELAB). - the developing and working through of an idea by the student with points given for things added to the drawings which are not repeated. It would include added parts, added colors, lines, shapes, forms, shading, and textures.

Of the Part Scores on the Test of Suggestibility - (TS)

Positive Shift - (PS). - the number of responses on the second administration of the TS which were influenced by the investigator presenting a contrived shift agent, which changed, causing the student to shift his response in the direction of the false norm of the shift agent. The shift agents, in the order of their presentation, were: (1) other first grade children in Lansing, (2) other fourth grade children in Lansing, and (3) other Art Teachers in Lansing.

Negative Shift - (NS). - the number of responses on the second administration of the TS which were influenced by the investigator presenting the responses of the three contrived shift agents, which changed, in order, causing the student to shift his response away from the direction of the false norm of the shift agent. The shift agents, in the order of their presentation, were given above.

Methods

During May 1965, a sampling of 309 first grade boys and girls, from twelve classrooms in six schools in the Lansing School District, selected on the basis of ethnic background and the socio-economic area in which they lived, were administered three paper and pencil tests: (1) Torrance's MTCT, an experimental test, which is designed to measure some of the creative abilities of a wide age range of people; (2) the

S-CIT which attempted to measure a degree of creative behavior AND a degree of conforming behavior, and (3) the TS which attempted to measure a degree of conforming behavior. The latter two instruments were devised by the investigator for the purpose of developing them in this study for possible use in other experimental studies as well as for use by elementary classroom teachers.

The S-CIT was administered by the twelve individual teachers over a period of one week, from Monday through Friday, using materials supplied by the investigator. Each child selected a drawing that he could draw on and color in from a set of six drawings of three different types. This was done each morning and each afternoon for the five days. Each session lasted about twenty-five minutes. At the end of the week each child had selected, drawn on, and colored in at least ten drawings on which he had spent about 250 minutes of activity.

The MTCT and the TS were administered by the investigator either one or two weeks following the completion of the S-CIT, during part of a morning or an afternoon of the school day.

The tests were scored during the following summer and through the next year. The MTCT produced four part scores: FLU, FLEX, ORIG, and ELAB. The S-CIT yielded seven part scores: SEL, COL, FLEX, ELAB, ORIG, COVER, and DISP. The TS had several part scores but only the PS and NS scores were used.

Limitations

Whatever generalizations are attempted are obviously limited, to the specific students studied and to the specific circumstances under which the investigator worked.

The sample contained 309 students from a possible 2500 first graders. Twelve classrooms have been included out of a possible ninety-one, not including another fourteen combination first and second grade classrooms. Six schools have been used out of a possible forty-two in Lansing. The sample was a selected sample and not a random sample. The total first grade population was used at five of the six schools. At the sixth school two out of the five first grade classrooms were used. These two selected classes met in separate small buildings, referred to as primary units, which could be remodeled into homes at some future date. They were selected because both teachers liked the primary units very much, even though they were several blocks from the main school, and because the two classes were small in numbers. Of course, selecting these two particular classes compounded the number of variables already present in this study.

All of the test instruments were scored by the investigator. No one else was called upon to score a random sample of the tests in order to arrive at inter-scorer reliability. Scoring is time consuming and often requires rather specific interpretations which may be hard to standardize due to the variability of the children's responses. Ease of scoring needs to be developed but this is not usually possible until the various scores originally employed are checked for validity and reliability.

The S-CIT was administered by the twelve teachers over a period of five days from Monday through Friday. On Wednesday afternoon, of the test week, all Lansing public school children were sent home because of a tornado threat. Rather than leave a gap, even though it might skew the results, the investigator asked the twelve teachers to let their

children pick from the Wednesday set of drawings on the following Monday.

Teachers were not visited during the administration of the S-CIT in order to observe the standardization of administration of the test. Several substitute teachers were involved when the regular teacher was absent, usually for a day.

Teachers were asked to rate their students as "Most Creative" and "Most Conforming." Some teachers nominated only two or three children as most creative or as most conforming, while other teachers tried to nominate and rank the whole class as either conforming or creative. They might have been asked to nominate and rank the ten most creative and the ten most conforming children instead of leaving it open.

Overview of the Thesis

In Chapter II a short review is given of the work of Repucci, Yamamoto, and Taylor as they categorized the many definitions of creativity. The four broad approaches used in the study of creativity are described by Mooney and some background is given related to the studies on creativity as well as the increased interest and diversity in writing and research. The different approaches of Guilford and Torrance are mentioned. The area of art education has had a vital interest, in its unique position, in providing opportunities for children and youth to be creative in working in the arts. Several studies of creativity and intelligence, as reviewed by various authors, are mentioned. A brief resume of the origination of Torrance's MTCT follows. Relevant studies by Townsend, Freyberger, Heilman, Bencetic, Johnson, and Neff are presented. Ideas from Lowenfeld and Brittain, D'Amico, Zirbes, the Michigan Art Education Association, and Torrance, concerning coloring books, are

included to round out the information presented in Chapter II.

Chapter III concerns the area of conformity. A short section on the definitions of conformity and of suggestibility is followed by a discussion of the relationship of conformity and suggestibility. A number of characteristics of conformity are described from Crutchfield's work. A review of the literature by Zajonc is cited for a number of characteristics of conforming behavior. After several pertinent studies are reviewed briefly, comments about conformity in the contemporary society are given as reported by a number of significant authors and then ideas are presented concerning the relationship of creativity and conformity.

Chapter IV is devoted to a description of the conduct of this study from its beginning to its design using the three tests. The section concerned with the administration of the three tests and the section on instrumentation, which gives the rationale for using the different types of drawings, are included in the Appendix because of their supportive role to this Chapter.

Information about the sample is outlined. The statistical null hypotheses are stated as they were used to set up the data for the computer. Space is given to the data collecting devices and the data processing used. An important section is included on the validity and reliability of tests of this type and of the instruments used in this study - particularly the MTCT. A discussion of the appropriateness of the statistics used in the study is presented.

Only the presentation of the findings are included in Chapter V. The hypotheses are presented with the particular findings of each.

Chapter VI concerns the summary and the conclusions, along with

a discussion of the findings and of the implications felt to be appropriate for education. Recommendations are listed for future research, particularly related to this study. In addition, recommendations to schools, parents, and the community are suggested for working on the important idea of fostering and enhancing creativity for all persons.

CHAPTER II

RELATED LITERATURE ON CREATIVITY

Introduction

Only a relatively small amount of the total literature which has accumulated on creativity, mostly in the past six years, is reviewed here. There are scores of definitions of creativity, many descriptions of the creative process, and a great number of personality characteristics explored. Taylor lists over eighty attributes of the creative person in a review of the intellectual, the motivational, and the personality traits of the creative person.[1] There are so many definitions of creativity that it is impossible to describe them all. Repucci, Yamamoto, and Taylor have evolved somewhat systematic classifications of these definitions.

Categories of Definitions of Creativity

Repucci indicates that much effort has been spent in trying to understand the term "creativity." He noted some fifty or sixty definitions which he classified into six major classes. His first class is labeled "Gestalt" or "perception" type where the greater emphasis is upon the "recombination of ideas or the restructuring of a 'Gestalt.'"

---

[1]Calvin W. Taylor, "Research Findings on Creative Characteristics," Creativity and Art Education, ed. W. Lambert Brittain (Washington, D. C.: National Art Education Association, 1963), pp. 30-33.

The second group indicates an "end product" or "innovation." A third class emphasizes self-expression with the main idea that one has a need to express oneself in a unique, individual manner. The fourth group has a "psychoanalytic" or "dynamic" orientation with creativity thought of as an interacting hierarchy of the id, ego, and superego. The fifth class, referred to as "solution thinking," emphasizes the thinking process instead of the actual solution of the problem. The last group is beyond characterization so Repucci called it "varia."[2]

Yamamoto writes about the "holistic approaches - non-positive and positive" and the "elementaristic approaches - non-positive and positive." In his Epilogue, Yamamoto sums up the different approaches. Some people believe that analytical studies of creativity are really not possible without obliterating the essence of the creative act. These people are "non-positivistic holists." Others believe that empirical investigation is possible and argue against reductionistic approaches. They argue for the need to understand a man's creative behavior in its whole. These people are the "positivistic holists." Another group vehemently declares its belief in the total creative potential of man and asks others to follow specific steps to foster creativity, arguing on the basis of intuitive judgment and happenstance observation. He classifies Torrance in this group. The fourth group includes those who contend that reductionistic empiricism is the only way to understand creative behavior which Yamamoto termed "positivistic

---

[2]L. C. Repucci, "Definitions and Criteria of Creativity," (unpublished manuscript. Midland, Michigan: The Dow Chemical Company, n.d.), pp. 1-2. (Mimeographed.)

elementarism." Here he places Guilford.[3] He goes on to explain that:

> Each group has its unique assumptions, adopts its particular definitions, and employs its preferred techniques of inquiry. Each group has its own language, its peculiar way of speaking about the problem which is not readily understood by other groups of workers. Obviously, these divergencies in frame of reference and in form of communication add to the difficulty of integrating man's knowledge about his uniquely human behavior, namely, creativity.[4]

Yamamoto is quick to add that doing anything to stratify concepts or ways of working would be counter to the free and rich cross-fertilization of ideas which are vitally needed for the furtherance of knowledge in this multifarious area of study.[5]

Taylor's content analysis of some 250 definitions included the simple to the complex, from children's spontaneous finger paintings to Einstein's formulation of $E = Mc^2$. He places the many definitions into five "levels" or "clusters." The first he identified as "expressive creativity" because of the idea of spontaneousness shown by preschool children "before social pressures substitute conformity patterns for individual spontaneity, a loss which may be sought for again throughout life but which few ever regain again." A second application Taylor called "productive creativity." Most of the definitions fall here. The emphasis is on producing some idea or object. A third cluster is called "inventive creativity" where efficiency and ingenuity with materials and ideas at hand are emphasized. Relatively few people are

---

[3]Kaoru Yamamoto, "Research Frontier: 'Creativity' - A Blind Man's Report on the Elephant," Journal of Counseling Psychology, XII (1965), 428-433.

[4]Ibid., p. 432.

[5]Ibid.

creative at this level where they are capable of producing or doing something absolutely new. The person does not produce any basically new principle however. The fourth cluster Taylor listed as "innovative creativity," for the reason that a substantial change is made in a principle which is already known and requires a copious amount of cognitive flexibility. The last grouping of definitions at the highest level of creating Taylor calls "emergentive creativity" where singular men of rare talent radically transform old sciences and arts or develop new ones. Einstein, Darwin, Freud, Marx, Picasso, and Wright are individuals who became "nullists in their field of science or art" as Taylor calls them.[6]

Four Basic Approaches to the Study of Creativity

Creativity has been variously approached, as Mooney and others indicate when they discuss the different orientations to the problem. Mooney describes four aspects: (1) the product created, (2) the process of creating, (3) the person of the creator, and (4) the environment in which the creation comes about. Just as Yamamoto discussed his orientation to the various approaches, Mooney says that each affords a different rendering of the identification of creative talent; each criterion differs and each has an appeal to a different group of researchers. Mooney informs us that the four approaches, in addition to having various levels of sophistication which make them different, also have an antagonistic tendency toward one another. He wonders if an overall perspective of the four approaches can be maintained which can serve

---

[6]Irving A. Taylor, "Creativity Research for Future Creativity," Future Implications of Creativity Research, op. cit., pp. 56-61.

and support each other rather than be a threat to each other. In order to do this he calls for the overall perspective which is "large enough to encompass all four [approaches] within one system and deep enough to establish the interlocking function of all four." With this goal in mind Mooney gradually evolved a model which integrated the four approaches by showing them to be aspects of one overall perspective "that nature is put together according to order." If we find a germinal order pertaining to the forming of life structures many social and biological problems could be thought through successfully.[7]

Background of Studies on Creativity

Evidence of interest in the area of creativity existed before the turn of the twentieth century. It has only been within the past sixteen years, however, that interest in the area has really increased. Hutchinson, writing in 1931, reported only two articles were referenced in the Psychological Abstracts for the year 1930 and those were not significant.[8] Guilford, in giving his 1950 presidential address to the gathered psychologists at the annual meeting of the American Psychological Association, referred to Hutchinson's review, as well as to one by Markey.[9]

Markey reviewed the field of imagination in 1934 and, in summation, wrote:

---

[7]Mooney, op. cit., pp. 74-76.

[8]Eliot Dole Hutchinson, "Material for the Study of Creative Thinking," Psychological Bulletin, XXVIII (1931), 392.

[9]J. P. Guilford, "Creativity," American Psychologist, V (1950), 445.

> Conceptions of the nature of imagination vary from definition as the simple reproduction and reconstruction of sense material by the use of imagery to views of creativity as a mysterious force or instinct which transcends description. Cognitive and quantitative aspects on the one hand are contrasted to affective and qualitative theories on the other. In education, formal training programs, as opposed to creative expression programs, illustrate this difference. Research has not been sufficiently varied or extensive to determine conclusively the validity of either type of approach in nurturing the imagination. Theory, practices, and experimental data on imagination are notably uncoordinated.[10]

Guilford caused the battle flags to be raised among the many psychologists attending the 1950 annual meeting as he deplored the gross neglect of creativity. The lack of studies is so obvious, he said, that no proof is necessary. He indicated he was astounded when he went to look for himself, at that time, and found nearly 121,000 articles listed in the Psychological Abstracts, over the past twenty-three years, with only 186 definitely related to the area of creativity.[11]

Evidence of an Increase in Writing and Research

In reviewing the Dissertation Abstracts, from 1952 until May 1966, a listing was made of the doctoral dissertations with the word "creative" or related concept included in the title. This search revealed approximately 99 EdD's and 127 PhD's granted to scholars for specific work related to the subject of creativity in this fifteen year period. Seventy-five per cent of these doctorates have been completed in the past six years. TABLE 2-1 shows the particular ages or grades used by the many scholars in their studies. Some studies reported did

---

[10]Frances V. Markey, "Imagination," Psychological Bulletin, XXXII (1935), 233.

[11]Guilford, op. cit., p. 445.

TABLE 2-1

GRADE OR AGE BREAKDOWN OF DOCTORAL DISSERTATIONS REPORTED IN DISSERTATION ABSTRACTS FROM 1952 TO MAY 1966

Grade or Age	Number of Dissertations
Pre-school	3
Kindergarten	1
Retarded	1
Elementary - no grade listed	5
1st	5
2nd	12
3rd	13
4th	26
5th	27
6th	34
Junior High	1
7th	16
8th	18
High School	5
9th	11
10th	5
11th	5
12th	10
College	33
Community College	1
Freshman	3
Sophomores	4
Juniors	4
Seniors	7
Graduate Students	3
Adults	33
Total	286[12]

not happen to indicate the grade level, and only five studies out of approximately 226 specifically involved first grade students.

Of the approximately 226 dissertations, about twenty-eight of them were concerned with the original art work of children or adults to

---

[12]The total number of dissertations adds up to more than 226 because many of the studies used students at more than one grade or age level.

see if they were creative. Eleven were written about the identification of the creative person either through teacher nominations or the ratings by the job supervisor, in the case of research scientists particularly, or by a peer group. Of particular significance is the fact that approximately sixty-three dissertations used Torrance's Minnesota Tests of Creative Thinking, or parts thereof, as a measuring device; approximately sixty used all or parts, usually parts, of Guilford's battery of creative thinking tests; and another twenty-three reported using the measures used by Getzels and Jackson. Approximately eighty-three utilized other measuring devices developed by others or for themselves.[13]

Taylor indicates that useful research has been done on many different aspects of creativity, at all age and grade levels and in various research installations, professional activities, and industry. Yet by 1964, according to Taylor, the increase in recent literature, both basic and applied, has not helped very much since relatively little is yet known. Markey reported this in 1934 concerning the study of imagination. Much more basic research needs to be supported.[14] Yet support, particularly financial, according to Torrance, has been marginal except in the last few years when it has increased somewhat.[15]

The Work of Guilford and Torrance

Guilford and Torrance are undoubtedly the foremost individuals

---

[13]Again the total is misleading because some scholars used several tests in their studies.

[14]Calvin W. Taylor, "Introduction," Creativity: Progress and Potential, op. cit., p. 9.

[15]E. Paul Torrance, "Education and Creativity," Creativity: Progress and Potential, op. cit., p. 66.

in developing tests of creative thinking. Yamamoto classfies Torrance as a "non-positivistic elementarian" because of Torrance's six guides for enhancing creativity in children which "remain quite general and grossly outlined."[16] Yamamoto places Guilford in the "positivistic elementarian" group since Guilford is a "correlational psychologist" whose concern is with the variation among organisms or individual differences.[17]

Guilford and his associates are doing intensive work on their Structure-Of-Intellect model. At the Fifth Utah Creativity Research Conference in 1962 Guilford said that in recent years their major emphasis had been to see if factors predicted by the Structure-Of-Intellect model could be discriminated by factor analysis. Each test they devise is on the basis of unique qualifications that represent each empty cube of the model. Extending the tests to both sexes at younger levels is in prospect.[18]

The Structure-Of-Intellect appears to be a very useful model. Thurstone is encouraged that it may be like the periodic table of the elements which has served physical scientists so long. Unknown abilities could be predicted and then searched for in order to fill in the gaps in the Structure.[19] Yet not all psychologists and research workers, interested in and working in the area of creativity, are necessarily trying to fit their approaches and what they have found from their studies into

---

[16]Yamamoto, op. cit., p. 431.

[17]Ibid.

[18]J. P. Guilford, "Progress in the Discovery of Intellectual Factors," Widening Horizons in Creativity, op. cit., p. 263.

[19]Thelma Gwinn Thurstone, "Commentaries," Productive Thinking in Education, op. cit., p. 37.

the Structure as such. Guilford, for example, asked Mednick to explain how units, one of the six products in the Structure, could be explained within the associative principle which Mednick uses in his Remote Associates Test - RAT.[20]

According to Guilford, the creative abilities seem to be localized in the divergent-thinking category and somewhat in the transformation category. With this in mind, Guilford asks if educators have been emphasizing these skills enough. A better balance is needed in the divergent-thinking areas when compared with teaching in convergent thinking and in critical thinking or evaluation.[21]

Goldman, writing for a British audience, explains that "divergent" thinking means thinking which produces multivariat responses, not the expected or conformist answers required by most standardized ability tests which usually demand "convergent" thinking. Guilford's evaluative thinking indicates sensitivity to problems unnoticed by less creative persons.[22] Goldman goes on to compare Guilford and Torrance:

> One major difference between Guilford and Torrance is that whereas each of Guilford's tests was designed to identify or represent a single factor, Torrance soon initiated more complex tests each of which could be scored on several factors. Torrance has emphasized that it is the processes of creative thinking which demand urgent attention more than the products which have so far claimed major consideration.[23]

---

[20]Guilford, op. cit., p. 263.

[21]J. P. Guilford, "Three Faces of Intellect," American Psychologist, XIV (August, 1959), 478.

[22]R. J. Goldman, "The Minnesota Tests of Creative Thinking," Educational Research, VII (November, 1964), 4.

[23]Ibid.

According to Mackler and Shontz, different approaches produce significant differences in measurements. They indicate that Torrance's approach involves "high intratask consistencies among individuals, since it is the person, rather than a set of task-independent factors, that is responsible for the final test performance. Intertask consistency is not essential, since creative persons are not necessarily expected to be equally creative in all situations."[24]

Torrance is oriented toward discovering creative people and studying the characteristics of their behavior. He feels that it is too early to define a specific group of factors. While Torrance was not in agreement with Guilford's approach of factor analysis, he did start by using some of Guilford's tests.

Others Working in This Area

The approach used by the investigator in this study in the development of the S-CIT relates to the approach of Torrance since seven part scores are possible for each student given the S-CIT. The purpose here is not to determine that one approach or any combinations thereof would be more productive than any other even though the approach taken by Torrance is favored. Understandably, any approach to researching creative abilities is a very difficult and involved task. The elusiveness of the various creative abilities is legend. Some researchers have been more successful than others in their findings[25] but this does not mean

---

[24]Bernard Mackler and Franklin C. Shontz, "Characteristics of Responses to Tests of Creativity," (unpublished manuscript, Teachers College, Columbia University: Institute of Urban Studies, 1964), p. 3. (Mimeographed.)

[25]Taylor and Holland, op. cit., pp. 34-39.

that everyone should give up his own particular tack and follow the most productive approach. Diversity of approach, while confusing and seemingly uncoordinated, may, in the long run, lead to more data which is meaningful and can be pieced together with other data to fill out the picture more completely, and perhaps, as Guilford would wish, ultimately to validate the total Structure-Of-Intellect.

To indicate another approach to creativity, some researchers even use serendipity in their efforts to find new and sometimes accidental relationships of two unrelated ideas. Diversity of effort is consistent with the general meaning of divergency within creativity.[26]

Trezise discusses the various approaches, including those which are concerned with the multi-dimensional approach of studying the creative person such as is done at the Institute of Personality Assessment and Research (IPAR) at the University of California at Berkeley where MacKinnon, Barron, Gough, and Crutchfield have done extensive work. Trezise used the total "life style" of the person as his approach to the study of the creative adolescent.[27]

In Burkhart's Spontaneous and Deliberate Ways of Learning, two useful constructs are delineated, as the title of the book indicates, for looking at the process of creativity with the major emphasis on pupil's creative growth as shown by their progress in their own art.[28]

---

[26]Sarnoff A. Mednick and Martha T. Mednick, "An Associative Interpretation of the Creative Process," Widening Horizons in Creativity, op. cit., p. 55.

[27]Trezise, op. cit., pp. 23-24.

[28]Robert C. Burkhart, Spontaneous and Deliberate Ways of Learning (Scranton, Pa.: International Textbook Company, 1962), p. 7.

The influence of Creativity and Intelligence by Getzels and Jackson has been great but controversial. Getzels and Jackson, as well as Torrance, have used tests of creativity in their studies originally devised by Guilford.

Thus far, we have largely considered the work of researchers who have had a psychological orientation, with Guilford as perhaps the most influential. Torrance may have written more than Guilford in the area of creativity, which would include his writing on the gifted student. But both men are prolific writers and their works appear in numerous books and journals.

We need to remember constantly that in whatever directions researchers are going they are usually concerned with providing opportunities for creativity for all people, young and old. We must not lose sight of the fact that the children and adults who are studied are not just numbers, or protocols in a book, or statistics - they are unique human beings.

The Role of Art Education

Art education has contributed to the overall development of creativity. Eisner indicates that "art education has long been concerned with the development of human creativity. Whitford, Lowenfeld, and Read are but a few who have made pioneering efforts to understand creative behavior in order to develop it in children."[29] Art education, for most of the past twenty years, has been oriented toward the development of creativity in children but has seemingly ignored the systematic study

---

[29]Elliot W. Eisner, "A Typology of Creativity in the Visual Arts," Studies in Art Education, IV (Fall, 1962), 11.

and research on creativity up until perhaps ten years ago.

Support for the relatively important position of art education has come from Taylor who was instrumental in the organization, implementation, and reporting of the five different University of Utah Conferences which were mainly concerned with the scientific study of creativity, not only in the scientific field, but in other areas of study and of vocational interest. Taylor concluded an article with this emphasis on the art education approach:

> Art education may be more valuable in this age of science than is generally realized. By the approach of education through art, as stated by Lowenfeld, perhaps a better understanding of the nature and importance of creativity can be transmitted to more of our students, even though it may not all transfer to the sciences or to other fields of human endeavor.[30]

There are some researchers who do feel that creativity is a general and universal trait and perhaps what one person does in his creating, whether he works in a scientific laboratory, or in designing a large building complex, or in sculpting a block of marble really is using many of the same general creative abilities as well as some distinct abilities within the creativity hierarchy unique to the particular task. It seems reasonable to assume that the scientist, the architect, the sculptor, and all other people, not so artistically endowed, can live their respective lives just as creatively as anyone else. Taylor goes on to say that a goal throughout the whole educational program in science, for example, could be the strong emphasis on the development of creativity in each and every student just as Melby maintains should be done with every child in every school in every part of this country.

---

[30]Calvin W. Taylor, "Research Findings on Creative Characteristics," Creativity and Education, op. cit., p. 34.

Taylor's impression of art education is that it has "always had the encouragement and development of creativity as its central goal or at least one of its most central goals."[31]

Studies of Creativity and Intelligence

In reviewing the literature to find reports of research designed specifically to test and measure creativity, it became evident that relatively few studies were concerned with younger elementary school children. In addition, most of the early studies were concerned with the measurement and the relationship of creativity or imagination and intelligence. No test was found which attempted to assess both creativity and conformity at the same time.

Writing in 1957, Czurles explained that about 90 years ago Fechner did an experiment with a set of proportions and forms which produced pleasing reactions on the senses of the subjects. From that time until the 1920's the historical sequence of major research in art was limited. According to Czurles, extensive research, designed to measure art ability and achievement with a variety of scales and tests, began in earnest in the 1920's. These tests included the Meier-Seashore, the McAdory Tests, and F. L. Goodenough's measurement of intelligence through drawings, all of which were quite influential.[32]

Getzels and Jackson review the early researchers but, again, they mention people who were doing testing, using various measures, to see what relationship existed between creativity or imagination and

---

[31] Ibid.

[32] Stanley A. Czurles, "Milestones in Research for Art Education," Research in Art Education; Art Education Bulletin, XIV, (May, 1957), 13.

intelligence. They mention Dearborn who used inkblots to study the imaginative responses of students and faculty at Harvard in 1898. After reviewing a number of the works of other researchers, the authors conclude their review by commenting that "the casual observation by Dearborn in 1898 had become a commonplace research finding - giftedness in intelligence and giftedness in creativity were by no means synonymous." They conclude their brief summary of research in the area of creativity and intelligence with the same concern Guilford expressed in 1950 that "we must look well beyond the boundaries of the IQ if we are to fathom the domain of creativity."[33]

Torrance, in Guiding Creative Talent, refers to a number of different tests of creativity, and of imagination, as well as citing a number of studies concerned with creativity. There is some overlap with the studies reported by Getzels and Jackson. Torrance has grouped his review of the early research studies according to grade or age level: the early childhood years, the elementary school years, the high school years, and higher education. Again, the concern in these studies is with the relationship of creativity or imagination and intelligence.[34]

Origination of the Minnesota Tests of Creative Thinking[35]

In Rewarding Creative Behavior, Torrance writes that Som Nath Ghei, Kenneth DeYoung and he started at the same time, early in 1958, to review the measures of creative thinking that had been devised up to

---

[33]Getzels and Jackson, op. cit., pp. 5-6.

[34]Torrance, Guiding Creative Talent, op. cit., pp. 23-38.

[35]Torrance, Rewarding Creative Behavior (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1965), pp. 32-40.

that point and to read about the lives and experiences of recognized creative persons through autobiographies, biographies, and other writings about them. About a year and a half later the first tests were developed. The authors wanted to devise an instrument which "could be administered from kindergarten through graduate school - tasks which would challenge the graduate student and have a high ceiling and at the same time be easy enough to elicit creative responses from the kindergartener." One can imagine the challenge to these authors, particularly since none of the three had had experiences in devising and using tests of creative thinking. They decided to adapt some of Guilford's materials since something was already known about them and they "had a sound theoretical rationale."

The first battery had only six tasks with Forms A and B containing parallel sets of tasks to make them equivalent for a pre-test and a post-test situation. The six tasks included: Unusual Uses of Tin Cans, Impossibilities, Consequences, Situations, Common Problems, and Improvements.

Torrance goes on to explain that they were encouraged with the response to these tasks at the fifth-grade level and up. They found the tests were able to differentiate those chosen by peers and teachers as having a "lot of good ideas" and other criteria of creative behavior from those who were not nominated. This indicated some evidence of validity. They also found out that the youngsters who scored highest in the creative thinking abilities differed in "meaningful ways from their classmates of the same sex and equal mental age as measured by three different intelligence tests." When the authors compared the intelligent children with their equally intelligent, but highly creative,

classmates the works of the latter were "characterized by humor, playfulness, relative lack of rigidity, and relaxation." Things produced during regular activities were rated as most original and more "off the beaten track." They also were known by their teachers and classmates as "having wild or silly ideas, especially the boys." Another fact appeared which has been shown by others, in experiments, that statistically positive relationships exist between the creativity measures and the standardized measures of achievement even when mental age has been cancelled out. Getzels and Jackson have shown that highly creative children, whose intelligence is not as high as the highly intelligent children, still do as well on the standardized tests of achievement as the highly intelligent.[36]

The next test of imagination, Form C, came about because the two parts of the first test, Forms A and B, did not obtain adequate responses from children in grades four and lower. The authors introduced the idea of having fun, in line with the theoretical orientation of "regression in the service of the ego." This involved asking the students to think of ideas for making each toy object, used in the test, better so that it would be more "fun to play with." A number of scores were obtained from this product improvement test some of which later proved to be too time consuming to score and were dropped.

At about the same time a need for a figural, or non-verbal, test prompted the authors to develop several such tests. Of the two considered, one was dropped while the Circles Test and its alternate, the Squares Test, have been used since. The figural tests could be given to groups of children, rather than by the time consuming individual

---

[36]Getzels and Jackson, op. cit., p. 25.

administration method. They were considered important because they would measure the creative thinking of a child whose verbal development was slow or delayed and would generally complement the child's total creative thinking abilities. Other figural tests were developed along the way including the Picture Construction Task and the Incomplete Figures Task. The former was developed by Torrance while the latter was adapted from the Drawing-Completion Test developed by Kate Franck and used by Barron and others in studies of creativity.

The several non-verbal tasks referred to above are discussed in the Appendix of Guiding Creative Talent and include pictures of the test instruments.[37] Goldman's article, referred to above, presents a good overall description of the MTCT.

Pertinent Studies of Creativity at the Lower Elementary Level

Of particular interest for this review of the literature are six studies done with elementary school children, including first graders. The investigator found no study that was quite like the present study although portions of other studies related to parts of this study.

Townsend[38] studied the ability of 287 first, second, and third grade school children in a New York school to copy seventeen geometric forms. He also gave a form perception measurement test, a test of tapping to determine the motor abilities along with tests of horizontal and vertical movements of the preferred hand. Two other measures were

---

[37]Torrance, Guiding Creative Talent, op. cit., pp. 214-222.

[38]Edward Arthur Townsend, "A Study of Copying Ability in Children," (unpublished Ph.D. dissertation, Columbia University, 1950), Dissertation Abstracts, X (1950), 56-57.

used, the mental age from the Kuhlman-Anderson, and the chronological age from confirmed birthdates. All of these measured variables were studied in relation to copying. Townsend found that:

> Copying, whether considered from the viewpoint of the four scoring criteria, copy by copy, or subject by subject, did not vary regularly with chronological or mental age, with form perception, or with motor abilities. Teachers of children of these ages will find some copying errors in some children. Fewer errors are made by older children but not all adults can copy with preciseness. Although teachers may specifically direct attention to the components and form of the copies variable errors will still be made. Further, tests of mental age for these children which rely upon copying may or may not yield reliable estimates of mental age since copying is a variable.

At first glance, an art educator would look aghast at the process of having any child copy geometric forms. At second glance, one might wonder why it was important that one should be "concerned with the nature of the functions involved in copying designs as this skill develops in children during the first three years of school" as Townsend so states. However, if one wants to know whether children will be able to form their letters and numbers as they learn to print, either by copying the letters from a workbook or from the blackboard, then one would know something about when this can be expected to be done more efficiently. If this is the case, why not use actual letters rather than designs? For the purposes of producing art, copying is definitely frowned upon. Nevertheless, one may argue that drawing a still life is copying. It is if the requirement is a very factual representation. But if the still life is a stimulus for the person to create his own interpretation, particularly of a spontaneous nature as Burkhart would encourage, then it is not copying but creating a very personal statement. The idea of the child forming his letters by copying them from the board goes back

to the delineation of imitation which is necessary for children to learn certain prescribed ways for facilitating meaningful communication. Learning to form letters is not art for the young child, but lettering can be an art for the older students and artists who have learned the basic rudiments of written communication.

In 1951, Freyberger[39] studied the differences in the creative drawings of children of varying ethnic and socio-economic backgrounds in Pennsylvania based on samplings of grades one through six. She developed an object checklist containing 110 items to use in rating nearly 1600 creative spontaneous type drawings which were collected from selected areas in that state. She noted the similarities as well as the differences in the various groups investigated. She states that "there were almost three times as many similarities found among the socio-economic, ethnic, and grade groups as differences in these same groups." In the lengthy list of similarities were some which concern first and second grade students.[40]

Freyberger's findings indicate that "the real differences that were found were attributed in all instances to the grade levels and not the ethnic or socio-economic groups. The majority of these differences occurred with the extremes of the grade level, either first or sixth grades."

---

[39]Ruth Freyberger, "Differences in the Creative Drawings of Children of Varying Ethnic and Socio-Economic Backgrounds in Pennsylvania Based on Samplings of Grades One Through Six," (unpublished Ed.D. dissertation, Pennsylvania State College, 1951), Abstracts of Doctoral Dissertations. . . Pennsylvania State College. . . , XIV (1951), 265-266.

[40]See Chapter VI for "Recommendations for Future Research" since space does not permit exploration of these findings in this study.

The significant findings of the study indicate that there were a great many more similarities than differences between the socio-economic and ethnic areas. These similarities did not appear until after the different grade levels had been compared.

The present study was not directly concerned with counting the incidence of many of the similarities and differences given in Freyberger's study but many of her pertinent findings could be compared with the various drawings which were made by the first graders in this study. This is an area for future study.

Heilman[41] conducted an experimental study of workbook influence on the creative drawings of second grade children. Because of its pertinence, even though the study involved only second grade children, it is reviewed here. Some educators feel that workbooks, as they are sometimes used, without definite goals of supplemental reading in mind for the child, or of checking them over, have very little value for the child. The author writes about a vital issue considered in this present study. He indicates that:

> Workbooks, it seems, reflect quantitative interest in subject matter with virtually no concern for creative development. The use of workbooks in the primary grades become significantly important when considering their almost universal adoption in American classrooms.
>
> The art educator becomes particularly concerned because the authors of workbooks tend to refute educative processes that promote total growth. Workbook activities reflect: imitative procedures, dependent thinking and regimentation that opposes self-confidence in activities.

---

[41]Horace Heilman, "An Experimental Study of Workbook Influence on the Creative Drawings of Second Grade Children," (unpublished Ed.D. dissertation, Pennsylvania State College, 1954) Abstracts of Doctoral Dissertations . . . Pennsylvania State College . . . , XVII (1954), 319-323.

Heilman planned to "determine what conflict in the creative thinking of the pupil is established by exposure to workbooks." He collected 384 drawings from sixty-four second graders from three schools from a sequence of workbook exposures and creative drawing sessions with and without motivation. After treating the data statistically, the author found that the "study population has established positive evidence that workbooks qualitatively influence the total structuring of their creative drawings. There was interference with the characteristics of the total growth pattern as promoted by creative drawings." He concluded that:

> There was no discoverable evidence in the examination of the literature on workbooks that the drawing and/or coloring activities were of any direct influence on growth in reading or arithmetic. Since, as previously stated, the statistical data reveal that the general growth pattern through creative work was seriously influenced by exposure to workbooks, this investigator cannot establish any justification for the inclusion in workbooks those activities that interfere with the total growth of the child.

Using the coloring book idea as part of the S-CIT, it was hypothesized that children who would select coloring book type drawings to draw on and color in would be "imitative," "dependent," and "regimented" as Heilman has indicated in discussing workbooks. This appears to be another way to look at conforming behavior in children.

In 1959 Bencetic[42] made a study "to contribute information on the preferences of elementary school children for paintings of various styles and categories which would prove helpful in planning future picture-study units and curricula to develop aesthetic appreciation in

---

[42]Stephen Bencetic, "Picture Preferences of Elementary Children," (unpublished Ed.D. dissertation, Pennsylvania State University, 1959), Dissertation Abstracts, XX (February, 1960), 3117.

children." He used forty-one reproductions of paintings, post-card sized, of different styles from Renaissance Realism to Abstract Expressionism and three examples of children's paintings. He showed the pictures to 540 children in grades one through six in three Pennsylvania communities selected on the basis of socio-economic and ethnic backgrounds, size and location. One of Bencetic's conclusions is pertinent for noting here:

> Realistic pictures were favored by a ratio of two to one over the ten pictures judged "most abstract." Mansfield children showed the greatest preference for the abstract pictures on an overall basis; the preferences from the first through sixth grades remained almost constant, with the greatest preference shown by the fifth grade, indicating a possible influence of the creative school activities and the college community environment.

Johnson[43] working under the direction of Torrance, conducted a cross-cultural assessment of the creative abilities of school children of Samoa in order to determine if the absence of cultural discontinuities would cause creativity to increase or decrease at certain points. Cultural discontinuities, in the United States, cause the so-called fourth grade slump in creativity. The Samoan culture was chosen because it is free of major discontinuities in the up-bringing of children, yet it is stifling of divergency. The fifth hypothesis is noteworthy for this present study: "The Samoan teacher's concept of the 'ideal pupil' reflects the cultural emphasis on conformity." Johnson used three instruments to gather data: the MTCT (both non-verbal and verbal), the Ideal Pupil Checklist, and the Goodenough "Draw-A-Man" test, from over

---

[43]Richard Johnson, "The Gorwth of Creative Thinking Abilities in Western Samoa," (unpublished Ph.D. dissertation, University of Minnesota, 1963), Dissertation Abstracts, XXIV (November, 1963), 1922.

1000 pupils in grades one through six from two main subcultures: the mission and the government elementary school systems. Grade one in the mission school was not tested for a reason not stated in the "Abstract." The findings indicate that:

> The over-all Samoan sample did not show the drop in creative thinking abilities characteristic in the American culture, but neither were levels at each grade as high as a comparison Minneapolis-St. Paul sample. However, those students who were taught by American teachers did show a drop at the end of the third grade, and have a much lower level of tested abilities compared to students of Samoan teachers within that school.
>
> The mission students showed a rapid rise in creative thinking abilities in the first year of school, and then leveled off. The government school students had a much lower starting level, but followed this with a steady rise in each year assessed.
>
> . . . . . .
>
> Both previous research, and the Ideal Pupil Checklist indicated that because conformity was stressed as pre-requisite to success, tendencies toward creativity are likely to be extinguished.
>
> The conclusion was drawn that the typical "slump" found in the United States was not inevitable, and that three conditions appear necessary in order to raise and maintain a high level of creative thinking abilities: first, a reduction in discontinuities; second, a variety of stimuli to be rearranged, integrated, and responded to; and third, a continual cultural rewarding of the creative enterprise.

Since conformity was stressed in the Western Samoan culture as a prerequisite to success, tendencies toward creativity are likely to be extinguished. One may feel that the American middle class cultural influence, in the case of the American mission cross-cultural setting of Johnson's study, would compound the degree of conformity in the children, even more than was noted.

Elsewhere, Torrance discusses cultural discontinuities in relation to the larger study of which Johnson's was a part. A number of other cultures were included in order to study the particular differences of creative thinking abilities within as well as between them. Examples

of cultural discontinuities include:

> Concern about sex appropriateness and emphasis on sex differences become tremendously inhibiting at about age five and continue into the beginning of first grade. Many children at this age are inhibited in their thinking because they have been harshly warned by parents and teachers to eliminate fantasy.[44]

At the fourth grade level children are expected to act more grown up. They encounter more organization and formality at this age and grade which tend to stifle original behavior and thoughts. Homework is added gradually as the subject matter areas change from year to year. Student council and other school activities take the student's time and interest. Perhaps some children serve as hall monitors and are responsible for the behavior of others. Torrance mentions a number of other cultural discontinuities which students encounter as they get older and more is expected of them.[45]

Torrance, in discussing the idea of the various "slumps" which appear at different age levels in our culture, indicates that:

> Now that the developmental curves for the creative thinking abilities of some of these cultures are becoming clear, the idea has been thrust upon us that the declines ["slumps"] in the creative thinking abilities that occur at about ages five, nine, thirteen, and seventeen are the result of the stresses imposed by cultural discontinuities and are accompanied by personality disturbances.[46]

---

[44]Torrance, Education and the Creative Potential (Minneapolis: The University of Minnesota Press, 1963), p. 77.

[45]Ibid.

[46]Ibid., p. 72.

In 1963, Neff[47] had fifty-four first, second, and third grade boys and girls of high, average, and low IQ construct simple puppets and give a performance with their puppets. His purpose was:

> (1) to investigate the relationship between puppetry and the creative imagination of children; (2) to develop, empirically, a puppet test capable of measuring some aspects of the child's thinking ability; and (3) to partially validate this instrument by comparing the success of young children on the Puppet Test with personal data and other measures of their creativity.

He found that the Puppet Test Scores correlated with the scores on the three creativity measures for children as developed by Torrance, and with the judgments of three pieces of art work from each child: a crayon drawing, a tempera painting and a cut-paper project. Among his conclusions, these have importance for this study aside from the fact that Neff worked with first, second, and third graders.

> The Puppet Test did measure some aspects of creativity as defined for this study.
>
> Certain items on the Puppet-Head Construction Test were related to the Torrance tests while the totals were not. The same items also correlated well with the Puppet Performance Test and the painting judgments.
>
> A definite relationship existed between the facets of creativity measured by the Puppet Performance Test and the Torrance creativity battery. Individual criteria on the two measures were shown to correlate significantly.
>
> With the possible exception of painting, the Puppet Test did not measure those aspects of creativity in the production of art work.
>
> The two phases of the Puppet Test correlated highly in the nonverbal areas, suggesting that the Puppet-Head Construction Test complements the Puppet Performance Test by probing nonverbal creativity.

---

[47]George Neff, "The Creative Imagination of Young Children as Revealed in a Puppet Construction and Puppet Performance Test," (unpublished Ed.D. dissertation, Pennsylvania State University, 1963), Dissertation Abstracts, XXIV (February, 1964), 3206.

One of the concerns of this present study is how the various part scores on the three instruments used are related just as Neff was concerned about the relationship of his Puppet Performance Test and Puppet-Head Construction Test with Torrance's creativity test battery. For instance, does the S-CIT measure some of the same creative thinking abilities that Torrance's MTCT does? Do the various part scores of the MTCT and the S-CIT have any positive relationship with the teachers' nominations of their students as "most creative" and "most conforming"? These and other relationships are of interest to the investigator just as Neff sought certain relationships with his tests.

Other Studies and Specific Comments about the Use of Coloring Books

In Creative and Mental Growth, Lowenfeld and Brittain write that the particular workbooks normally used in reading and in arithmetic cause the student to repeat over and over again the same pictorial concept, whether it be twenty-five bluebirds, or sixteen sail boats, or eight elephants. Add nine kittens to three kittens, and what will you have? These children are learning a number concept by using a stereotype of some object which, over time and repeated in enough instances, may cause the child to become inhibited in conceiving of certain objects. The authors cite Heilman's study and also discuss the experiments by Russell and Waugaman. The latter found that "63 per cent of all children who had been exposed to coloring book birds lost their initially established sensitivity to birds and changed their concepts to resemble the stereotype."[48] An individual's self-expression can be and is so easily,

---

[48]Lowenfeld and Brittain, op. cit., p. 22.

so often, neglected. The effect of predrawn, completed, stereotyped drawings has a very subtle, but devastating effect, on the impressionable child who is searching for answers. Lowenfeld and Brittain describe the handicaps a child encounters when using coloring books:

> Let us assume that the first picture the child has to fill in is that of a dog. As soon as the child is confronted with the task of following a predetermined outline, we have prevented him from solving his own relationship creatively. His relationship to a dog may be one of love, friendship, dislike, or fear. There is no opportunity for him to express his relationship and thus relieve himself of tensions of joy, hatred, or fear. . . . There is not even a place for the individual differences of Johnny and Mary.[49]

Most children come to realize that they would never be able to draw the object as well as it is drawn in the coloring book. As they use coloring books constantly their own ability to represent something in their own unique way withers and finally dies. Many children began to say "I can't draw."[50]

Since we do know that the use of coloring books does affect a child's creativeness we should be on guard. Lowenfeld firmly believes that "every child deserves the maximum chance to grow."[51]

Children even do better when assigned to practice coloring within a line, just to learn that skill, when they have the opportunity to make their own drawing. They will color it in more painstakingly than if the object is pre-drawn.[52]

---

[49] Ibid., pp. 22, 24.

[50] Ibid., p. 24.

[51] Lowenfeld, "Creativity: Education's Stepchild," A Source Book for Creative Thinking, op. cit., p. 16.

[52] Lowenfeld and Brittain, op. cit., p. 24.

It might be well to indicate a note about the idea of imitation. Lowenfeld and Brittain fear that there is a misunderstanding about the word IMITATION. Imitation is very useful in learning ways to communicate for instance, so that a person can express himself to others in particular ways as writing and speaking. According to the authors "imitation in any learning situation is only used as a means to an end and never as an end in itself."[53]

Zirbes indicates that there are some procedures which leave little if any opportunity for anything butconformity to instructional expectations. One of her concerns is with "murals which are outlined or stenciled to be 'filled in' by the children." She adds that they "are a piece with the 'coloring in' which blights so many young children's creative potentialities."[54]

In a short article in the Michigan Education Journal, a number of reasons are listed why stereotypes, including coloring books, should be avoided by all teachers. These reasons include:

> They tend to produce uniformity, conformity, and dependence, rather than independent thinking, creativity, and individuality.
>
> They are above the skills and abilities of some children and beneath the skills and abilities of others. In any case, they are an insult to the children using them.
>
> They leave the impression that there is only one way to do something.
>
> They are ugly, as compared to the variety, personality, and individuality of results obtainable through more creative and flexible art lessons.
>
> They help to perpetuate mediocrity.

---

[53] Ibid., p. 21.

[54] Zirbes, op. cit., pp. 267-268.

> They prevent a child from discovering his own methods or representing his own interests, experiences, and observations.
>
> They jeopardize a child's appreciation of his own work through unfair comparisons.
>
> They reduce human knowledge and experiences to a meaningless decoration.[55]

These reasons were originally presented in a position paper on art and creativity as the result of a cooperative workshop by members of the Department of Classroom Teachers (DCT) and the Michigan Art Education Association (MAEA). The teacher-artists and classroom teachers of art, recognized a common concern so the two organizations established liaison in 1965, put some money aside for workshops, and gathered together a committee on art and creativity. This is a very encouraging example of two educational groups "working together to further innovation, self-renewal, creativity, and inquisitiveness."[56]

Concluding this review of the literature it seems appropriate to share a report of a boy, now a seventh grader,whom Torrance learned about as he was studying creative students in one of the schools where he was conducting some of his research activities:

> Before Keith entered school, everyone was impressed by his curiosity, cleverness, and mature thinking. Strangers would assume that he was in the third or fourth grade at the time he was four and a half years old. When Keith brought home his corrected kindergarten papers, his mother was disturbed to find he was doing failing work. He would add cowboy hats or boots to the dittoed drawings his teacher gave him to color or even more radically change a drawing. The trend seems to have continued throughout the remainder of Keith's educational career. His parents have had Keith tested by some of the best

---

[55]"MAEA-DCT Help for Teaching Art," Michigan Education Journal, XLII (May 1, 1966), 18.

[56]Ibid.

> pediatricians in their area. All have said that there is nothing wrong with Keith either physically or mentally and that he will learn when he had the "right teacher." Now thirteen years old, Keith was retained in the seventh grade last year, and teachers suspect that he is mentally retarded. His parents wonder. They see him come alive and work enthusiastically with projects at home and cannot believe that he is mentally retarded. Instead of talking about when the next school vacation will begin, as Anne does, Keith talks about when he will be old enough to drop out of school.[57]

Surely there must be something amiss here. Is it Keith? The school? The parents? The teachers? The pediatricians? Or an unfortunate combination of all or part thereof? Where is the "right teacher"? Why does Keith come alive at home with his projects and fail at school? As an "unmotivated" youngster in school, will he become a dropout?

Summary

After all of the definitions have been listed and all the approaches taken and the measures found and studies compiled we come down all the spokes to the hub of the wheel. After all the words are written and all the speeches made and all the actions completed, the vital concern is what happens to people in their everyday lives - right now, this instant - concerning the opportunities they have for being creative. Nothing in this study is important unless it can provide some insight into how we can make life more meaningful for everyone. This does not necessarily need to be couched in the framework of a religious experience or an artistic experience or a hypnotic experience or any other type of experience except your wholehearted commitment to everyday living. Right this very minute are you able to think creative thoughts, do creative actions, write creative words, or draw creative

---

[57]Torrance, Education and the Creative Potential, op. cit., p. 64.

ideas? What keeps you, RIGHT NOW, from being creative? What forces prevent you from trying out different ideas right now or in the next few minutes or in the next hour or this afternoon or during the coming weekend? The forces are staggering.

It takes more than words, or talk, or even good opportunities to be creative; it takes the courage of one's convictions. Most people realize it is usually very difficult to be creative for a whole host of reasons. But does creativity belong only to the few? Can you become creative in different ways in different areas at different times in different degrees? You can if you are willing to keep trying.

Those who have led the way in creativity research, especially Guilford and Torrance, have been inspirational to many students and scholars who have benefited from their ideas and actions. These two researchers have provided much impetus to the difficult and complex study of creativity through the development of their experimental tests of creative thinking and in their prolific writings.

Guilford's Structure-Of-Intellect, first presented in 1955, contains 120 hypothesized unitary abilities; some of which relate to creativity. He indicates that the creative abilities seem to be localized in the divergent-thinking category and somewhat in the transformation category. His Structure is somewhat analogous to the Periodic Table of the Elements used by physical scientists. Through factor analysis he seeks to isolate the unitary abilities for which he develops specific tests.

Torrance has approached creativity through testing for a number of creative attributes in the same test. He feels that it is too early to define a specific group of factors. As Torrance and associates

developed the Minnesota Tests of Creative Thinking they sought ways to validate their efforts. This was done, to a certain extent, with the various tests by finding out about the children who scored high on the creative thinking tests. These high creatives, as rated also by their teachers and peers, had lots of good ideas, were characterized by their humor, playfulness, relative lack of rigidity, and relaxation especially when compared with the highly intelligent but less creative children.

Another significant finding mentioned by Torrance and others was that highly creative children, whose intelligence was not as high as the highly intelligent children, still did as well on the standardized tests of achievement as the highly intelligent. This means that IQ alone should not be the sole criteria for selecting students for special programs or for college entrance.

Form C of the Torrance MTCT was designed to measure a child's ability to think of ideas to make a toy animal more fun to play with following the theoretical orientation of "regression in the service of the ego." At about the same time the figural tests were devised which were used in the present study.

We need to remember constantly that in whatever directions researchers are going they need to be concerned with providing opportunities for creativity for all ages and groups of people. We must not lose sight of the fact that the people who are studied are not just numbers, or protocols in a book, or statistics - they are unique human beings.

While most art educators have not been involved in doing research on creativity, they have been concerned with fostering and enhancing creativity through the teaching of art activities. According to Taylor, "art education may be more valuable in this age of science than is

generally realized" since one of its most central goals always has been the encouragement and development of creativity.

Getzels and Jackson, as well as Torrance, review the early studies. Much of the research in this area of creativity was concerned with the relationship of creativity or imagination with intelligence. Dearborn, in 1898, casually noted that "giftedness in intelligence and giftedness in creativity were by no means synonymous." Practically every study reported even today supports this lack of correlation between creativity and intelligence. This meant that tests of creativity were measuring other abilities not touched by intelligence tests. Both measures are necessary to secure more complete information about a person.

Of the six studies cited at the lower elementary level three are of particular relevance and apply most directly to this study. Heilman collected 384 drawings from sixty-four second graders and found "positive evidence that workbooks qualitatively influenced the total structuring of their creative drawings" and interfered with the "total growth pattern as promoted by creative drawings."

Bencetic showed 540 children, in grades one through six, forty-one post-card sized reproductions of paintings of different styles. Among his findings he noted that "realistic pictures were favored by a ratio of two to one over the ten pictures judged 'most abstract.'"

Johnson showed that in a Samoan cross-cultural assessment of over 1000 school children, in grades one through six, that the "typical 'slump' found in the United States was not inevitable, and that three conditions appear necessary in order to raise and maintain a high level of creative thinking abilities": (1) that cultural discontinuities be reduced; (2) that stimuli of various kinds be "rearranged, integrated,

and responded to"; and (3) that creative enterprise be continually rewarded in the particular culture.

There is very little the various authors report that can be said in favor of coloring books as we review the comments of Lowenfeld and Brittain, Zirbes, and the list compiled by the MAEA-DCT. According to the MAEA-DCT article, all teachers should avoid using the coloring book approach with their students; especially those like Keith.

CHAPTER III

RELATED LITERATURE ON CONFORMITY

Introduction

In order to know something about conformity it was felt important to consider: how researchers define conformity; how suggestibility is viewed by social psychologists; the characteristics of conforming persons, as identified in various studies; the significant studies of conformity reported at the lower elementary level; what various authors have written about conformity; and the relationship of creativity and conformity.

Definitions of Conformity

Walker and Heyns define conformity:

> . . . as movement toward some norm or standard and non-conformity as movement away from such a norm or standard. This definition implies a dimension of some kind which permits specification of at least three points: an original position for a person or group, a point or position specified as a norm, and a second position of the person or group somewhere on the continuum.[1]

They go on to explain that "conformity and non-conformity always involve movement or change," and that "a norm in this formulation can be any standard from any source." Social norms can have a positive type of sanction, a negative type of sanction, or both. There are also

---

[1]Edward L. Walker and Roger W. Heyns, An Anatomy for Conformity (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1962), p. 5.

agencies to administer them.[2]

Zajonc defines conformity as the "behavior of an individual [when it] is under the control of a group norm." He refers to a group norm as a uniformity of social behavior among the members of a specified group.[3]

In the Test of Suggestibility (TS) devised for this study, the attempt was made to influence the first grade children to shift their second response, as they viewed a prepared set of drawings a second time, to the false norm established by the investigator.[4] This was essentially a single observation taken in about a fifteen minute period. The real norm had been established during the week that the S-CIT was administered. At that time, the children had selected certain drawings which might be referred to as their "favorites." The child's initial position on the TS was determined when he viewed the set of paired drawings the first time, and each student recorded his responses.

Walker and Heyns point out that "conformity is a class of behavior. As such it should be manipulatable like any other class of behavior." A simple formula which describes the manner in which behavior is usually manipulated is pictures here:

NEED ⟶ INSTRUMENTAL ACT ⟶ GOAL[5]

---

[2]Ibid.

[3]Robert B. Zajonc, "Conformity," International Encyclopedia of Social Sciences (New York: The Macmillan Company, to be published in January, 1968), p. 4 in author's copy of article.

[4]A false norm is a contrived norm set up by the investigator to influence the subjects to shift or move toward it in order to see if they have a tendency to conform.

[5]Walker and Heyns, op. cit., pp. 4-5.

Definitions of Suggestibility

Coffin writes that suggestibility usually implies:

> . . . some sort of "uncritical" acceptance of a proposition or course of action and the observer or experimenter usually notes or sets up a situation offering possibilities of "right" or "appropriate" responses and of "wrong" or "inappropriate" responses, together with a "proposition" to the subject that he make the "inappropriate" response. If he does so, the observer considers this "suggestion"; if he makes the "right" response, it is considered "non-suggestibility," or "thought" or "critical response."[6]

McConnell indicates that:

> Suggestibility is a broad psychological construct which has often been used to describe the uncritical amenability of an individual to influences outside of himself.[7]

Relationship of Conformity and Suggestibility

The investigator found no direct reference to the similarity or distinctness of conformity and suggestibility. McConnell mentioned that suggestion is similar to other constructs such as prestige and conformity suggestion, instructional set, propaganda influence, and persuasibility.[8] Asch describes the general method used in suggestibility experiments for effecting changes of opinions and judgments. He states that the process followed is simple and forthright:

> One establishes first how an individual evaluates a given matter. The second step consists of informing him about the evaluation of the same matter by others. If we find the individual altering his position in the suggested direction, we have obtained a definite social effect, the result of a reaction to the evaluation of others. In brief, one determines the views

---

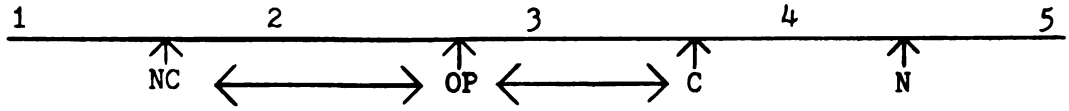
[6]Coffin, op. cit., p. vii.

[7]Thomas R. McConnell, Jr., "Suggestibility in Children as a Function of Chronological Age," Journal of Abnormal and Social Psychology, LXVII (1963), 286.

[8]Ibid.

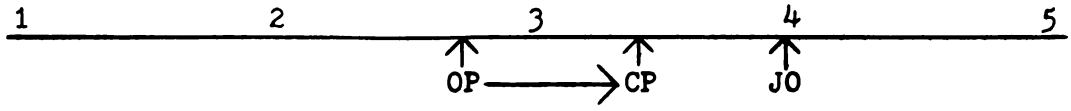
> of individuals before and after they have been subjected to the views of others; the latter is the experimental factor, the effect of which is measured.[9]

When we compare the steps outlined by Walker and Heyns and those just described by Asch we find a similarity. Walker and Heyns picture conformity and nonconformity in this way:[10]



OP = Original position
N = Norm
C = Conformity, movement toward
NC = Nonconformity, movement away

Asch's description might be pictured as follows:



OP = Original position
JO = Judgment of others
CP = Changed position

Asch has not introduced the idea of non-suggestibility in outlining the two steps mentioned above but it is assumed that this dimension does exist. Coffin[11] and Bird[12] refer to the fact that subjects are positively, negatively or neutrally influenced by suggestibility stimuli.

---

[9]Solomon E. Asch, Social Psychology (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1952), p. 403.

[10]Walker and Heyns, op. cit., p. 5.

[11]Coffin, op. cit., p. vii.

[12]Charles Bird, Social Psychology (New York: D. Appleton-Century Company, 1940), p. 269.

The neutral position is not represented in either diagram above but it is assumed that there were subjects in the studies by Walker and Heyns who did not shift from their original position.

Zajonc tells us that as conformity experiments are typically contrived, the subject is confronted with the responses of a group of people before he makes his own decision about the object seen or statement read or whatever the test situation might be. The group response is often purposefully different with what is actually true and what the subject perceives to be true.[13]

The similarity of the experimental process in studying conformity and suggestibility in subjects appears to be so similar as to suggest that they are essentially the same process or at least comparable. Early authors, including Asch, do not even discuss "conformity" in their writing, whereas, they do include discussions of "suggestion" and "suggestibility."

The studies reported by Walker and Heyns were completed in a period from 1955 to 1962 when their book, An Anatomy of Conformity, was published. They make no mention of "suggestibility"; conformity is all that is discussed. Zajonc reviews the area of "conformity" but does not even mention "suggestibility" at all. Student does a very complete review of the literature related to the personality correlates of "conformity" but does not mention "suggestibility."[14] McConnell obtained

---

[13]Zajonc, op. cit., p. 23.

[14]Kurt R. Student, "The Personality Correlates of Conformity: A Literature Review," (unpublished Ph.D. dissertation, The University of Michigan, 1965) (Mimeographed.)

four measures of suggestibility, one of which was "conformity suggestion."[15] The method used by McConnell to obtain this measure is very similar to the method the investigator used in obtaining the Positive and Negative Shift Scores on the Test of Suggestibility used in this study.

Characteristics of Conformity

It should be kept in mind that the distinguishing characteristics of conformity, as in the area of creativity, are subject to a multitude of variations because the study of human behavior is so complex. In addition, research on conforming behavior of people has not been intensified by a Guilford-like battle cry, though Sherif, Asch, and Crutchfield, among others, have done much work.

Crutchfield posits four types of personalities:

> (1) [The general] conformer . . . lacks ego-strength, is anxious and suggestible, is overly dependent on the emotional support of other people. Such a person is brought to comply with the group through a weakened conviction about his own judgmental powers, a readiness to assume that the group is right and he is wrong.
>
> (2) [The "expedient" conformer] is brought by group pressure to express more outward agreement with the group, while his private judgment remains unaffected . . . . [he is] not prevented in his inner thinking from seeking for creative solutions, despite the group pressure.
>
> (3) [The counterconformist reacts] negatively to the group, . . . repudiates its standards, [and is] actively contra-suggestible. [He needs to defend] his personal identity, becoming emancipated from the group's authority, and expressing hostile impulses toward others . . . . [all of which] can be expected to impair his creative efforts.
>
> (4) [The] independent-minded person is often highly conventional in those ways of social behavior that facilitate life in the group and yet do not impede his own aims. The truly independent

---

[15]McConnell, op. cit., p. 287.

> person in whom creative thinking is likely to flourish - is someone who can accept society without denying himself.[16]

Crutchfield, working at the Institute of Personality Assessment and Research (IPAR), at the University of California at Berkeley, found that, among 100 men from different professions, the ones who exhibited extreme independence in the test situation were described by the assessment staff in the form of descriptive Q sorts:

> Is an effective leader.
>
> Takes an ascendent role in his relations with others.
>
> Is persuasive; tends to win other people over to his point of view.
>
> Is turned to for advice and reassurance.
>
> Is efficient, capable, able to mobilize resources easily and effectively.
>
> Is active and vigorous.
>
> Is an expressive, ebullient person.
>
> Seeks and enjoys aesthetic and sensuous impressions.
>
> Is natural; free from pretense, unaffected.
>
> Is self-reliant; independent in judgment; able to think for himself.[17]

Crutchfield has worked with MacKinnon, Barron, and others at IPAR for a number of years. He has administered a standardized experimental technique, for measuring conformity tendencies of the individual, to over 600 persons, including samples of college students, engineers, writers, architects, medical school applicants, mathematicians, military

---

[16]Richard S. Crutchfield, "Detrimental Effects of Conformity Pressures on Creative Thinking," Psychologische Beitrage, VI (1961/62), 468-470.

[17]Crutchfield, "Conformity and Character," American Psychologist, X (1955), 194.

officers, and research scientists. In contrast to the independent thinking person, he found that the extreme conforming thinker evidenced these behaviors:[18]

Cognitive functioning	Significantly less intelligent.
	Shows tendencies toward rigidity of cognitive processes and poverty of ideas.
	Perceptual performances tend to be less adaptive to reality.
	Poorer in critical judgment.
	Less well informed.
Motivational and emotional functioning	Clearly lower in ego-strength and in ability to cope under stress.
	Exhibits more emotional constriction, lack of spontaneity, repression of impulse, and tendency toward indirect expression of hostility.
	More subject to anxiety.
Self-conception	Inclined toward pronounced feelings of personal inferiority and inadequacy.
	Lacks self-confidence.
	Tends to be less insightful and realistic in his self-conception.
Relations with others	Exhibits strong sociometric orientation and an intense preoccupation with other people.
	Interpersonal behavior shows more passivity, suggestibility, and dependence toward other people.
	Considerable evidence of disturbed and distrustful attitudes toward them.
	Proves to be inferior in social acuity, that is, in his ability to judge other people's reactions correctly.

[18]Crutchfield notes that the precise way in which personality factors relate to conformity behavior vary greatly, depending in part upon the specific nature of the psychological situation in which conformity is elicited.

Personal attitudes and values	Expresses attitudes and values of a far more orthodox and excessively moralistic nature often coupled with An intolerant and authoritarian outlook. Less likely to exhibit aesthetic sensitivity and inquiringness as a habit of mind.[19]

Student reports that Crutchfield, using the Strong Vocational Interest Blank, found that those people who were concerned with conventional values, such as policeman, office men, real estate salesmen and morticians, had interest patterns like those who were found to be conformers. "Interest patterns of the independents tend to be similar to those persons in occupations calling for artistic and scientific originality, e.g., artist, musician, author-journalist, mathematician, and architect.[20]

Zajonc reviewed numerous studies in social psychology, in the area of conformity, and described the various characteristics of conforming people - young and old. He indicates that the tendency to conform has been shown to be a stable individual characteristic showing up repeatedly in different situations. He cites a study by Ferguson in which subjects who shifted attitudes on one scale, of different attitude scales, also shifted attitudes in the direction of the contrived majority on other scales.[21]

Rosmer and Crutchfield are reported to have found clear evidence that for a single task and for a single experimental session the subjects

---

[19]Crutchfield, "Detrimental Effects of Conformity Pressures on Creative Thinking," op. cit., pp. 466-467.

[20]Student, op. cit., pp. 86, 88.

[21]Zajonc, op. cit., p. 16.

who shift to the majority on initial trials are also likely to shift on subsequent trials. Also individuals who shift on the specific task during one experimental session, tend to shift on that same task on a repeated administration at a later date.[22] Bird indicates that there is support for the finding "that people constantly are suggestible along certain lines [but not] in all or a majority of instances covering a wide range of suggestions."[23]

In other studies reviewed by Zajonc, Tuddenham found that children are prone to conform more readily than adults, girls more than boys, and women more than men. Both Crutchfield and Tuddenham report that intelligence and conformity are negatively related. Zajonc reports that conformity to a false majority is substantially negated when it involves fairly stable values. Even when people have a strong commitment, some degree of conformity is seen.[24]

One of the hypotheses which is being tested in this study is the idea that conforming children are not-as-creative. The conforming child, for instance, is more dependent on others. As a child is more dependent he is not as open to his total experience. Zajonc indicates that perhaps the most outstanding among many personality factors which has a significant relationship to conformity is the dependency variable. He states that:

> Naturally, a dependent individual would be more prone to conform than one who can function independently, and who need not rely

---

[22] Ibid., p. 17.

[23] Bird, op. cit., p. 271.

[24] Zajonc, op. cit., pp. 18-19.

> on others in judging his own actions. . . . It is generally found that children are more dependent than adults, and that females [are] more dependent than males.[25]

Children are normally dependent. It is realized that independence comes gradually, but dependence need not be prolonged by measures such as coloring books, patterns, and other ideational "crutches." Zajonc paints the "picture of the conformist as a dependent, submissive person, with little confidence in his own ability, [which] leads one immediately to suspect that he is also quite sensitive to his relationship with authority figures." This is borne out, but not too clearly in research studies. Zajonc presents the idea in his review that "dependency is a personality disposition related to the affiliative strivings of the individual" whereas "independence . . . is related to his achievement strivings." He says that they both can predict conformity but in opposite directions.[26]

Concerning independence, Torrance feels that "creativity by its very nature, requires both sensitivity and independence." We have come to believe that sensitivity is a feminine virtue, and independence is a masculine value. With this in mind the highly creative boy (sensitive) seems more effeminate than his peers and the highly creative girl (independent) more masculine than her peers.[27]

According to Zajonc, a unitary personality disposition to conform generally has not been found consistently. In addition, followup studies

---

[25] Ibid., pp. 19-20.

[26] Ibid., p. 21.

[27] Torrance, Education and the Creative Potential, op. cit., p. 22.

are often at odds with the original studies. The author does state the fact that females tend to conform more than males is the most reliable finding in this area. Concerning group factors, Zajonc goes on to discuss the importance of a person's confidence in resisting conformity. As conformity experiments are typically contrived, the subject is confronted with the responses of a group of people before he makes his own decision about the object seen or statement read or whatever the test situation might be. The group response is often purposefully different with what is actually true and what he perceives to be true. Indeed, many factors can be introduced in the experimental contrived situation to cause the person to change his decision, often in instances of obvious fallacious situations, depending on the characteristics of the group, its size, its unanimity, its reputed expertness on the task. These are some of the factors helping to negate the individual's confidence in his own judgment. Just as Walker and Heyns indicated earlier, the conforming situation can be manipulated by various tried and tested techniques briefly mentioned by Zajonc.[28]

Zajonc concludes his review by saying that even though research studies on conformity have not been highly reliable, much data has been collected since the early studies by Sherif and Asch who also charted the way ahead. They have shown that group pressures are powerful controlling agents even under completely private conditions. When subjects make obvious wrong judgments, even in a situation they know to be experimental, the pressures on them are great, real and serious. Increases in physiological stresses are noted in the person as he is confronted

---

[28]Zajonc, op. cit., pp. 22-27.

with a majority, false or otherwise, counter to the subject's belief, which then declines when he agress with the group.[29]

Student, reviewing the research on psychological characteristics and conformity, reports various findings made by Barron who selected extreme groups in susceptibility by the use of the Asch situation and compared their self-ratings on the Gough Adjective Check List. He found that:

> Subjects low in conformity significantly more often perceived themselves to be artistic, emotional, original (.01 level of confidence), demanding, excitable, fairminded, logical, moody, rational, reckless, and tactless (.05 level of confidence). Yielders considered themselves to be more determined, efficient, kind, obliging, optimistic, patient (.01 level of confidence), affected, considerate, dignified, friendly, helpful, modest, stable, tactful, and wise (.05 level of confidence).[30]

Pertinent Studies of Conformity at the Lower Elementary Level

Work on conformity with young elementary school children is relatively rare, perhaps because of the fact that children are so changeable. Perhaps the age factor is the reason for the lack of studies in these lower grades. Coffin indicated that "most experimenters agree that suggestibility is higher in children than in adults, and that it may increase from infancy to approximately age seven or nine and decrease progressively from then on." Coffin cites a number of researchers who have made this finding while several researchers found no decrease in suggestibility with age.[31]

---

[29] Ibid., p. 28.

[30] Student, op. cit., p. 86.

[31] Coffin, op. cit., p. 20.

McConnell studied the relationship between suggestibility and chronological age of 290 boys and girls in grades one through twelve attending a demonstration school affiliated with George Peabody College. He defined suggestibility as "a broad psychological construct which has often been used to describe uncritical amenability of an individual to influence outside of himself." This idea is similar to other constructs which include: prestige and conformity suggestion, instructional set, propaganda influence, and persuasibility. None of these constructs seem to correlate highly with each other. It is therefore thought that "the generality of the construct is probably limited in some degree to the operations involved." McConnell lists some of the variables he feels are important which tend to influence suggestibility: the type of suggestion, the method of testing, the physiological and psychological states, the stimulus ambiguity, the subject's sex, and the various personality characteristics. The author says that several factors play a large part in making substantial inter-subject variability - the personality structure and the past learning experiences of the subjects. Even though the area of suggestibility is quite complex, as it has been operationally defined, it has been shown to be measurable and predictable. McConnell refers to Coffin's excellent article written in 1941.[32]

McConnell found that "little suggestibility research using children as subjects has been published over the past decade." It is assumed that as a child grows older that his tractableness to suggestion decreases. Some researchers have shown this, others have not. The author hypothesized that chronological age would have a negative

---

[32]McConnell, op. cit., p. 287.

relationship to suggestibility and that boys would be less suggestible than girls.[33] In discussing the results, the author writes that:

> The developmental curve for suggestibility confirmed the hypothesis that uncritical amenability to suggestion decreases as children grow older. This decrease is likely to be a function of more and wider learning experiences, greater confidence in perceptions, and generally increased autonomy.
> . . . . . .
> The finding of no sex differences in the suggestibility measures questions previous research results which have found such differences.[34]

A study of Maslow of 316 fifth and sixth grade boys identified some relationships between social conformity and self perception. He wondered if a person's low self-esteem is also seen in his lack of trust in his ability "to know reality" and in his compensatory "need to validate his perceptions by consensus" in order to prove his adequacy. The results indicate that "the relationship between conformity and low self-esteem, which has been consistently found with adults, is not present in pre-adolescent boys."[35]

The basic idea for the Test of Suggestibility for this study was suggested by Zajonc and shown to be possible by McConnell's study. The latter's study obtained four measures of suggestibility: baseline suggestibility, prestige suggestibility, conformity suggestion, and prestige suggestibility. The third measure, conformity suggestion, was essentially the measure obtained in this study. McConnell told the students that:

---

[33] Ibid.

[34] Ibid., p. 289.

[35] Albert R. Maslow, "Some Relationships between Social Conformity and Self Perception," (unpublished Ph.D. dissertation, The American University, 1961), Dissertation Abstracts, XXII (October, 1961), 1285.

"We have given these last slides to a group of boys and girls your age in another school and they nearly always marked one of the figures as bigger than the other. We want to see if you agree with what they said." This investigator obtained responses based on the prestige factor of a first grade shift agent, a fourth grade shift agent, and art teachers as a shift agent. The design of the TS needed to be simple and easy enough for first graders to do without a great deal of preparation and explanation.

Conformity in Contemporary Society as Seen and Written about by Various Distinguished Authors

Lowenfeld writes that "originality" is the name we give to that quality which is directly opposite "conformity" in thought and expression. Creative students give statistically infrequent responses to questions and solve problems in often unique and individual ways. "Their solutions spring from the depths of their own minds rather than from something they have read or heard."[36]

Anderson, writing about Terman's well-known longitudinal study of gifted children many years ago, remarks that in looking back it is small wonder that the children in Terman's study, while developing into intellectually capable people, have not shown their great originality in the arts and the sciences. As Anderson notes, "these 'geniuses' were selected not on the basis of a demonstrated originality or uniqueness in their responses but on the basis of their swift and superior conformity in cultural norms."[37]

---

[36]Lowenfeld, op. cit., p. 13.

[37]Harold H. Anderson, "Creativity and Education," AHE College and University Bulletin, op. cit., p. 1.

Anderson discusses the Open and the Closed Systems in education.

> In the Closed System of education the student has only to learn what his forebears have already discovered or agreed upon. He learns what someone else thinks is right or wrong, to follow directions, and do what he is told. Unfortunately for most of us that is where our school learning stopped. It is, however, the system by which the heritage of the race is preserved - including the sorting, classifying, and cataloging of attics full of useless, unlovely, and undiscarded psychic antiques.[38]

In writing about the meaning of creativity, Anderson discusses nine propositions about creativity. The seventh one concerns the infant starting his life in an Open System where he may interact freely in his environment. He is unable to move around, but he takes everything in. After he learns to communicate and to move about, people in his environment begin to close in on him and confine him in some of his behavior. He begins to meet the complex system of demands from his environment which include a great many socializing and acculturating processes. The climax comes to these early requirements for conformity when the child begins school. The systems begins to close surely and tightly even in the school setting. There is no escape. Unfortunately, the environments of most children, at all socio-economic levels, but especially the lower, do not stimulate nor even allow the continuous process of fostering and enhancing creativity that is so vitally needed. It is not surprising, argues Anderson, that in early childhood, creativity is universal and that among adults, who have been through the acculturation process for many years, it is almost nonexistent.[39]

Torrance realizes that creative performance is enhanced by the

---

[38] Ibid.

[39] Ibid., p. 4.

right conditions in the home and at school, by how one responds to the creative needs of others, and by whether creative thinking and creative achievements are encouraged or discouraged.[40] He mentions that future teachers continue to learn only the way to devise tests to measure what pupils learn, almost never to utilize what pupils learn. Teachers talk about objectives of concentrating on "pupils' being familiar with and conforming to behavioral norms, and learning the 'right' attitudes." Seldom do teachers state outcomes in terms of all kinds of thinking: critical, creative, constructive, independent, logical, liberal, and analytical. Seldom is educational research, according to Torrance, devoted to the investigation of the thinking process.[41] Elsewhere, Torrance discusses some problems in attempting to maintain creativity:

> Inescapably, the individual who thinks of a new idea is in the very beginning a minority of one. Even when matters of demonstrable fact are involved, as in the Asch experiments, there are very few people who can tolerate being a minority of one. Since creativity involves independence of mind, nonconformity to group pressures, or breaking out of the mold, it is inevitable that highly creative individuals experience some unusual problems of adjustment. Thus, the highly creative child must either repress his creativity or learn to cope with the tensions that arise from being so frequently a minority of one.[42]

Toynbee sees in America today the affluent majority "striving desperately to arrest the irresistible tide of change." With this impossible aim in mind, public opinion in America is putting a tremendously high premium on social conformity right now; and this endeavor to standardize the behavior of adults is "as discouraging to creative ability

---

[40]Torrance, Education and the Creative Potential, op. cit., p. 62.

[41]Ibid., p. 4.

[42]Torrance, Guiding Creative Talent, op. cit., p. 104.

and initiative as the educational policy of egalitarianism in childhood."[43] He firmly believes that any child can be so easily discouraged, since children are especially sensitive to hostile public opinion. They are willing to pay a high price for "poor-spirited conformity" since this is what an "egalitarian-minded society" values. He warns that egalitarianism which is "misguided" and conservatism which is "benighted" are current menaces in most English-speaking countries to the fostering of creative ability. Creation is a threat to the status quo in society because it is expanding and building outwardly. It ruins the old established order in the process of building a new and better one. The creative artist or the creative architect or anyone with a creative spirit makes the dough rise, but this valuable social service is castigated as highly undesirable in a society where the "powers-that-be have set themselves to stop life's tide from flowing."[44]

Schachtel writes that the pressure of society affects everybody's life. Parents, teachers, peers, all partake of the process which results in the formation of a more or less definite, closed view of life and the world, a certain code of behavior along with quite specific views about things and people.[45] He goes on to add another dimension of the effects within the family:

In addition to the closure of the world which results from the

---

[43]Arnold Toynbee, "Is America Neglecting Her Creative Minority?" Widening Horizons in Creativity, ed. Calvin W. Taylor (New York: John Wiley & Sons, Inc., 1964), p. 8.

[44]Ibid., pp. 6-7.

[45]Schachtel, Metamorphosis: On the Development of Affect, Perception, Attention, and Memory, op. cit., p. 187.

> transmission of a familiar and/or cultural viewpoint, parental curbing of the child's exploratory drive can also be a factor that interferes with the world-openness of the child and often leads to a more or less powerful strengthening of the tendency to avoid the unknown and remain embedded in the familiar.[46]

Melby writes with great sensitivity for the place of creative teaching and creative teachers working with all children but, he adds, it is very difficult to grow up creatively since society's total structure is designed to grant approval to those who conform. He says that children with the "most vigorous and obstreperous spirits" are the ones who are able to be completely themselves. From their ranks we have juvenile delinquents and those "who find creative outlets [and] become artists, musicians, scientists or other kinds of original persons."[47] Later on, as he begins to write about the power of the self-image, Melby feels that as one looks around at the social and educational panorama, one becomes concerned with the enormous waste of human potentialities. This is because there has been tremendous emphasis "on knowledge rather than on the individual, on information rather than on personal growth, on conformity rather than on creativity."[48]

In effect, Melby and others are asking how the unrelenting cascade of cadaverous commonality, captive consensus, callous conventionality, and cautious conformity can be curbed and controlled, especially in the process of education. Here is the eroding process as Melby writes about it:

Somehow or other as the child grows older and progresses from

---

[46] Ibid.

[47] Melby, The Teacher and Learning, op. cit., pp. 28-29.

[48] Ibid., p. 78.

> grade to grade his spontaneity is reduced. The curiosity evidenced in earlier years seems gradually to be lost. Increasingly the individual's educational progress is measured in terms of how much he can remember of what other people have done rather than in terms of the degree to which he develops himself in creative directions. As we progress through the grades and levels of education there is more concern with subject matter and less with the individual's own outlooks, interests, aptitudes, and creative capacity. Thus, the educational system becomes a vast enterprise that is shot through with a deadening emphasis upon conformity, upon routine, and upon the individual's ability to master what others have done rather than to develop something of his own.[49]

Curiously, educators look at A. S. Neill as a radical, like some other men in history, who is a man of his own convictions and who has patiently shown that the art of living can be a way of teaching and learning. In many ways he is a man come too early for his meaningful labours to have much of a significant impact. Neill maintains that:

> You cannot make children learn music or anything else without to some degree converting them into will-less adults. You fashion them into accepters of the status quo - a good thing for a society that needs obedient sitters at dreary desks, standers in shops, mechanical catchers of the 8:30 suburban train - a society, in short, that is carried on the shabby shoulders of the scared little man - the scared-to-death conformist.[50]

Fromm, in his remarks for Neill's book, joins in the lament:

> Our economic system must create men who fit its needs; men who cooperate smoothly; men who want to consume more and more. Our system must create men whose tastes are standardized, men who can be easily influenced, men whose needs can be anticipated. Our system needs men who feel free and independent but who are nevertheless willing to do what is expected of them, men who will fit into the social machine without friction, who can be guided without force, who can be led without leaders, and who can be directed without any aim except the one to "make good."[51]

---

[49]Melby, Education for Renewed Faith in Freedom, op. cit., pp. 54-55.

[50]A. S. Neill, Summerhill: A Radical Approach to Child Rearing (New York City: Hart Publishing Company, 1960), p. 12.

[51]Erich Fromm, "Forward," Summerhill: A Radical Approach to Child Rearing, op. cit., p. xi.

Is it any wonder that someone recently remarked, "stop the world, I want to get off!" "Include me out," as Goldwyn immortalized.[52]

Thurstone remarks that if you give children a chance they will show creative ability. She bemoans the fact that we seem to plan things just the opposite so our general philosophy "is not to allow non-conformity or originality. . . . One of the purposes of civilization is to make us all as much like everybody else as possible."[53] Sylvia Ashton-Warner wonders about her Maori students in their New Zealand habitat: "I don't know where the intention fails but we end up with the same pattern of a person in nine hundred ninety-nine instances out of a thousand."[54]

Relationship of Creativity and Conformity

In the discussion about the relationship between creativity and conformity which follows, we can ask ourselves just what should the relationship be? All of one and none of the other? Half and half? This implies an all or neither or an even balance relationship, respectively. Perhaps there needs to be some kind of shifting or sliding relationship. In this study the aspects of creativity are felt to be of major importance but the numerous and onerous forces in society command the opposite strategy - that of conformity. Overcoming this vast barrier is one of difficult tasks of man in our advanced civilization.

---

[52]John Gardner, Self-Renewal The Individual and the Innovative Society, op. cit., p. 64.

[53]Thelma Gwinn Thurstone, "Commentaries," Productive Thinking in Education, op. cit., pp. 38-39.

[54]Sylvia Ashton-Warner, Teacher (New York: Bantam Books, Inc., 1963), p. 86.

Student informs us that the current interest in creativity, among the great many social scientists, is in finding ways in which creativity can be increased, and in the relationship between creativity and conformity. He feels that "a better understanding of the relationship between conformity and the motivation to be right[55] would also enhance our understanding of the group processes which promote creativity."[56]

Sherif believes that social isolation is not a natural condition of the human being, either from a particularly desired setting or as a prolonged unending state. People in a normless isolated state experience personal conflict or, most certainly, loss of personal identity. Sherif asks:

> Why, then, denounce groups as such, or norms as such, or conformity as such? Instead, our efforts should be directed toward evaluating particular groups and particular norms in terms of the state of interdependence of human beings in given societies and in terms of enduring, lasting human values in contemporary settings - where what one does relative to others is no longer his own business. What one group does has come to be the business of all groups.[57]

When the difficulty is reduced to everyday experience MacKinnon realizes that:

> It is not easy for a teacher, or for anyone else who always has to deal with groups of individuals, to welcome nonconforming behavior; and this is, of course, especially anxiety

---

[55]Student is making the implicit assumption that "a relationship exists between creativity i.e., creative problem solving and the motivation to be correct." The investigator wonders if to be "correct" at any cost, even of "conforming," is meant to mean that creative people are more likely to be "correct" most of the time if they use the "creative problem-solving" way.

[56]Student, op. cit., pp. 69-70.

[57]Muzafer Sherif and Carolyn W. Sherif, Reference Groups: Exploration into Conformity and Deviation of Adolescent (New York: Harper and Row, 1964), p. 273.

> provoking for the inexperienced person. It is not nonconformity as such that deserves respect or even acceptance - and certainly not nonconformity that is carried on for nonconformity's sake (which ends by being conformity in reverse) - but rather, that kind of nonconforming, independent behavior merits respect which is an expression of the wholehearted commitment of the individual to truly creative goals.[58]

MacKinnon is quick to urge that freedom for the student is not unlimited but that discipline and self control are vital. Learning these abilities appears to be necessary for being truly creative but not to the point of overlearning self-control and discipline. In addition "there is a time and a place for their learning [and for their practicing - investigator]; but having been learned, self-discipline and control should be used flexibly, not rigidly or compulsively."[59]

The concern in this study is with the degree or variations of creativity and conformity normally found in first grade children. With all the pressures and cultural discontinuities from society designed to have children and adults conform in most areas of social and intellectual activity, it seems that there is little room or energy left for children and adults to be creative, when to be creative often takes enormous energy and strength of one's convictions. Torrance emphasizes:

> It should be recognized, however, that the goal of guidance is not to promote just individuality and creativity but to encourage healthy kinds of individuality, creativity, and conformity. As shown by Pepinsky's findings . . . , creativity and conformity are not antithetical to each other. Many creative individuals, however, need guidance in achieving the balance between creativity and conformity so that they enhance one another. This is a guidance task for teachers and counselors at all levels of education, because the creative personality does not emerge suddenly and

---

[58]Donald W. MacKinnon, "Personality Correlates of Creativity," Productive Thinking in Education, op. cit., p. 166.

[59]Ibid.

> dramatically. It must be nurtured through many crises from kindergarten through graduate school.[60] (Italics mine.)

On the other hand Crutchfield believes "that conformity and creative thinking are antithetical."[61] (Italics mine.) He calls this a "truism." In this particular article Crutchfield makes two general points: (1) "That conformity pressures tend to elicit kinds of motivation in the individual that are incompatible with the creative process, . . . and (2) that high susceptibility by the individual to conformity pressures tends to be associated with certain personality traits that are detrimental to creative thinking."[62]

Pepinsky describes the young college women in her study as accepting certain limits as unavoidable, but they view authority with "critical respect" instead of "unquestioning servility." These women "conform to the majority view in trivial matters, but where they differ on issues they see as important, they can maintain their positions under pressure." The important idea here is the ability of the nonconforming independent thinkers to accept conformity in areas of unimportant actions or ideas, but to maintain their own unique position in the vital meaningful areas that really matter and for which they can work with conviction and commitment.[63]

Business, industry, and government are vitally interested in

---

[60]Torrance, Guiding Creative Talent, op. cit., pp. 142-143.

[61]See underlined statements by Torrance and Crutchfield. This dichotomy is presented in more detail in Appendix A.

[62]Crutchfield, "Detrimental Effects of Conformity Pressures on Creative Thinking," op. cit., p. 463.

[63]Pauline N. Pepinsky, "A Study of Productive Nonconformity," The Gifted Child Quarterly, IV (Winter, 1960), 81.

developing creative talent among their "key" personnel who are considered a vital resource. Creative talent is a valuable commodity in the personnel market place. What the researchers are finding in these areas certainly has added to the general knowledge about creativity as executives, scientists, and research workers have been studied. There is also the great concern about the embedded cultural expectations and the other kinds of discontinuities which every individual in our society has been steeped in and is continually confronted with. Researchers, writing about creativity in business, industry, and government, have discussed the relationship of creativity and conformity. The consensus seems to be that both are necessary.

Maier and Hayes acknowledge:

> W. H. Whyte, Jr., for the best known and most determined effort to equate participation, teamwork, and democracy in business with mass mediocrity and conformity. The new social ethic, he argues, has overemphasized the value of the group thesis to such a degree that it has led to a delusory and self-destructive trend toward a climate which inhibits initiative and imagination. The solution he offers social institutions lies in the compulsive power of a word: INDIVIDUALISM.[64]

However, these two authors see Whyte's "individualism" creating the "very problems of conformity and mediocrity it is avowed to cure." As they point out "fear and dependency are at the root of the matter. A young man in business today cannot be a nonconformist by himself unless such behavior is acceptable to his superiors." They believe that "men get into trouble more for what they do than for what they fail to do. Conforming may not always be an asset, but it is not dangerous."[65]

---

[64]Norman R. F. Maier and John J. Hayes, Creative Management (New York: John Wiley & Sons, Inc., 1962), p. 25.

[65]Ibid., p. 26.

Nevertheless the job of tightening bolt after bolt after bolt after bolt after bolt into car dash after car dash after car dash after car dash is also very dangerous. Creative outlets can help relieve the tedium.

In connection with mass production of goods, Maier and Hayes outline "a fundamental principle in the philosophy of democratic leadership: people in organizations are interdependent, not independent."[66] The authors explain that:

> Each member needs the help of other members to assume some share of the total task. It is this mutuality of needs that creates interdependence and defines the climate in which creativity must take place. . . . Our problem is not simply to enhance personal freedom and creativity, but to do so within the context of social interdependence. The individualist in the organization who assumes he is independent is merely ignoring the costs of mismanaging the economics of freedom.[67]

Maier and Hayes point out that it is certainly imperative in a democratic society such as ours that, within large and small units of society, such as corporations and families, limitations on individual freedom are necessary. No one can do just as he pleases at any time or else the resulting disintegration of the corporation and the family, of the entire society, would "seriously impair the freedom of every individual in it. The climate would be anarchy."[68]

This is certainly true, but the organizational setup of most corporations, huge and small, does not seem to be capable of the flexibility which can permit divergency, or individuality of effort, or

---

[66] Ibid., p. 35.

[67] Ibid.

[68] Ibid., pp. 29-30.

spontaneousness of feeling, or anything resembling humanness, especially for the individuals on the assembly-line type of jobs. A double standard exists with a few individuals who are "officially encouraged" to be creative in their work. Industry needs men who can fit in and not rock the boat and, of course, there are a great number of individuals in society who have learned to like and accept this kind of effort.

As the family unit changes, further loss of personal attachment will be evident. This might be a unit of society where creativity can still be fostered and enhanced even as it changes dimensions. As ways of fostering and enhancing creativity are devised to fit better the various changing dimensions of society, they need to be fabricated almost on a floating foundation which can adapt flexibly and appropriately to significant changes within society.

Haefele, a research chemist at Proctor and Gamble Company, maintains that the:

> . . . problem of climate arises because organizational pressures operate to limit and to mold creativity. This is but one aspect of the larger problem of conformity, which stands as one of the most important blocks to creativity. We squelch our children with conformity and social adjustment in school, and give them another big dose in business. But creation is nonconformity *per se*. If one applies any logic at all, the organization should strive to make a man whom it desires to be creative, less a conformist than he is already. The creator has to be a nonconformist because every creation is an act of nonconformity.[69]

Maier and Hayes write of the double standard which allows some talented individuals to be creative while making all others continue in desirable, safe and conforming ways on the production line.[70] Fromm

---

[69]John W. Haefele, Creativity and Innovation (New York: Reinhold Publishing Corporation, 1962), p. 193.

[70]Maier and Hayes, op. cit., pp. 31-34.

wrote, quoted above, that "our system needs men who feel free and independent but who are nevertheless willing to do what is expected of them, men who will fit into the social machine without friction, who can be guided without force, . . ."

In a publication written for the Foundation for Research on Human Behavior entitled Creativity and Conformity - A Problem for Organizations, Carol Ludington, its editor, wrote in conclusion:

> CREATIVITY AND CONFORMITY are important to every organization. Both are needed. It is a mistake to assume, loosely, that one is good and the other bad. They are both essential to social progress and social stability. What society and business must work for is a wholesome balance between the two.[71]

Gardner, drawing heavily on the research of Barron, Crutchfield, Getzels, Guilford, MacKinnon, Stein and others for his discussion of creativity, offers many insights which are relevant to the relationship of creativity and conformity. He reports that one of the findings he found most interesting from recent research was the idea that "the creative individual as a rule chooses to conform in the routine, everyday matters of life, such as speech, dress, and manners. One gets the impression that he simply is not prepared to waste his energy in nonconformity about trifles." Just as with Pepinsky's young college women, "he reserves his independence for what really concerns him - the area in which his creative activities occur."[72]

Gardner indicates that "one shortcoming in current writing on this subject has been the tendency to seek a villain." It might be one

---

[71]Carol Ludington, (ed.), Creativity and Conformity: A Problem for Organizations (Ann Arbor, Michigan: Foundation for Research on Human Behavior, 1958), p. 33.

[72]Gardner, op. cit., p. 37.

social class dominating another, Madison Avenue, The Establishment, or any other "tired old bogey man" the individual wishes to use. But, as Gardner advises, "an essential feature of the individual's predicament today is that there is no villain." He writes that "what is oppressing the individual is the very nature of modern society."[73] As he discusses tyranny without a tyrant he says:

> If we understand how these things can happen, then we are in a position to understand that people can construct their own tyrannies. If one's freedom must be invaded, it is perhaps comforting to find the invasion accomplished democratically. But loss of freedom is loss of freedom.
>
> Finally, as we have already seen, many threats to individual freedom do not stem even remotely from the relationships of authority and subordination nor indeed from any political circumstance, but from customs, traditions, and conceptions of what is "proper procedure." These can be as coercive as any tyranny.[74]

Maier and Hayes write that automation may be valuable in freeing men from the assembly line so that human resources may be used "in more creative ways." They say that "machines can do many things better than human beings. This leaves man free to do what he can do best - think."[75]

Even though men might be free to think, Gardner feels that the "root of the difficulty is an attitude of mind that has never really died out in the world, nor perhaps even diminished greatly since the days of the Pharaohs - a willingness to sacrifice human values to other objectives." The author warns that if human aesthetic, spiritual, and social values are not preserved, modern technology will destroy them

---

[73] Ibid., p. 55.

[74] Ibid., p. 56.

[75] Maier and Hayes, op. cit., pp. 33-34.

most certainly.[76] According to Gardner:

> The tyranny of the mass society is not a matter of one man's foot on another man's neck. It is a tyranny of the formula. Mass society searches for common denominators. Sheer numbers make it impossible to take account of individual identity. Serving the mass market requires standardization. Popular culture becomes homogenised. Even political campaigns are planned by the market researcher.[77]

Gardner feels that the fault of society and organizations, and presumably of the individuals themselves, "lies in an assignment of functions that ignores the needs of the individual."[78] So often the man is trained to fit the job. We need to realize that:

> Organization serves man and rules him, increases his scope and hems him in. We must be exceedingly discriminating in weighing its benefits against possible disadvantages. And in doing so we shall discover that everything depends on the patterns of organization.[79]

Gardner sees hope that "on some fronts we seem to be achieving patterns of organization that avoid stultification, rigidity and threats to freedom inherent in monolithic integrations. If this is true, it may be the most important single fact in our future."[80]

Maier and Hayes see that the "problem of improving creative achievement in organizations is basically the problem of maximizing freedoms in social settings. . . . to avoid the pitfalls of irresponsible individualism on the one hand and blind conformity on the other." They have searched for "a synthesis: a new creative climate within the

---

[76]Gardner, op. cit., p. 57.

[77]Ibid.

[78]Ibid., p. 60.

[79]Ibid., p. 63.

[80]Ibid.

framework of organization."[81]

Gardner urges that we need to devise ways to create organizations and other systems of technology so that the talents of individuals are fully used and that satisfaction and dignity are preserved for all human beings. "We must learn to make technology serve man not only in the end product but in the doing."[82]

Maier and Hayes suggest that until automation takes over the drudgery and boredom of repetitive and monotonous work that:

> Group problem solving represents a form of participation that supplies a creative climate wherein individual freedom and creative opportunities are enhanced for every member of the group. It represents an interdependent balance of needs of members and needs of the organization. By maximizing human freedom, it maximizes human creativity. It provides active, responsible roles for each member of the organization in a climate that encourages freedom to think, freedom to disagree, freedom to experiment, freedom to err, and freedom to create.[83]

In the meantime, in spite of what Maier and Hayes say about "irresponsible individualism," we must nuture:

> . . . the creative man who seems a little sandy in the fine-meshed organizational gears [who] is fighting a battle for the very management that may look at him askance. He fights for all men, and for the free spirit of the western world, which has in large degree given freedom to live, and now seeks to maintain freedom to create.[84]

Summary

Conformity is seen as a movement toward some norm or standard while non-conformity is a movement away from such a norm or standard.

---

[81]Maier and Hayes, op. cit., p. 37.

[82]Gardner, op. cit., p. 64.

[83]Maier and Hayes, op. cit., p. 38.

[84]Haefele, op. cit., p. 194.

Suggestibility is viewed also as a movement toward or away due to the uncritical amenability of an individual to influences outside of himself. In the absence of any explanation in the literature reviewed by the investigator, concerning the relationship of conformity and suggestibility, it is assumed, by comparing definitions and descriptions of the process of each, that there is a close relationship - perhaps of being synonymous or at least part of the same behavioral sequence for most individuals.

The work of MacKinnon, Barron, Gouch, and Crutchfield, done at the Institute of Personality Assessment and Research (IPAR) has been coordinated, systematic, and significant. Some of Crutchfield's findings concerning the characteristics of conformity as well as of independence, for purposes of contrast, are presented in detail. Basically, he posits four personality types: (1) the general conformer who lacks ego-strength and is suggestible, (2) the "expedient" conformer who conforms in public but who thinks creatively in private, (3) the counter-conformist who reacts negatively on purpose, and (4) the independent minded person who can accept society without denying himself.

It needs to be pointed out that no one person truly is characteristic of one type or another at any one time. Generalizations are gross estimates at best.

Among the findings reported by Zajonc, as he reviewed the literature on conformity, these are most significant for this study. Conformity is considered a stable individual characteristic showing up repeatedly in different situations as well as in subsequent trials on a single experimental task. Bird indicated that people seem to be suggestible along certain lines in a majority of instances covering a wide range of suggestions. Zajonc reported that children are prone to conform more

readily than adults, girls more than boys (not always found), and women more than men (the most reliable finding in this area).

Dependency is the most outstanding trait, among many personality factors, of people who conform. Because independence and sensitivity are associated with creativity, creative girls are thought to be more masculine (independent) and creative boys more feminine (sensitive). Thus far, a unitary personality disposition to conform generally has not been found consistently.

In a typically contrived conformity experiment, the subject is confronted with the responses of a group of people before he makes his own decision about the situation, the group response is often different on purpose to see if the person can be influenced to change his opinion. This can be done through a number of different contrived situations.

A study of suggestibility with 290 children in grades one through twelve is reported by McConnell. He found that uncritical amenability to suggestion decreased with age, due to the child's wider learning experiences, his greater confidence in perceptions, and his generally increased autonomy. He also found that boys and girls showed no differences when their suggestibility scores were compared.

The basic idea for the Test of Suggestibility (TS) for this study was suggested by Zajonc and shown to be possible by McConnell's study.

Included are a number of significant authors who have written about conformity in our present day society. Almost as a body they have deplored the fact that conformity has been over emphasized and that there must be more provisions made for all people to become more creative.

Anderson's Open and Closed System represents the creative and the conforming aspects of society. Young children start out in life as

open to their total experiences but, with age, their mobility and curiosity are restrained increasingly to keep them in bounds. In school, a child's intellectual activities are often curtailed rather than stretched while behavioral conformity is implicitly expected. Creativity becomes less possible as more forces are brought to bear on the social child.

Children, according to Toynbee are willing to pay a high price for "poor-spirited conformity" since this is what an "egalitarian-minded society" values. Melby says that the children with the most vigorous and obstreperous spirits are the ones able to be themselves completely; turning out to be delinquents or someone, perhaps, who seeks an artistic outlet.

The discussion of the relationship between creativity and conformity attempts to point out that both behaviors are needed. The question that has been unanswered is what degree of each behavior is needed, wanted, or desirable in human activities in the myriad of relationships with others.

Certainly, people cannot do as they wish at all times nor should society impose its sanctions or power on a will-less individual. Individuality must be balanced by considerations for others. Independence must be balanced with dependence and interdependence. Technology must be balanced with humanism. Mass production, mass media, mass advertisement, mass this or mass that must not be the end product of society. The means of production must be appropriate to the needs of the individual. By sacrificing the values of the working man to the drudgery and monotony of production we are threatening our own future role in a technological society.

By learning self-control and self-discipline the person can,

using these behaviors flexibly, become totally committed to a creative way of life. Counselors, teachers, parents, patrons and other interested people can help guide students in creative ways without sacrificing either the individual's creativity or denying societal processes.

Creative people who are independent can conform in areas that are necessary for their physical well-being in society yet be extremely independent in the areas that are of vital concern to them. The intellectual frontier of the mind has much room for creative efforts. This is the area in which every school should be excelling.

By devising social organizations around patterns of human needs and concerns perhaps large and small groups can find a meaningful relationship where creativity can be fostered and enhanced within the framework of individual freedom as well as within the framework of freedom of others who can enjoy the same behaviors and thoughts. By having groups as well as technology serve man, not only in the end product but, in the doing process, society will be capable of maximizing individual achievement as well.

As ways of fostering and enhancing creativity are devised, to fit better the various changing dimensions of society, they need to be fabricated almost on a floating foundation which can flexibly and appropriately adapt to significant changes within society. This floating foundation would be the flexible behaviors of individuals who have learned self-control and self-discipline and who are able to use it flexibly in the pursuit of a creative way of life with conviction and commitment.

CHAPTER IV

CONDUCT OF THE STUDY

Introduction

Most of the first grade children in this study had one year of schooling as kindergarteners during which time they became acclimated to the academic atmosphere at its earliest level. The children had not yet gone through the academic and socialization process to the extent that third and fourth graders have. First graders are still more naive, more open, more curious, and more creative.

Perhaps because first graders are more open and more naive they are also more amenable to suggestion so that they would be influenced by the ideas and behavior of others. Most young eager minds soon learn that conformity is the expected mode of behavior in our society as well as the safer mode. This conformity usually extends past the physical behavior of students to their intellectual behavior as well.

In order to see if first graders are more creative or more conforming than older students a cross section of each age or grade level would need to be included in this study.

The major concern in this study, as stated on the first page and in the Purpose, is with the attempt to assess the variations of creativity and of conformity found in first graders regardless of their relative creativeness or conformity with upper grade children. This

would be an area for future research.

Torrance has shown that children generally receive higher scores on most measures of creativity as they grow older with the exceptions of certain slumps caused by various cultural discontinuities.[1]

McConnell and others have shown that "uncritical amenability to suggestion decreases as children grow older." He suggests that "this decrease is likely to be a function of more and wider learning experiences, greater confidence in perceptions, and generally increased autonomy."[2]

However, society exerts great pressures on children to conform so that generally conformity increases with age as children fit into adolescent roles and then into adult patterns of behavior.

Crutchfield has described the behavior characteristics of extremely conforming persons so we do know something about some people who do conform a great deal in many situations in life.[3]

The investigator was interested to see if the variations of creativity and conformity of first graders especially might be assessed. If a test instrument could be developed that would be sensitive to these variations at this level perhaps the test might be extended to the older children, much as Torrance has been able to do with some of his Minnesota Tests of Creative Thinking tasks. This is an area for further research too.

---

[1]Torrance, Education and the Creative Potential, op. cit., p. 74.

[2]McConnell, "Suggestibility in Children as a Function of Chronological Age," op. cit., p. 289.

[3]Crutchfield, "Detrimental Effects of Conformity Pressures on Creative Thinking," op. cit., pp. 466-467.

As first grade teachers use the S-CIT with their students, it is hoped that the information gained about the variations of creativity and conformity of their students will point out the need for them to provide many opportunities for their students to be more creative. As first grade teachers become more aware of and concerned about providing these opportunities for creativity, their students will be able to open more intellectual doors wider as they pursue their own education.

Teachers of the other grades would need to become equally concerned so that eventually a student could start in kindergarten and proceed up the educational ladder encouraged by teachers who provided every possible opportunity to foster and enhance his/her creativity.

Background

Permission was granted by the Lansing School District for the investigator to conduct his study at the elementary school level. Building principals of the six schools were contacted by the Director of Elementary Education. After discussing the proposed study with each of the six principals, the twelve first grade teachers, two from each school, were contacted, and meetings were arranged to discuss the proposed project with them. All principals and teachers contacted were most willing to participate in the study.

Arrangements were made with the teachers to administer the major test instrument, the Selection and Color In Test (S-CIT),[4] during the week of May 24, 1965, starting on Monday. Necessary instructions[5] and

---

[4]See Appendix B.

[5]See Appendix C.

the first of the five phases of the test were distributed. Each teacher was asked to list and rank his "most creative" and his "most conforming" students on a form[6] provided which listed some criterion for creative children and for conforming children. These nomination forms were collected prior to the administration of the S-CIT so that the teachers might not be influenced by the children's selections on the S-CIT.

Following the administration of the S-CIT by the twelve classroom teachers, arrangements were made for the investigator to administer the Minnesota Tests of Creative Thinking (MTCT) and the Test of Suggestibility (TS). This was to be done either one or two weeks afterwards. One school day was devoted to the administration of the MTCT and TS in each school; one class in the morning and the other in the afternoon. Testing was done on Tuesday, Wednesday, and Thursday of both weeks, leaving Monday and Friday open for any followup.

Right after the two tests were completed, each child was asked individually by the investigator to name or title each object that he had drawn on the three different tasks of the MTCT. The investigator recorded the responses and, in most cases, this was done before the children went home for lunch at noon, or when they came back to school for the afternoon, or by the time they returned home in the afternoon (for those children tested in the afternoon). For several schools it was necessary to return the first open day in order to finish recording all the children's responses. This could have been avoided by having a second person along or by asking the teacher to help record responses, but he would normally be busy with his class again after the tests

---

[6]See Appendix D.

were done.

When all the data had been gathered, an individual folder was made for each student. The drawings for the S-CIT were tallied for each student and for each class. Tables were developed for each class showing the number of each type of drawing selected by each student for each morning and afternoon of each day for the test week. Most students had a total of ten drawings in their folder.

On the back of each drawing the teacher had asked the child to print his name, the school, the teacher's name, whether AM or PM, and the date so that each set of drawings for each child could be kept in chronological sequence or separated and grouped together by the type of drawing, for scoring purposes, and then refiled back in the child's folder in the proper chronological order.

When the ten drawings for each of the 301[7] students were accurately identified on the back and tallied, the various types of drawings were sorted together by type and class for scoring purposes. All of the Clowns of the typical (class) of the Coloring Book (type) were put together to be scored as a group. The scoring process on the nearly 3000 drawings, representing 48 different classes, of five different types, for the S-CIT took most of the summer of 1965. Each drawing was scored first for Elaboration, Originality, Coverage, and Dispersion[8] according to methods developed by Torrance and adapted by the investigator.

Objective scoring procedures for all three tests were worked out

---

[7]There were 309 students in the total sample. Eight students were absent for most of the time. Only the 301 students with five or more drawings were included in the study.

[8]See Chapter I for Definitions of Terms.

as much as possible, and care was taken that they were consistently applied to each drawing of each test by the investigator. The drawings were not rescored by a second party in order to determine the inter-scorer reliability. The investigator rescored a few of the drawings to note the agreement of scores and found it to be satisfactory. The investigator did all of the scoring for all three instruments so the scoring error might be held constant.

The Test of Suggestibility (TS) was scored when all of the other scores from the S-CIT and the MTCT were tabulated on a composite scoring sheet for each student.[9] Another form was devised to record the individual scores from the MTCT for each student so an accurate tally was kept of how each part of each task was scored.[10]

Design

Three tests were used to collect the data for this study: the Minnesota Tests of Creative Thinking (MTCT), the Selection and Color In Test (S-CIT), and the Test of Suggestibility (TS). Each will be discussed in turn.

The Minnesota Tests of Creative Thinking - (MTCT)

The tasks that were used in this study were all figural or non-verbal which means the tasks involved drawing ideas: Picture Construction with a curved, jelly bean shape; Incomplete Figures, Form A; and Circles. These were developed by Torrance at the University of Minnesota

---

[9]See Appendix E.

[10]See Appendix F.

and have been rather widely used experimentally.[11] Permission to use the MTCT was secured from Torrance prior to its use in this study.[12] The MTCT[13] was administered to the students in order to arrive at a relative creativity score for each student obtained from a test that had been used widely for which some validity and reliability had been secured. Torrance had suggested using the particular three tasks because they were non-verbal so the children did not need to write down anything and the tasks could be group administered.

The scoring of the MTCT was aided by using a Guide developed by Torrance.[14]

The Selection and Color In Test - S-CIT

This test was developed by the investigator. The attempt was made to construct a bipolar (two ended) test which, at one end, would measure the degree or variation of the children's creative behavior and, at the other end, would measure the degree or variation of their conforming behavior. The test needed to be of such a design that the children would easily understand the directions, could do the test somewhat independently, and would enjoy doing it, even repeatedly. The teacher would need the test in a form that could be easily administered, easily scored,

---

[11]Personnel Press, Inc., of Princeton, N. J., is publishing this test in standardized form for general distribution under the name of the Torrance Tests of Creative Thinking.

[12]See Appendix G.

[13]See Appendix H.

[14]E. Paul Torrance, Guide for Administering and Scoring Non-Verbal Form B: Minnesota Tests of Creative Thinking (Minneapolis: Bureau of Educational Research, College of Education, University of Minnesota, 1964). (Mimeographed.)

easily interpreted, and would give him valid and reliable results. These factors were all considered in designing the instrument.

In the construction of the S-CIT it was hypothesized that conforming children might more often tend to select a certain type of drawing when given the opportunity to do so. Drawings which are very common and very popular with most children and easily available on the general market are contained in coloring books. So a selection was made of five typical coloring book drawings which were included in the test to see if they might measure the conforming behavior of first grade children. If the children did select a coloring book type drawing, it would be difficult for them to add any of their own ideas. In other words, they would have a minimum of opportunity to express their own ideas on this type of drawing.

It was also hypothesized that creative children might more often tend to select certain types of drawings (or "non-drawings") which would allow the child a great deal of opportunity to add his own lines, areas, colors, and ideas. Based on previous experience, it was thought that a child would not usually select this type of drawing without a very strong desire to express himself more fully. Such drawings had been used in Torrance's Incomplete Figures Tasks. He, in turn, had adopted them from the Drawing-Completion Test developed by Kate Franck. The Stimulus Line type of drawing was included in an attempt to measure the creative behavior of first graders.

Other types of drawings were used to make the test instrument into an ascending scale, which included Coloring Book type drawing (all the lines furnished), a Geometric Design type (fewer lines were supplied), a Dot type drawing (only dots were supplies), and a Stimulus Line type

drawing (just a few lines were supplied). The Coloring Book designs were considered to allow for the least creative response, the Stimulus Line for the most.[15]

In order to translate this idea into an instrument with a range of drawings for making it varied, more interesting, and capable of measuring varying degrees of creative effort, the following scoring scheme was used and assigned to each drawing. The lowest score was given to the coloring book drawing, the highest score to the blank sheet of paper.[16] The scores given to the geometric and dot drawings were considered equivalent. A second score was assigned to each drawing, usually two points lower, in the event the child selected the same drawing twice in one day.

It was thought that the seven part scores from the S-CIT would be correlated with the four part scores of the MTCT in order to determine what, if any, relationship existed between the two tests. Three part scores were common to both tests: Flexibility, Originality, and Elaboration, though the first and the last were scored differently in the S-CIT. A significant positive relationship between the part scores of the two tests would indicate that essentially the same creative abilities were being assessed. This would tend to validate one end of the bipolar S-CIT as capable of measuring creativity. This, of course, does not establish the validity of the MTCT. More about this is included in the

---

[15]The rationale for selecting the different types and classes of drawings for the S-CIT appears in Appendix I.

[16]The blank sheets of colored paper were only offered on Thursday of the week the S-CIT was administered.

section of Validity which follows.

The S-CIT was designed to be administered over a period of one school week in order to measure a degree of a child's creative and conforming behavior for a sustained period of time.[17] This would tend to minimize the effects of a "bad" day or even a "good" day for the child. The idea of using a test over a longer time period was suggested by Calvin Taylor, who indicated that Ghiselin had considered having people "try take-home aptitude tests to find those who continue to be involved and who jot down additional responses whenever they occur." Taylor also indicated that "the ebb and flow of ideas in the creative process suggests the need for tests that assess variability in the performance of an individual over a period of time." People have their ups and downs. According to Taylor, "perhaps the person with the greatest variability over a period of time has more creative potential."[18]

Further support for designing a test over a period of time came from Lansing, of the University of Illinois, who wrote:

> One of the favorite experimental techniques of researchers in art education has been to stimulate a group of children, to have them produce art works based upon the stimulus, and then to evaluate their products. Usually, the products are drawings or paintings produced within 50 minutes after the stimulation. We have believed it to be possible, by this method, to measure accurately the influence of such things as stimulation and school environment. Three questions about this practice arise:

---

[17]For a complete description of the specific directions used in administering the S-CIT, as well as the MTCT and the TS, see Appendix J.

[18]Taylor and Holland, "Predictors of Creative Performance," Creativity: Progress and Potential, op. cit., p. 22.

1. Is there any reason to expect an immediate reaction to a stimulus?

2. Is there any reason to assume that an individual will do equally well in all media?

3. Is 50 minutes long enough for each individual to give form to his unique reaction to the stimulus?

If the effect of a stimulus may be delayed (for an hour, a day, a week), if artists are not necessarily equally proficient in all media, and if a Piera della Francesca conceivably would require more time than a Mathieu to finish his work, then there is reason to doubt the validity of results obtained under the research conditions we have described.[19]

Administering a test over a period of time would furnish a type of reliability. However, attempting to gain in reliability by readministering the S-CIT and the TS a second time to the same children did not seem feasible in the present study. Further research is necessary in refining or abbreviating the S-CIT and in securing additional validity and reliability data concerning it. The same holds true for the TS if further developmental work in this area seems warranted and appears to be fruitful.

Since the S-CIT instrument consisted basically of six different drawings for each of five days, it was necessary to find, to adapt, or to create enough equivalent drawings for each of the four types of drawings for the five days. In addition, enough copies of each drawing needed to be duplicated to anticipate the eventuality of every child picking the same drawing if it happened to be especially appealing. It was assumed, however, that there would be enough diversity of interest and behavior in the class so that all the children would not ask for the

---

[19]Kenneth M. Lansing, "Editorial," Studies in Art Education, IV, (Fall, 1962), 1.

same drawing. In the pre-testing of the instrument in several different schools prior to using it in Lansing, the investigator did find that children typically chose different drawings. It was felt important that each of the six drawings be equally available both at the AM and the PM sessions. Depending on the size of the classes, either 30 or 35 copies of each drawing were duplicated.

In addition, the first grade classes in each school were designated as Group A and Group B to see if certain drawings of the S-CIT would be affected by pairing them with other drawings. Two drawings of equal appeal would reduce the number of selections of each while an appealing drawing paired with an unappealing drawing would skew the selections in favor of the appealing drawing.

The idea was to find out, by using a wide range of drawings, which set of drawings or which particular pairings of drawings, or repairings, might make up the final set for the final test instrument which would be given on just one day. The day could be determined by seeing which of the five days obtained the most "even" responses from the children in the present study. It was assumed that Wednesday would be a good day to administer the test since in the middle of the week children would be neither "too tired" nor "too fresh."

The Test of Suggestibility

After investigating the area of conformity studies and suggestibility studies, the present investigator found no suggestibility test that would be suitable for using with first grade children. The test needed to be as simple and short as possible, not involve written responses, and measure suggestibility as exclusively as possible. The

approach of the TS was suggested by Zajonc and shown to be possible by McConnell. The purpose of the test was to measure the degree or variation of children's conforming behavior.

The basic idea in conformity and suggestibility research appears to be very similar as is carried on in social psychology research. In such research an attempt is made to influence a subject to shift his response from an initial response, given under neutral circumstances, to a false norm of some type usually contrived by the investigator. In most experimental test situations some outside influence is exerted to cause the person to change or shift his own opinion, judgment, or position to the one desired by the investigator. If the person conforms by shifting toward the response desired by the investigator, he could be considered suggestible. The investigator attempted to find research concerning the relationship of conformity and suggestibility, but none was available. However, it is assumed here that the two characteristics are a part of the same general behavioral process.

There are three methods of testing for conformity which are quite widely used experimentally. They include Sherif's autokinetic phenomenon,[20] the Asch technique using lines,[21] and the Crutchfield apparatus.[22]

The investigator translated this approach, suggested by Zajonc

---

[20]Eugene L. Hartley and Ruth E. Hartley, Fundamentals of Social Psychology (New York: Alfred A. Knopf, 1952), p. 6.

[21]Solomon E. Asch, Social Psychology (Englewood Cliffs, N. J., 1952), p. 451.

[22]Richard S. Crutchfield, "Conformity and Character," American Psychologist, op. cit., p. 191.

and also by McConnell, into the Test of Suggestibility. The first graders were asked to choose one of two drawings that they would like to take and color in if they had the chance again. There were eighteen pairs of drawings. All the drawings for the TS were selected from only those drawings used for the S-CIT and were paired so that an "art oriented" drawing appeared in each pairing. The art oriented drawings were either an atypical Coloring Book drawing, a complicated Geometric Design drawing, a complicated Numbered or an Unnumbered Dot drawing, or an Open Stimulus Line drawing. These classes of drawings had actually been selected least frequently by the children when the S-CIT was administered.[23]

The first graders saw each of the eighteen pairs of drawings, one pair at a time, and were asked to record their responses by circling the corresponding number and letter on a response sheet supplied for the purpose.[24] The first time through the set of paired drawings the children were asked simply to choose one of the two drawings they liked the best. The second time through the set of eighteen pairs of drawings the investigator attempted to influence the children to shift their second response from their first response, already recorded and collected, to the false norm established by the investigator. The false norm was established as the contrived responses of three different shift agents: other first grade children in Lansing, other fourth grade children in Lansing, and other Art Teachers in Lansing. The eighteen pairs were

---

[23]The rationale for each type and class of drawing is given in Appendix I.

[24]See Appendix K.

divided in thirds, six responses to be given for each shift agent.

It was hypothesized that the children who shifted their second response to the false norm would be more conforming children because they were influenced by the idea that some other group, the shift agent, liked the drawings they had not chosen the first time through the paired drawings. Perhaps, if others liked the drawing so much, they would shift and choose the suggested drawing selected by the shift agent. The false norm was always the drawing that was art oriented. It should be pointed out again that these same art oriented drawings included in the TS were part of the S-CIT. Children usually had not picked these drawings to color in as often at the time the S-CIT had been administered so the investigator found this useful on two counts: (1) for selecting or contriving these drawings for the false norm, and (2) as the basis for an Art Score. When the TS was given the first time, the children had marked their answer sheets with the drawing they liked the best. When only the first responses which coincided with the art oriented drawing were counted, this yielded an Art Score for each child. This is an avenue of investigation planned for the future.

The TS yielded two other scores that were used in the data in this study. One was called the Positive Shift (PS) score and represented the child's change or shift of his second response toward the false norm. It might have been referred to as his Conformity Score. The one called the Negative Shift (NS) score represented the child's change or shift of his second response away from the false norm and also away from his first choice which, in this situation, coincided with the false norm. This might have been referred to as his Nonconformity Score. A great many children did not change or shift but apparently remembered which

drawing they liked the best on their first response and duplicated their response the second time in spite of the nominal "soft sell" approach by the investigator to influence their second choice to shift to the false norm.

However, some children did shift to the false norm, and one may speculate why they shifted. First, the investigator is a rather tall, adult male whom some of the children may find imposing. Further, visiting art teachers are favored figures in a first grader's school life; and if this teacher suggested the superiority of certain drawings, this would undoubtedly influence some of the children's opinions. Further, the equal appeal or dislike of certain drawings make it difficult to decide, and, therefore, the children's opinions of them might be more amenable to change. Also, the fact that other children in the city chose certain drawings may have influenced their choices. However, the reasons why some youngsters shifted their opinion and others did not need not be of concern here; it is enough to say that some were influenced by some factor or combination of factors at a particular moment, and the shift can be called conforming to the suggestion stimulus.

It was thought that if the PS score were to have a significant negative correlation with the MTCT part or total scores and possibly the S-CIT, it might indicate the antithesis of creativity - namely conformity. Also, the possibility that the NS score might possibly have a significant positive correlation with the two other tests was considered.

The TS had not been tested for either validity or reliability except as it might have a certain valid relationship with the MTCT. It was designed to test conformity in order to validate the opposite end of the bipolar S-CIT instrument.

Even though the investigator felt the TS was being administered successfully at the time, a number of children failed to respond to the complete set of eighteen pairings of drawings. In the event the child failed to respond six times or more his score on the TS was not included or recorded on the composite scoring sheet. The investigator made some very careful judgments for the children who lacked six or less responses and their scores were recorded including those made for them by the investigator.

Instrumentation

In the Selection and Color In Test the student chooses a drawing from a set that ranges from drawings with all the lines supplied (Coloring Book) to those with only a few lines supplied (Stimulus Line).

If the student selects a Coloring Book type drawing it was hypothesized that the child, at that moment, shows a degree of conforming behavior; that is, he is conforming to the situation or norm, which in this case is defined as that which one might normally expect a student to follow. In other words, one would expect a student to choose a drawing that is familiar to him, that he enjoys doing, that requires little mental or artistic effort, that he can do quickly, that looks good when it is done, and that generally requires no creative independent thought.

If the student selects a Stimulus Line type drawing, it was hypothesized that the child, at that moment, is showing a degree of creative behavior. The behavior is hypothesized to be creative because it represents a rejecting of the norm and of the expected by disregarding all the other more common drawings and picking the one that might

be new to him; that he has never tried before, much less seen before; and that would require some creative independent imaginative thought.

As mentioned, the various types of drawings were given weighted scores in order to translate their selections on the S-CIT into some type of relative measure.

TABLE 4-1 gives a description of the scoring schema for each type and class of drawing on the S-CIT.

These selection scores also appear on the composite scoring sheet.[25]

By arranging the 48 drawings in a visual relationship such as is done in TABLE 4-2, the reader can see the total range of the instrument as it was administered to both Group A and Group B over the period of five days.

Each drawing mentioned by title in TABLE 4-2 is included in Appendix B arranged in the same order chronologically with Group A's set of drawings followed by the set for Group B for the days when each day had different sets. All drawings are included with permission of the particular owners or those who could grant such permission and are mentioned in the Acknowledgments.

Major Selected Sample

Three hundred and nine boys and girls from twelve first grades were selected on the basis of the location of their six schools in different socio-economic areas in the Lansing School District. Schools were selected in which several different racial groups were represented.

---

[25]See Appendix E.

TABLE 4-1

A DESCRIPTION OF THE SCORING SCHEMA FOR EACH TYPE AND CLASS OF DRAWING ON THE SELECTION AND COLOR IN TEST

Selection Score 1st	Selection Score 2nd	Type	Class	Short Description
1	0	Coloring Book	Typical	All lines provided
3	1	Coloring Book	Atypical[a]	All lines provided
5	3	Geometric Design	Simple	Disproportioned shapes;Symmetrical
7	5	Geometric Design	Complicated[a]	Flexible movement; Asymmetrical
5	3	Dot Numbered	Simple	A few dots and numbers provided
6	4	Dot Numbered	Complicated[a]	A lot of dots and numbers provided
7	5	Dot Unnumbered	_____	Dots and circles of various sizes
9	7	Stimulus Line	Closed	A few basic lines with closure
11	9	Stimulus Line	Open[a]	A few basic lines with no closure
13	11	Blank Paper	White	No lines whatsoever
13	11	Blank Paper	Colors	No lines whatsoever; Five colors

[a]Indicates that the drawing was usually considered "art oriented." It was used as the false norm drawing on the Test of Suggestibility as well as being the basis for the Art Score obtained on the TS. See TABLE 4-2 for examples of specific "art oriented" drawings. See also Appendix B for the actual drawings. See also Appendix E for the composite scoring form which also shows which drawings were designated "art oriented."

First graders were selected because it is at this grade level that creativity needs to be continued just as it was encouraged in the kindergarten setting. The first grade teacher who is sensitive to these needs can help keep the students' interests and curiosity open. As the teacher learns more about his first graders he is in a better position to open many more doors at this early school age. As the teachers in the succeeding grades become equally sensitive to these needs children can go through their years of schooling with their intellectual frontiers more fully explored and expanded.

TABLE 4-2

BREAKDOWN OF THE DAILY SCHEDULE OF THE FORTY-EIGHT DRAWINGS USED ON THE SELECTION AND COLOR IN TEST DURING THE FIVE DAY WEEK WITH SIX DRAWINGS OFFERED EACH DAY AS INDICATED BELOW

FOR GROUP A

Type & Class of Drawing	Days of the Week with Title of Drawings for Each Day				
	Monday[b]	Tuesday	Wednesday	Thursday[b]	Friday
CB Typ	Clown	Bird	Fishing	Tom & Pig	Train
CB Atyp[a]	First Steps[c]	Puff[d]	Cheering[e]	People & Dog[f]	Still Life[c]
GEO Simp	Cross	----	Circle	----	Triangle
GEO Comp[a]	Design	----	Parabola	----	Flexible
DOT-N Simp	----	1-2-3-4	----	Rabbit	----
DOT-N Comp	----	----	----	----	----
DOT-UnN[a]	----	Large & Small	----	Dispersed	----
STIM Clos	Flame[i]	Hat	Flag	Wheels	Bumps
STIM Open[a]	S Curve	Waist	Beach "H"	Mtn. Line	Sticks
BLANK	----	----	----	Six Colors	----

FOR GROUP B

CB Typ	Clown	Still Life[c]	Woman[h]	Tom & Pig	Vendor[g]
CB Atyp[a]	First Steps[c]	Seated Woman[c]	Player[e]	People & Dog	Puff[d]
GEO Simp	Cross	----	Triangle	----	Circle
GEO Comp[a]	Design	----	Parabola	----	Flexible
DOT-N Simp	----	----	----	Rabbit	----
DOT-N Comp	----	Sailor	----	----	----
DOT-UnN[a]	----	Large & Small	----	Dispersed	----
STIM Clos	Flame[i]	Hat	Bumps	Wheels	Flag
STIM Open[a]	S Curve	Sticks	Beach "V"	Mtn. Line	Waist
BLANK	----	----	----	Six Colors	----

[a] An "art oriented" drawing. See specific titles of drawings.

[b] Sets of drawings for Monday & Thursday same for Groups A & B.

[c] Paintings by Pablo Picasso.

[d] Originally used by John Anderson.

[e] Adapted from paintings by Bob Peak.

[f] Painting by Joan Miro.

[g] Painting by Diego Rivera.

[h] Painting by Henri Matisse.

[i] From Figural Form B - Torrance Tests of Creative Thinking.

Intelligence test scores were not available for the children because students usually do not take these standardized tests until the second grade. The possibility of doing the study with second grade students was considered since at this level the intelligence test scores would be available, but it was felt the advantages of dealing with first graders outweighed the advantage of having I.Q. scores available for a second grade sample. The investigator considered giving an intelligence test to the first graders in this study, but the time involved in doing this made it prohibitive.

Future research using the data collected in this study perhaps would indicate differences between white and non-white first graders, between children from different socio-economic areas, and between children in the same school in different classrooms.

Rejected Sample

Eight first graders were absent so much of the time during the week that the Selection and Color In Test was administered that they were not able to complete five or more drawings so they were not included in the Sample. Some children were absent during the administration of the MTCT and the TS but they were retained in the Sample because they had completed more than five drawings of the S-CIT. By using the Missing Data Routine for the computer, just the data that were available for each subject were used. A number of students did not complete enough of the TS to include their responses in the final data so the number of subjects who had missing data on the various part scores of the three tests varied considerably.

Pre-test Sample

Two first grade classrooms in one of the Haslett Elementary Schools and two first grade classrooms in one of the East Lansing Schools were used in order to try out the Selection and Color In Test instrument. Administrators and teachers cooperated willingly. Data was collected from approximately 100 first graders which helped to answer a number of questions.

Statistical Null Hypotheses

1. There will be no significant correlation between the total score of the MTCT and the PS score of the TS.
2. The part scores of the MTCT, the part scores of the S-CIT, the PS and the NS scores of the TS, will not differentiate between the Creative and the Conforming groups nominated by their teachers.
3. The SEL part score of the S-CIT will have no significant correlation with the total score of the MTCT.
4. The ELAB part score of the Picture Construction Task of the MTCT scored by Torrance's method will have no significant correlation with the same task and part score as scored by the Smith method.
5. The S-CIT part scores will yield no significant correlation with the total score of the MTCT.
6. The part scores of the S-CIT will have no significant correlation with the corresponding part scores on the MTCT: FLEX, ORIG, and ELAB.
7. There will be no significant correlation between the AM part scores and the PM part scores of the S-CIT.

Data Collection Devices

A number of devices were designed for recording the data systematically from the S-CIT, the MTCT, and the TS.

For the S-CIT the children drew their responses right on the drawings provided. The teacher recorded their titles on the drawings themselves. Scoring of Elaboration, Originality, Coverage, and Dispersion was done on the front of each drawing. These four scores and three others, Selection, Flexibility, and Color, were compiled on the composite scoring sheet. (See Appendix E for the composite scoring sheet.)

On the MTCT each child responded by drawing certain objects for each of the three tasks in the test booklet provided. (See Appendix H for a copy of the MTCT.) Titles were given by the children individually to the investigator, who wrote them beneath each object drawn. Scoring was done on a separate scoring sheet on which it was possible to indicate the scores in detail for future reference. Scores were obtained for Fluency, Flexibility, Originality, and Elaboration. These were recorded on the front of each child's MTCT booklet as well as on the composite scoring sheet. (See Appendix F for the scoring sheet used just with the MTCT.)

On the TS the children responded by marking their choices first on a green sheet and then on a pink sheet. Scoring was done when this information was compiled in a special section on the composite scoring sheet. (See Appendix K for a copy of the green and pink response sheets.)

Teachers' nominations of their pupils as "most creative" and "most conforming" were written on a form provided by the investigator prior to the administration of the S-CIT. (Appendix D.)

When all the tests had been scored and the data compiled on the composite scoring sheet, they were transferred to a coding form for key-punching on statement cards by operators at the Computer Center at Michigan State University. After the data were run through the computer, a number of pages of statistical data were obtained which provided the information on which the findings are based.

Data Processing

Three statistical programs were written which provided the data to test the null hypotheses. For various reasons a number of children did not have complete data for all of the part scores involved in the computations. The Missing Data Statistics Routine (MDSTAT) was used in these instances. This procedure allowed the investigator to use as much of the available data in the many correlations desired.[26]

The second program used the Least Square Deletion Routine (LSDEL).[27,28] This enabled a multiple regression analysis to be made of the four part scores of the MTCT, as the dependent variable, and the seven morning and seven afternoon part scores of the S-CIT, as the independent variables.

---

[26]William L. Ruble and Mary E. Rafter, Michigan State University Agricultural Experiment Station, STAT Series Description No. 6, Calculations of Basic Statistics When Missing Data is Involved (The MDSTAT Routine), (January, 1966). (Mimeographed.)

[27]William L. Ruble, Donald F. Kiel, and Mary E. Rafter, Michigan State University Agricultural Experiment Station, STAT Series Description No. 7, Calculation of Least Squares (Regression) Problems on the LS Routine, (March, 1966). (Mimeographed.)

[28]Mary E. Rafter and William L. Ruble, Michigan State University Agricultural Experiment Station, STAT Series Description, No. 8, Stepwise Deletion of Variables from a Least Squares Equation (LSDEL Routine), (March, 1966). (Mimeographed.)

The third program used the same LSDEL Routine to do a multiple regression analysis, with the teacher nominations of their students as "most creative" and "most conforming" as the dependent variable, and with the part scores of the MTCT, the S-CIT, as well as the PS and NS scores of the TS for the three shift agents computed separately, as the independent variables. In the latter program a linear discriminant analysis was used in order to maximize the differences between the two groups of the "most creative" and the "most conforming" students. The "most creative" students were designated as "1," while the "most conforming" students were designated as "0." The mean scores for the creative children then could be compared with the mean scores for the conforming children to note the variance.

Validity and Reliability

Validity

Taylor indicates that "minimum reliability of [creativity] measurement techniques is essential, although, given a certain minimum, reliability is less important than validity."[29]

He also reviews the concurrent validities of variables related to creative performance. He and Holland discuss the following areas which give a rather complete picture of the various ways in which researchers are working: correlates of tests of creativity with no external criteria, concurrent validities based upon external criteria, motivation and interest inventories, biographical information, personality

---

[29]Calvin W. Taylor, "Some Knowns, Needs, and Leads," Creativity: Progress and Potential, op. cit., p. 185.

and originality scales, self-ratings, ratings by others, special devices (such as the Problem Solving Apparatus, invented by John and Rimaldi) and tests, physical measures and effect of drugs, and situational or environmental influences.[30]

At the Fifth Utah Creativity Research Conference, a participant asked Guilford about the large number of intellectual dimensions that might be involved in creativity and would not just one of these many factors account for very little of the variance in a criterion of creativity? Guilford replied that no only was this true but with so many factors involved in such a complex area as scientific research no one factor is likely to show much validity since you have to divide the predictable variance in the criterion in many parts. Guilford felt that "a combination of tests of all the relevant intellectual factors, however, should give substantial prediction. Adding nonaptitude and aptitude predictors in a composite should do even better."[31]

Admittedly, validity and reliability are very difficult to establish when attempting to assess human behavior. Torrance reports in several of his books that he and his associates attempt to establish some types of validity for their measures of creative thinking involving one or the other of these two approaches:

(1) Identifying high and low groups on some test measure and then determining whether or not they can be differentiated in terms of behavior that can be regarded as "creative."

(2) Identifying criterion groups on some behavior regarded as

---

[30]Taylor and Holland, "Predictors of Creative Performance," Creativity: Progress and Potential, op. cit., pp. 34-39.

[31]J. P. Guilford, "Progress in the Discovery of Intellectual Factors," Widening Horizons in Creativity, op. cit., p. 278.

creative and then determining whether or not they can be differentiated by test scores.[32]

Torrance has often used teacher and peer nominations as immediate criteria to establish validity. The latter measures are particularly significant above the third grade. He writes that "quite uniformly we have found that children nominated by their teachers on such criteria [as creative thinking, curiosity, and the like] achieve higher scores on the tests of creative thinking than do their peers not so nominated or who are nominated as being especially low on the criterion in question."[33,34] Teacher nominations of their children as "most creative" and as "most conforming" were asked for in this present study. The findings are reported later.

Torrance cites a study by Yamamoto in which teachers were asked to choose fifth grade students whom they considered most capable: (1) of producing the greatest number and the most unusual ideas; (2) of finding alternative ways of meeting problems; (3) of being the most inventive and of developing new ideas, and (4) of being able to figure out all the details involved. The teacher nominations of students based on the above criteria clearly differentiated the fifth graders nominated from those not nominated by their teachers on three of the four scores of Form D of the MTCT that Yamamoto used, thus providing a rough validation for

---

[32]E. Paul Torrance, "The Measurement of Creative Behavior in Children," Productive Thinking in Education, op. cit., p. 212.

[33]Torrance, Rewarding Creative Behavior, op. cit., p. 275.

[34]In discussing the early development of the MTCT several examples of validity were included in Chapter II of this study which are not included in this section.

the three scores.[35]

Longitudinal studies have been mentioned by some researchers as a possible way for validating criterion. In such an approach an experimental and a control group of creative children are tested and observed over an extended period of time on the basis of a wide range of criteria to determine if those originally most creative would subsequently prove to be most creative.

Reliability

Torrance reports that generally, test-retest reliabilities after specific lapses of two weeks, three months, eight months, and twelve months have shown satisfactory results. Also quite satisfactory have been the battery totals. Correlations of around .88, even with the alternative forms of the test instruments, have been found for the intermediate grades and the college students. Reliability figures for the primary grades for battery totals have ranged from the upper .40's to the .70's. When retesting for single factors, reliabilities are lower. For example, test-retest reliabilities in the primary grades for single tasks and scores in a few cases drop as low as the .30's. Torrance is "not so concerned about the lack of reliability of the tests in the primary grades as [he is] about the conditions that cause this low reliability in scores."[36]

Elsewhere Torrance states that at the kindergarten, first, second, and third grade level, test-retest reliability is not as high

---

[35]Torrance, op. cit., p. 275.

[36]Torrance, "The Measurement of Creative Behavior in Children," Productive Thinking in Education, op. cit., pp. 211-212.

as he would like. But he is not especially worried about this since his major interest is "in evoking and developing whatever creative talents a child possesses." Torrance further explains that test-retest reliability can be influenced by conditions of the home and the school, by whether creative thinking and creative achievement are rewarded or discouraged from day to day or week to week.[37]

In the present study reliability was calculated on the basis of a comparison between the mean of the seven morning (AM) part scores and the mean of the seven afternoon (PM) part scores. This represents a test of reliability over a span of five days.

Analysis

Appropriateness of the Statistics Used

A variety of correlation coefficients were computed to determine the relationships between certain variables, and two multiple regression analyses were used. By this method the best combination of significant variables that would give the best prediction was found. Fisher's linear discriminant function was used in one of the multiple regression analysis. Guilford explains that the general principle of the discriminant function "is that the different scores or measures will be weighed in such a way as to maximize the differences between the means of the two composites derived from two criterion groups, relative to the variance within those groups."[38]

---

[37]Torrance, Education and the Creative Potential, op. cit., p. 62.

[38]J. P. Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw-Hill Book Company, Inc., 1956), p. 432.

In Regard to Correlations

It is assumed that if either a significant positive or a significant negative correlation existed between certain variables that certain of the stated hypotheses would or would not be capable of prediction. Five such hypotheses were so stated: one, three, four, six, and seven. Hypotheses two and five are discussed shortly in relation to the multiple regression analysis used.

Concerning First Hypothesis.--It was felt that there might be a negative relationship between the total score of the Minnesota Tests of Creative Thinking (MTCT), measuring a degree of creative thinking for each first grader, and the Positive Shift (PS) score on the Test of Suggestibility (TS), measuring a degree of conformity for each first grader. A child with a high creative thinking score on the MTCT would be more creative and not-as-conforming so that a low PS score on the TS would tend to support this hypothesis.

Concerning Third Hypothesis.--An attempt was made to show that a high Selection (SEL) part score on the S-CIT would indicate that the children who received the highest scores on SEL would be the most creative students. The basic assumption is that the most creative first graders would consistently seek to express themselves in the fullest manner possible. It was further assumed that they could do this more fully by selecting a Stimulus Line drawing. As mentioned, the scores given for SEL for different types of drawings were weighted; the highest score given to the Stimulus Line Type drawing.[39]

---

[39]Actually, the highest score was given to the Blank Sheet of Paper Type but this was only offered to the children in the S-CIT once during the five days - on Thursday.

A child who had selected the Stimulus Line drawing would have a high SEL part score for the week. If the relationship between the SEL part score, for each child, and the total score of the MTCT, for the same child, would be significantly positive, then some validity would be established for the SEL part score, assuming that the MTCT had a significant degree of validity. Partial validity has been established for much of Torrance's MTCT through teacher and peer nominations and other observations of creative behavior.

Concerning Fourth Hypothesis.--Torrance, in scoring his figural non-verbal tests of the MTCT for Elaboration (ELAB), instructs the scorer to follow certain directions. He indicates that:

> Two assumptions underlie the scoring of elaboration for the Picture Construction Test [as well as the Incomplete Figures Task and the Circles task]. The first is that the minimum and primary response to the stimulus figure is a single response. The second is that the imagination and exposition of detail is a function of creative ability, appropriately labeled elaboration.
>
> Therefore, in scoring elaboration, credit is given for each pertinent detail (idea) added to the original stimulus figure itself, to its boundaries and/or to the surrounding area. However, the basic response itself must be meaningful before elaboration has any worth, or can be scored.[40]

Further, Torrance gives one point for "each essential detail of the total response, but once that class of detail is scored, further evidence of the same class is not counted."[41] In other words, the repeat of an idea does not count. In art, however, we do count on the repeat of an idea, called a motif, to establish patterns. Much effort

---

[40]Torrance, Guide for Administering and Scoring Non-Verbal Form B: Minnesota Tests of Creative Thinking, op. cit., pp. 11-12, 29.

[41]Ibid., p. 12.

is spent in trying to get this idea across to students from the third grade up; that elaboration, or textural surface enrichment, makes for a much more interesting drawing or design. But this is not the primary point of disagreement with Torrance concerning ELAB. In regard to the scoring of the Circles task he states:

> The principles for scoring elaboration for the Circles task are the same as those which have been stated for the Incomplete Figures task. The problem is to determine the number of ideas communicated by each subject, IN ADDITION TO THE MINIMUM BASIC IDEA. How much of a story does the response tell?[42]

For example, a circle is not an apple until it is minimally elaborated with a curved stem or other basic appurtenance which identifies it as only an apple. A circle is not a face until the minimum of eyes, nose, and mouth are drawn in. Once the basic object is identified, further elaboration will count and increase the ELAB score for the student on the task. The worm would be counted. Eye lashes over the eyes would be counted. This implies a basic pictorial dictionary for this particular scoring so that every figure or object would need to be defined by the minimum lines drawn which will basically identify it as one thing and not another. Then any additional and non-repetitive lines added to elaborate the object will increase the score for the child.

The contention is that this method of scoring ELAB on the various tasks was difficult to do consistently, without such a pictorial dictionary, and perhaps did not represent an additional aspect of creativity - namely, the energy level of the creative child. It was never stated by Torrance, nor anyone else, as far as the investigator could find, that the energy level factor was even considered, much less felt to be

---

[42] Ibid., p. 29.

important. Of course, there are a great number of other factors that can be assessed, but that is not the point. It was the investigator's assumption that the more creative child would, of necessity, need more energy and be more willing to expend that energy in order to draw all the things his mind would bring forth. Just as feeble minded children do not usually show up as being creative,[43] a physically lazy child would have difficulty satisfying the demands of an especially active and pregnant mind. The investigator devised a method (described in Definition of Terms) whereby all lines drawn by the child, including repetitions, either made with pencil or with crayon, which did not trace over another line already supplied on the selected drawing, would be scored. A continuous line, with no breaks or definite changes of directions, would be counted as one line. If the line zigged and zagged and changed directions many times, each change of direction would constitute a different line and a higher score.

In order to see if this method of scoring ELAB would be related to the method used by Torrance an hypothesis was stated to be tested statistically. A significant positive relationship would indicate that both methods were predicting essentially the same thing.

One particular task, the Picture Construction Task, was scored by both methods to determine this relationship, although the investigator's method was used throughout the scoring of ELAB on the S-CIT.

Concerning Sixth Hypothesis.--There were three part scores on both the MTCT and the S-CIT which were common to both tests. These were

---

[43]Getzels and Jackson, Creativity and Intelligence: Explorations with Gifted Students, op. cit., p. 26.

Flexibility (FLEX), Originality (ORIG), and Elaboration (ELAB). Only ORIG was scored similarly by Torrance and the investigator. FLEX on the S-CIT was based on the particular types of drawings selected by the child. It was assumed that a child who selected a Stimulus Line drawing, then a Coloring Book drawing, and then a Stimulus Line drawing would be a more flexible child than one who always selected either all Stimulus Line drawings (and who would receive a high SEL part score and be more creative) or the child who always selected a Coloring Book drawing (and who would receive a low SEL part score and be more conforming). The assumption is that a creative child is freer to select whatever he would like to work on to express himself most fully at the moment. At some point in the week he might be attracted to a particular Coloring Book drawing and, being free and open, could select it to work on. At other times, he would have need or see the possibilities for a more complete expression of his own ideas and would be open and free to select a Stimulus Line drawing. As he selected different types of drawings it was assumed that he would be more flexible.

The apparent inconsistency between a high SEL score (more creative) and a low FLEX score (less creative) is explained in this way: the more creative child who always selects a Stimulus Line drawing and who has a low FLEX score would be sacrificing one ability for the other. It is felt that the SEL factor is more important and would supercede the FLEX factor. In other words, the opportunity a child takes to be able to express his own ideas is more important, according to the investigator, than the shifting back and forth between the Stimulus Line drawings and the Coloring Book drawings.

Torrance's method of scoring FLEX used the same idea of shifting

back and forth but does so by counting the number of different categories into which the responses fall. He has classified most of the responses given by the children he has studied into specific categories which can be referred to in the scoring manual by subsequent examiners.[44]

The two methods of scoring ELAB by Torrance's method and the investigator's method have been discussed above.

It was felt that a significant positive relationship between these three scores in common, FLEX, ORIG, and ELAB, on the MTCT and on the S-CIT would lend some validity to the S-CIT, again assuming that the MTCT was testing what it was purporting to test - several aspects of creative thinking. It would also show that alternative methods of scoring predict the same creative ability. If more efficient, yet still significant, scoring methods can be devised, the usefulness of the test instrument is thereby increased.

Concerning Seventh Hypothesis.--Since the S-CIT was not given as a retest to determine its reliability over a two, three, or four week interval it was felt that by comparing the Morning (AM) part scores with the Afternoon (PM) part scores that a degree of reliability could be shown since the same basic instrument with different, though equivalent, drawing types, was used for the period of five days - Monday through Friday.

It was felt that a significant positive relationship between the AM and the PM part scores would indicate a significant degree of reliableness in prediction. Correlations between the seven AM part

---

[44]Torrance, Guide for Administering and Scoring Non-Verbal Form B: Minnesota Tests of Creative Thinking, op. cit., pp. 13-18.

scores and the seven PM part scores were calculated to find this out.

Multiple Regression Analysis

Concerning Second Hypothesis.--The twelve teachers had been asked to nominate and rank their "most creative" and their "most conforming" students. Some teachers rated just a few students while several teachers attempted to nominate their whole class as either creative or conforming. It was felt that the more creative students would receive higher scores on the MTCT and the S-CIT than the more conforming students. In addition, it was felt that the more creative child would also receive a low Positive (PS) score on the Test of Suggestibility (TS). Using the teachers' nominations of their students, as most creative and most conforming, as the dependent variable, and the twenty-six other part scores on the MTCT, the S-CIT, and the TS, as the independent variables, a multiple regression analysis was selected to best determine the most significant relationships as well as the particularly significant variables which would afford high prediction.

After the various correlations were computed the least significant variables were eliminated or deleted in the subsequent computations in the multiple regression analysis until the most significant variables remained with high predictive capabilities.

In order to differentiate the two groups statistically, the most creative from the most conforming, Fisher's linear discriminant function was used. This permitted all of the scores for the most creative children to be computed for that group and the same for the most conforming children. It was thought that if the relationship between the teacher nominations, as most creative and most conforming, had a significant

positive relationship with the numerous part scores of the MTCT, the S-CIT, and the TS, that a degree of validity would be provided for the MTCT as well as for the S-CIT. It would also show that the teachers in this study were capable of nominating their students quite accurately as being "most creative" and as "most conforming" as shown by their high and low scores on the MTCT, the S-CIT, and the TS.

Concerning Fifth Hypothesis.--With the total score of the MTCT, as the dependent variable, and the fifteen part scores of the S-CIT, counting AM and PM scores separately, as the independent variables, a multiple regression analysis was used to see if there might be a significant positive relationship between the total score of the MTCT and the fifteen part scores of the S-CIT. If there was a significant positive relationship it was felt that the S-CIT would have a high degree of validity, assuming the MTCT was quite valid. On the other hand, if the relationship was not significant, it might be assumed that the various part scores on the S-CIT were measuring other aspects of creative behavior, just as valid and just as important, as the various aspects measured by the MTCT.

This would be true for the other relationships in all of the previous hypotheses. A low correlation between variables might mean that a number of different and distinct factors or abilities of creative behavior were being measured by the MTCT and the S-CIT.

Summary

Permission was granted by the Lansing School District to conduct this study with first grade students after which the proposal was discussed with the six building principals and the twelve teachers who would

be involved. All were willing to participate in the study.

The Selection and Color In Test (S-CIT) was administered by the teachers for five days, twice a day during the week of May 24, 1965. Instructions and materials were supplied by the investigator. Teachers were asked to nominate and rank their "most creative" and their "most conforming"students.

The investigator then administered the Minnesota Tests of Creative Thinking (MTCT) and the Test of Suggestibility (TS). After all three tests were completed, the drawings on the S-CIT were separated by classes and types of drawings after they were thoroughly counted, identified, and tabulated for each classroom. All scoring was done by the investigator.

The design of this study involved using three tests:[45] The MTCT to place the children in some perspective in regard to creative thinking abilities; the S-CIT to do the same in regard to both creative as well as conforming behavior patterns; and the TS to place the children in regard to conforming behavior.

Of interest is the editorial by Lansing concerning the general approach to research design. He questions the use of a fifty minute period by investigators during which time they hope to assess accurately the influence of stimulation and school environment for purposes of collecting research data. He asks if fifty minutes is long enough for each individual to give form to his unique reaction to the stimulus.

The S-CIT consisted of forty-eight different drawings of five

---

[45]See Appendix L for the description of directions used in administering the three tests.

different types: Coloring Book, Geometric Design, Dot, Stimulus Line, and Blank Sheets of Paper.[46] Part of the S-CIT each day were always the Coloring Book Type drawings and the Stimulus Line Type drawings. Two of the types were used alternately. The Blank Sheet of Paper was used only on Thursday for both Group A and Group B.[47]

It was hypothesized that the more creative, as well as less conforming, student would select a Stimulus Line drawing to work on and color in when given this opportunity twice daily for a week. It was also hypothesized that the more conforming, as well as less creative, student would select a Coloring Book drawing to work on and color in during the same time. The Stimulus Line drawing provided maximum opportunity for the student to express his own unique ideas on a drawing. The Coloring Book drawing provided a minimum of opportunity for the student to express his own ideas since everything ha been pre-drawn and all he needed to do was color inside the lines - a mechanical job at best.

The sample contained 309 first graders, eight of whom were not included because of lack of data. Pre-testing of the S-CIT was conducted with two first grade classes in two other local school systems.

The null hypotheses are stated, data collecting devices are mentioned, and a note about the data processing by the computer is included. Validity and reliability are discussed. Admittedly, both are very difficult to establish when attempting to assess human behavior. Torrance

---

[46] See Appendix I for the rationale for selecting the S-CIT drawings.

[47] Each class in each school was assigned to either Group A or B in order to test the particular effectiveness of the pairings of the S-CIT drawings.

approaches validity in one of two ways: (1) "Identifying high and low groups on some test measure and then determining whether or not they can be differentiated in terms of behavior that can be regarded as 'creative.'" (2) "Identifying criterion groups on some behavior regarded as creative and then determining whether or not they can be differentiated by test scores." Taylor indicates that a number of different methods are used by researchers to establish validity for their measures. Torrance is not especially worried about reliability since his major interests are "in evoking and developing whatever creative talents a child possesses" and in finding out about the "conditions that cause this low reliability in scores."

Torrance has used teacher and peer nominations of children as creative or not-as-creative as immediate criteria to establish validity. This was done in this study but only teacher nominations were asked for. Reliability in this study was determined by comparing the seven AM part scores and the seven PM part scores of the S-CIT.

A discussion of the appropriateness of the statistical methods used is treated in detail concerning the seven hypotheses. Five were written to be tested by correlating two or more scores for the children involved. Two hypotheses needed to be treated by the use of multiple regression analysis with Fisher's linear discriminant function employed in the hypothesis concerned with differentiating students whom the teachers nominated as "most creative" from those nominated "most conforming."

CHAPTER V

PRESENTATION OF FINDINGS

Restatement of the Hypotheses with the Findings of Each

1. It was hypothesized that there would be a significant negative correlation between the total score of the Minnesota Tests of Creative Thinking (MTCT) and the Positive Shift (PS) score of the Test of Suggestibility (TS).

An $r = -.10$ was obtained between these two scores, based on an N of 267. The statistic $r\sqrt{N-1}$ has approximated a unit of normal distribution.[1] In this case, $r\sqrt{N-1} = 1.63$ which was not significant at the .05 level on a two-tailed test. Hence, the hypothesis was not confirmed.

2. The part scores of the MTCT, the part scores of the Selection and Color In Test (S-CIT), the PS score of the TS, and the Negative Shift (NS) score of the TS will differentiate between the "most creative" and the "most conforming" groups.

The linear discriminant function originated by Fisher was used. He employed the discriminant variables as the independent regression variables and brought in a dichotomous dummy variable as the dependent

---

[1]Helen M. Walker and Joseph Lev, Statistical Inference (New York: Holt, Rinehart, and Winston, 1953), pp. 251-252.

variable designating group membership. In this second hypothesis the dependent variables were the children who were nominated by their teachers as most creative (as the first group) and as most conforming (as the second group). Since a computer was used in the processing of the data for this study it was possible to employ this particular function.[2]

The results of this analysis[3] are presented in TABLE 5-1. It will be seen that the results are significant which supports the hypothesis. The obtained multiple regression coefficient was .55. Accordingly, it was decided to use a smaller set of variables which would do essentially the same amount of discriminating between the two groups. Collier[4] has shown that the method of deleting variables in a regression

TABLE 5-1

ANALYSIS OF VARIANCE FOR OVERALL REGRESSION ON SELECTED VARIABLES[a]

	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Regression (About Mean)	12.1865	25	0.4875	2.3442	<.005
Error	28.4883	137	0.2079		
Total (About Mean)	40.6748	162			

[a]See Hypothesis 2 above.

[2]Raymond O. Collier, Jr., "A Note on the Multiple Regression Technique for Deleting Variables in the Discriminant Function," The Journal of Experimental Education, XXXI (Summer, 1963), 351.

[3]Mary E. Rafter and William L. Ruble, "Stepwise Deletion of Variables from a Least Square Equation," STAT Series Description No. 8, op. cit.

[4]Collier, op. cit., p. 353.

analysis is suitable for this purpose, and accordingly the least predictive variables were dropped, one by one, until the regression coefficient for each variable was significant at the .05 level with N = 163. The final multiple correlation coefficient was .44. The results of the analysis are presented in TABLES 5-2 and 5-3.

TABLE 5-2

ANALYSIS OF VARIANCE FOR OVERALL REGRESSION ON REMAINING SELECTED VARIABLES[a]

	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Regression (About Mean)	7.7623	4	1.9406	9.3159	<.005
Error	32.9126	158	0.2083		
Total (About Mean)	40.6748	162			

[a]See Hypothesis 2.

3. The third hypothesis stated that the SEL part score of the S-CIT would have a significant positive correlation with the total score of the MTCT.

The correlation coefficient was .11 which was not significant at the .05 level on a two-tailed test (N = 284), using the test described in Hypothesis 1, so the hypothesis was not supported.

4. ELAB on the Picture Construction Task of the MTCT was scored by two methods. The Torrance method is referred to as ELAB-T; the investigator's method as ELAB-S. It was hypothesized that there would be a significant positive correlation between these two scores.

The resulting coefficient was .48 which was significant at the

TABLE 5-3

MULTIPLE REGRESSION ANALYSIS FOR FOUR REMAINING VARIABLES[a]

Variable	Regression Coefficients	Standard Error of Coefficients	Beta Weights	Standard Errors of Betas	F	P
Constant	-0.1395	0.1479			0.8885	0.35
ORIG	0.0088	0.0033	0.19	0.07	6.8672	0.01
FLEX-TOTAL	0.0090	0.0030	0.22	0.07	9.1187	<0.005
ELAB-AM	0.0041	0.0014	0.21	0.07	8.5346	<0.005
PS-First Gr	-0.0602	0.0261	-0.17	0.07	5.3003	0.02

[a]See Hypothesis 2.

.001 level on a two-tailed test (N = 286) as described in Hypothesis 1. Consequently the hypothesis was supported.

5. It was hypothesized that the S-CIT part scores would yield a significant multiple correlation with the total score of the MTCT.

The results of the multiple regression analysis are presented in TABLE 5-4. The multiple regression coefficient was .31. While the results are statistically significant, the variance in the total score of the MTCT which is accounted for by the best linear function of the S-CIT was only about nine percent which was considered so low as to be incapable of good prediction. N = 284.

6. The part scores of the S-CIT were hypothesized to have a significant positive correlation with the corresponding part scores of the MTCT.

The results are presented in TABLE 5-5 and TABLE 5-6. Although the correlation between ELAB part scores was statistically significant

TABLE 5-4

ANALYSIS OF VARIANCE FOR OVERALL REGRESSION ON REMAINING SELECTED VARIABLES[a]

	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Regression (About Mean)	30905.1406	2	15452.5703	14.7007	<0.005
Error	295371.9404	281	1051.1457		
Total (About Mean)	326277.0810	283			

[a]See Hypothesis 5.

at the .05 level, on a two-tailed test, it was still not considered high enough to be of practical importance. The other corresponding part scores did not even reach statistical significance.

TABLE 5-5

CORRELATION COEFFICIENTS OF CORRESPONDING PART SCORES ON THE S-CIT AND MTCT[a]

		S-CIT Part Scores		
		FLEX	ORIG	ELAB
MTCT Part Scores	FLEX	.10		
	ORIG		.10	
	ELAB			.30

[a]See Hypothesis 6.

TABLE 5-6

FREQUENCIES OF ENTRIES
IN TABLE 5-5[a]

		S-CIT Part Scores		
		FLEX	ORIG	ELAB
MTCT Part Scores	FLEX	285		
	ORIG		284	
	ELAB			285

[a]See Hypothesis 6.

7. Hypothesis seven stated that there would be a significant positive correlation between the morning part scores and the afternoon part scores of the S-CIT.

The results are presented in TABLE 5-7. Although all of these part scores proved statistically significant at the .01 level, only the first three, namely COLOR, ELAB, and DISP were considered to be of practical importance, N = 300.

TABLE 5-7

CORRELATION COEFFICIENTS OF
AM AND PM PART SCORES
ON S-CIT[a]

		PM Part Scores of S-CIT						
		COLOR	ELAB	DISP	COVER	SEL	ORIG	FLEX
AM Part Scores of S-CIT	COLOR	.68						
	ELAB		.46					
	DISP			.41				
	COVER				.32			
	SEL					.26		
	ORIG						.17	
	FLEX							.14

[a]See Hypothesis 7.

Summary

The pertinent data concerning the seven hypotheses are presented in TABLE 5-8.

TABLE 5-8

SUMMARY OF DATA FOR SEVEN HYPOTHESES

No.	Brief Description		r	N	P[a]	Supported
1.	Sign. neg. corr. between total score-MTCT and PS-TS score		-.10	267	---	No
2.	Part scores of MTCT, S-CIT, PS & NS of TS will differentiate between creative & conforming groups	Initial	.55	163	<.005	Yes
		Final	.44	163	<.005	Yes
3.	Sign. pos. corr. between SEL part score of S-CIT and total score of MTCT		.11	284	---	No
4.	Sign. pos. corr. between ELAB-T and ELAB-S for Picture Construction Task		.48	286	.001	Yes
5.	Sign. multiple corr. between part scores of S-CIT and total score of MTCT		.31	284	.001	No[b]
6.	Sign. pos. corr. between corresponding part scores of S-CIT and MTCT	FLEX	.10	285	---	No
		ORIG	.10	284	---	No
		ELAB	.30	285	.001	No[b]
7,	Sign. pos. corr. between 7 AM and 7 PM part scores of S-CIT	COLOR	.68	300	.001	Yes
		ELAB	.46	300	.001	Yes
		DISP	.41	300	.001	Yes
		COVER	.32	300	.001	No[b]
		SEL	.26	300	.001	No[b]
		ORIG	.17	300	.01	No[b]
		FLEX	.14	300	.01	No[b]

[a]On a two-tailed test.

[b]Not supported for practical prediction.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Summary

The problem for this study was to see if a bipolar instrument could be constructed which would be easily administered, easily scored, easily and meaningfully interpreted, and which would measure BOTH the variations of creativity and of conformity of first grade public school children.

The purpose of this study was to learn more about the relationship of creativity and conformity of first grade children through developing and testing a bipolar instrument called the Selection and Color In Test (S-CIT) designed by the investigator to assess variations of creative AND conforming behavior.

Three hundred and one children constituted the sample. They were drawn from twelve classes in six schools selected in certain ethnic and socio-economic areas in Lansing, Michigan. Their teachers administered the S-CIT over a period of five days, during two sessions of twenty-five minutes each per day. The children selected one drawing each session, from a possible six, ranging in completeness of drawing from a Coloring Book Type to a Stimulus Line Type, to which they added lines to express real or imaginary ideas and then colored them in. This test was to measure the variations of both creativity and of conformity of the children.

The investigator gave three non-verbal tasks of the Minnesota Tests of Creative Thinking (MTCT) recommended by Torrance to 284 of the first graders. Each child also was given a Test of Suggestibility (TS), devised by the investigator, in which the attempt was made to influence the children to shift their second response on the TS to the false norm contrived by the investigator to indicate the variations of conformity.

Teachers were asked to nominate their "most creative" and their "most conforming" students just prior to the testing.

Seven scores were obtained on the S-CIT; Selection (SEL), Flexibility (FLEX), Color (COLOR), Elaboration (ELAB), Originality (ORIG), Coverage (COVER), and Dispersion (DISP), as well as a total score. The MTCT yielded four scores: Fluency (FLU), Flexibility (FLEX), Originality (ORIG), and Elaboration (ELAB), as well as a total score. The TS obtained two scores: Positive Shift (PS) toward the false norm, and Negative Shift (NS) away from the false norm.

Seven hypotheses were concerned with the relationship of the above scores on the three tests as well as with the teachers' nominations. The statistical treatments used indicate that:

1. There was no relationship between the total creativity score of the MTCT and the children's shifting toward the false norm on the TS which assessed conformity. While it was possible to determine which children were creative on the MTCT, it was not possible to show that these same children were nonconforming or less conforming by using the TS.
2. Teachers who nominated their students as "most creative" and as "most conforming" were able to predict this quite well based on the part scores of the three tests. The children so nominated scored either

high on the creativity measures (MTCT and S-CIT) or high on the conformity measure (TS) so that the correlation between all of the part scores on the MTCT, the S-CIT, and the TS and the teacher nominations, as determined by the multiple regression analysis, was .55. After the least significant variables had been deleted, the scores of the remaining four most significant variables correlated .44 with the teacher nominations with 163 children, significant at the $<.005$ level.

3. The SEL score was considered the key to the S-CIT. It showed no significant relationship to the total score of the MTCT so that it was not possible to predict which students would be more creative based on which drawings of the S-CIT they selected to draw on and color in.

4. The method for scoring ELAB, devised by the investigator, is significantly related to the method developed by Torrance. The correlation was .48. It would be possible to use the former method for scoring ELAB.

5. The S-CIT is not particularly capable of predicting creative behavior when compared with Torrance's MTCT. The multiple regression coefficient was .31 between the part scores of the S-CIT and the total score of the MTCT. Perhaps the S-CIT is assessing different creative abilities not measured by the MTCT.

6. Three of the scores of the S-CIT are not particularly capable of predicting creative behavior when compared with their corresponding scores on the MTCT. Perhaps the scores on the S-CIT are predicting different factors of creative behavior. The corresponding ELAB

scores were somewhat related but they correlated only .30 with each other which is not capable of significant prediction.

7. The reliability of the S-CIT over a five day period varies depending on the particular part score. The seven morning scores were compared with the seven afternoon scores for the five days. AM COLOR correlated .68 with PM COLOR; AM ELAB correlated .46 with PM ELAB; and AM DISP correlated .41 with PM DISP. All were significant at the .001 level for 300 students. The other four AM and PM scores, including SEL, were not particularly reliable.

Discussion of Findings and Conclusions Reached

1. There will be a significant negative correlation between the total score of the Minnesota Tests of Creative Thinking (MTCT) and the Positive Shift (PS) score on the Test of Suggestibility (TS). No significant correlation was found. The PS score on the TS was intended to show that the child with a high PS score was a more conforming child and therefore not-as-creative a child as shown by a low score on the MTCT. The essentially zero correlation, even though it is negative, -.10, indicates that the PS score has only a chance relationship with the total score of the MTCT when it is called upon to predict. This means that the child who scored high on a creativity measure is not necessarily less conforming or that the child with a low creativity score is not necessarily more conforming.

Generally, the kinds of validity measures Torrance used with the younger children in schools have been these:

> FIRST AND SECOND GRADES. In the first two grades there was a general tendency for children chosen most frequently on the odd-ideas criterion to have moderate creative thinking scores.

> Highly creative boys, however, were frequently chosen as having silly ideas and ideas for being naughty.[1]

Wishing for validity will not cause it to appear automatically; neither does a person's reasoning ability make any better validity, and not treating the subject at all does not obviate anyone from the responsibility of determining what is valid and what should be valid. It is certainly an important area of investigation, not only in this study, but in all such experimental studies. This is one reason why the teachers were asked to nominate their "most creative" and "most conforming" students.

The fact that the Test of Suggestibility (TS) was not able to show that the creative children who scored high on the MTCT or the S-CIT were not particularly less conforming may mean several things. First of all, the TS may be assessing some behavior unrelated to either conformity or suggestibility. Second, the test may be measuring a high level of conformity but the MTCT and the S-CIT are not assessing creative abilities necessarily. Third, all three measures might not be too valid for assessing either creativity or conformity.

2. The many part scores of the S-CIT, MTCT, and the TS will significantly differentiate the "most creative" and the "most conforming" groups of first grade children as determined by the ratings of their teachers.

In the multiple regression analysis that was used, the coefficient was .55 which indicates a significant positive relationship existed between the many part scores and the teachers' ratings of their children

---

[1]Torrance, Guiding Creative Talent, op. cit., p. 53.

as "most creative" and "most conforming." The multiple regression analysis, with all 25 variables, as the independent variables, showed a correlation of .55 with the teacher nominations held constant, as the dependent variable. Thirty percent of the variance was accounted for by the teachers' nominations. As succeeding variables of less significance were deleted, four variables remained which were significant at the .01 level of confidence or better. The resulting multiple correlation coefficient was .44 which is significant at the $<.005$ level of confidence.

Teachers were able to nominate their "most creative" and "most conforming" students with significant prediction. This means that a great percentage of the children who received high creative scores were rated as "most creative" by their teachers, and a large percentage of the children who received high conformity scores were rated as "most conforming" by their teachers.

This indicates that the teachers in this study were quite sensitive to the creative and conforming behavioral characteristics of their students to be able to select with this degree of predictability. In other ways, these teachers evidenced sensitivity to their students in such ways as encouraging them to think of imaginative titles for their drawings and taking the time to listen carefully and to write down the stories that many children told as they elaborated on the picture they had drawn and colored in. The most sensitive teachers encouraged more complete imaginative responses from their story tellers and some of the recorded stories ran a long paragraph in length.

3. The SEL part score on the S-CIT has a significant positive correlation with the total score of the MTCT.

No significant positive correlation was found between the two measures so that essentially the SEL part score was measuring something other than the various measures included in the MTCT. With the correlation of .11 the two measures are independent of each other and cannot be used to predict the existence of the other.

The basis for the S-CIT is the particular type of drawing selected by the child to work on and color in. Since the relationship of the SEL score is essentially a chance one with the total score of the MTCT it cannot be used to predict that a child is creative if he selected a Stimulus Line drawing. Since there was no significant relationship between the SEL score and the PS or NS scores of the TS it cannot predict whether a child who selected a Coloring Book Type drawing or a Stimulus Line Type drawing is necessarily a conforming child or a creative child.

4. The ELAB part score of the Picture Construction Task of the MTCT has a significant positive correlation with the ELAB score on the same task as scored by the investigator's method.

The correlation of .48 indicates that there is a significant positive correlation between these two measures, though it is not as high as desired. This shows that the investigator's method of scoring ELAB might be used interchangeably with the Torrance method. Both methods are quite objective since each is done by counting certain items such as lines, colors, parts, and other details, added by the child to his drawing. The contention rests in these two areas: First, Torrance's method of scoring ELAB seems to indicate that a pictorial dictionary is necessary in order to define every object by a minimum set of lines in

order to know what then to count as ELAB and, second, it does not account for the energy level the investigator feels most creative children possess in adding repeated lines, colors, and details. Torrance's method does not count repetitions at all.

The investigator's method involves counting all lines as separate lines if they zig and zag and change directions. A long smooth curved line would count one point. Repeated objects, colors, lines would be counted as separate items in the scoring.

Since the relationship between the two methods is quite high it would appear that perhaps Torrance's method is taking into account the energy level of the student inadvertently. If it were not, the correlation would be much lower.

5. The S-CIT part scores will yield a significant positive correlation coefficient with the total score of the MTCT.

The multiple regression analysis produced a coefficient of .31 which does not support the hypothesis since it is not high enough to be significant as a measure of prediction. While the Beta Weights predict in a sense, the multiple correlation coefficient of .31 means that only about nine percent of the variance is accounted for by the MTCT part scores. This is not appreciably different from a chance relationship between itself, as the dependent variable, and the fifteen independent variables from the S-CIT.

The S-CIT apparently is not capable of predicting creative behavior as does the MTCT. The possibility exists that the creative abilities measured by the S-CIT are different from those assessed by the MTCT and do not have a significant positive correlation because of this

difference.

However, it might be possible to take Hypothesis 2 as support for this latter possibility since the nominations by the teachers of their "most creative" and "most conforming" students correlated .55 with their scores on the different measures of creativity as well as with their measure of conformity.

6. The part scores of the S-CIT will have a significant positive correlation with the corresponding part scores on the MTCT.

The part scores which are common to both tests are FLEX, ORIG, and ELAB. Even though the first and last scores are scored differently, they show essentially the same things. The purpose was to check particularly the positive relationships that existed between them. The correlation coefficients for the two corresponding FLEX and ORIG part scores were both .10 which were not statistically significant for purposes of prediction. The correlation for the corresponding ELAB part scores was .30. While this is somewhat higher it is essentially no better than a chance relationship which does not make it statistically significant for purposes of prediction. Yet the correlation of ELAB on the Picture Construction Task, when scored by two methods, Torrance's and the investigator's, was .48. However, the overall relationship between these three corresponding part scores on both the MTCT and the S-CIT is essentially no better than chance so that the three scores of the S-CIT are not capable of predicting creative behavior as was hypothesized.

7. There is a significant positive correlation between the Morning (AM) part scores and the Afternoon (PM) part scores of the S-CIT.

In order to determine the reliability of the test instrument when tested over time, it was determined that a high positive correlation

between the AM and the PM scores was necessary. The S-CIT was administered over a consecutive five day period so that there were five AM scores and five PM scores added together and averaged for the mean AM and the mean PM part scores. Of the seven measures, only three had a significant positive correlation coefficient to warrant using them for determining reliability. These included the following: COLOR, ELAB, and DISP with correlations of .68, .46, and .41 respectively. The remaining part scores: COVER, SEL, ORIG, and FLEX had correlations of .32, .26, .17, and .14 respectively which were not considered significant for purposes of supporting the reliability of the S-CIT or for predicting purposes.

Reliability for the different scores is somewhat variable. The AM SEL score, which was considered the key to the S-CIT, only correlated .26 with the PM SEL score.

An alternate method of determining reliability from the existing data is possible whereby the SEL score for Monday is compared with the SEL score for Tuesday, and the rest of the week. This would be done with all of the seven part scores of the S-CIT. There is the possibility that many children selected one type of drawing in the AM and a different type in the PM which would reduce the reliability. The similarity of the second and third days' selections with Monday's selections may be more closely related thereby increasing the reliability of the S-CIT.

In regard to reliability, Torrance indicates that the reliability of the three tasks used in this present study: Picture Construction, Incomplete Figures, and Circles Tasks is not as high as he would like when given at the kindergarten, first, second, and third grade levels.

The reliabilities for retesting at one year intervals drop to

> the 30's for some of the individual tasks and are in the .50's and .60's for battery totals. Above the fourth grade, test-retest reliabilities for total batteries range from the high .50's to the high .80's.[2]

Torrance is more concerned about bringing out and encouraging children's creative abilities and in finding out what conditions make reliability so low.

Implications for Education

Perhaps the most significant result of this study is the fact that only several of the hypotheses were supported by the statistical findings. Often this is true when assessing the vagaries of human behavior. As such, prediction is very difficult at best. This difficulty of assessing human behavior is a natural deterrant to many researchers. Even as research techniques become more refined, more powerful, and more inclusive, the degree of prediction will still remain relatively gross because changes are always taking place in the individual and in his relationship with a changing society. Creativity, by its very nature, almost defies regularity, or usualness, or predictability, or even measurement. Until further research is done on the S-CIT and the TS, they remain experimental and cannot be regarded as particularly valid or reliable.

The words of Melby are most significant as he advised that the best way to encourage creativity and develop it in all children is to give all of them the kind of education that will permit them all to live creatively and gives them all a chance to learn what they can learn. All children should have all the opportunities that can be provided for

---

[2]Torrance, Education and the Creative Potential, op. cit., p. 62.

creative activities in school as well as at home and in the community.

Yet we need to consider Toynbee's warning that "misguided" egalitarianism and "benighted" conservatism do not thwart the fostering of creative ability. Do we provide creative activities just for the creatively talented or for everybody? If opportunities to be creative are provided for every child in school all the students who can best succeed with special opportunities will shine forth.

The NEA Project on Instruction indicates a philosophy of providing special opportunities to those who can best use them. According to Miller, "today's school should foster creativity in two ways: by providing the facilities and materials for each student's development, for every student has SOME creativity in SOME area; and by identifying highly creative children and giving special attention to them."[3] Which approach would seem the most fruitful to follow?

The answer may be self-contained in the method used. If all children are provided maximum opportunities for creative expression, the ones who will be normally and naturally outstanding will be provided with all the opportunities they can use. Those who are not as capable still will have all the opportunities they can use. Providing creative activities for all children is not a human leveler or a sponsor of mediocrity but a fostering and enhancing force which takes into consideration individual differences and leaves ample growing room for all abilities at all ages.

Flanagan tells us that "one of the big changes which is coming to the schools which should take into account creativity as well as

---

[3]Miller, Education in a Changing Society, op. cit., p. 128.

other talents is the individualization of instruction."[4] He thinks that "the most important implication for education from our present research findings is that education needs to be individualized to a much greater extent than it has been by whatever methods seem most effective. We should have a tailor-made program which will permit each child to develop his particular talents."[5]

Wolfson maintains that "essentially, individualizing instruction requires the teacher to encourage individual interests, allow for individual styles, and respond to individual needs."[6]

Flanagan indicates that it would be "a waste of effort to try to develop imagination, originality, or creative ability of people who have a substantial deficiency in this area." But it is important to try to assist everyone to learn everything he can regardless of talent or ability. Flanagan states that people in the upper levels of creativity need to be encouraged to devote time and energy in doing things as creatively as often and as much as possible. Others should accomplish as much as they can on things for which they have the greatest ability and talent.[7]

A great amount of what we know today as subject matter content in the typical school curriculum may need to be reoriented, revised, or replaced. Torrance foresees one of the most revolutionary changes

---

[4]John C. Flanagan, "Implications of Research in Creativity," The Future Implications of Creativity Research, op. cit., p. 50.

[5]Ibid.

[6]Bernice J. Wolfson, "Individualizing Instruction," NEA Journal, LV (November, 1966), 31.

[7]Flanagan, op. cit., p. 51.

occurring in the objectives of education.

> Schools of the future will be designed not only for learning but for thinking. . . . Colleges and universities are still teaching only the psychology of learning, almost never the psychology of thinking. . . . Rarely do teachers state objectives in terms of thinking - I mean thinking of all kinds - critical, creative, constructive, independent, logical, liberal, and analytical. . . . Most of our educational research is still being devoted to the investigation of the learning process; seldom to the thinking process.[8]

Melby feels that "perhaps the most signal failure of much of American education is its failure to help students to see that they are in effect creating their own environment for growth, that they are engaged in their own education."[9]

Wolfson writes that "in order to develop individuality and feelings of competence and to move toward self-actualization, children need to learn how to learn, to think independently, to make choices, to plan, and to evaluate."[10]

According to Lowenfeld and Brittain, "the ability to question, to seek answers, to find form and order, to rethink and restructure and find new relationships, are qualities that are generally not taught; and in fact these seem to be frowned upon in our present educational system."[11] They emphasize that the "opportunity for the child to create constantly with his present knowledge is the best preparation for future creative

---

[8]E. Paul Torrance, Education and the Creative Potential, op. cit., p. 4.

[9]Melby, The Teacher and Learning, op. cit., p. 69.

[10]Wolfson, op. cit., p. 31.

[11]Viktor Lowenfeld and W. Lambert Brittain, Creative and Mental Growth, op. cit., p. 2.

action."[12] The task of the teacher is to assist the students as they learn more about themselves and to stimulate creativeness using whatever methods the teacher finds most effective in this dual task.[13]

Wolfson indicates that "there is no best method for all teachers to use in teaching anything to all children."[14]

Guilford writes that every course or subject in school has opportunities for being taught creatively. A teacher who shows imagination in her teaching is bound to make any subject more exciting, more meaningful, and more inspiring. Encouragement for self-initiated activity by the students should be rewarded since unique achievements are more important than conforming achievements. As we continue to reward unique achievements, children will increasingly seek these rewards by demonstrating these kinds of behavior.[15] He believes that:

> We remember best and with greatest potential usefulness those things that we discover for ourselves and those things that have greatest meaning and significance. The active young child is thrilled by his discoveries. The more of this approach to gaining knowledge we can maintain in education the better. We should encourage the learner to seek information actively, not to be a passive receiver of information that is fed to him.[16]

Flanagan mentions that people expend extra effort on whatever job they are doing because they believe that they are doing something successfully that is very important. As he discusses the implications

---

[12] Ibid., p. 4.

[13] Ibid., p. 11.

[14] Wolfson, op. cit., p. 33.

[15] J. P. Guilford, "Creativity and Our Future," The Future Implications of Creativity Research, op. cit., p. 18.

[16] Ibid., p. 19.

of research findings for the individual he writes:

> I think the most important thing as far as the individual is concerned is that he needs as early as possible to discover his pattern of talents and to learn the implications of these talents for his life and career planning. He needs to know this in considerable detail because only if he knows how his imagination and ingenuity compare with these abilities in his fellow students and other persons in his own age group, can he plan intelligently how to use these and his other talents in planning both vocations and avocations. Perhaps there are other ways of discovering patterns of talent, but certainly in the experience of people such as Dr. Guilford and myself, there is nothing as good as a test, or, certainly nothing as efficient as a test. Sound planning can be done only if one has fairly objective data on himself in relation to comparable data on many other people and knowledge as to the importance of his special talents for various types of jobs.[17]

Taylor, in looking toward the future, sees a "creative morality" developing which will begin to tolerate increasingly the characteristics of people who are presently associated with deviant creativity, such as "tolerance with personal latitude, ambiguity, and inconsistency, humanistic tolerance of human variability, to accept security and insecurity within an individual, to be comfortable with the opposite extremes of emotions."[18] He visions nonverbal communication being emphasized and accepted with such things as the language of gesture and posture and the use of the design elements: color, shape, texture, dark and light, line, form, and pattern.[19]

Last of all, Taylor foresees "the creative task for the educator and the man in the future" as one of designing his universe," to relax

---

[17]Flanagan, op. cit., pp. 46-47.

[18]Irving A. Taylor, "Creativity Research for Future Creativity," The Future Implications of Creativity Research, op. cit., p. 83.

[19]Ibid.

the 'psychic sphincters,' and to avoid 'hardening of the categories.' We will begin to apply what we know, particularly in the field of education where it is most needed." As we go from one "cultural character" to the next, in a kind of severe transformation, extreme social tensions are bound to occur as has happened in prior transformations. Taylor believes that the "coming era will probably be as intolerant of the uncreative as the uncreative are now intolerant of the creative."[20]

Recommendations for Future Research

Here are a number of specific projects, taken directly from this study, which are considered worthwhile for further research.

Page

1. To study in more detail the various theories, particularly the perceptual theory, discussed by Schachtel, and the one by Rank, to see which one, or both, might explain the creative and conforming behavior of first grade children 28

2. To study the similarities and differences between the findings of the Freyberger study and this study 59,60

3. Further research is necessary in refining or abbreviating the Selection and Color In Test and in securing additional validity and reliability data concerning it. The same would be true for the Test of Suggestibility if further development work in this area seems warranted and appears to be fruitful 121

---

[20] Ibid., pp. 86-87.

Page

4. To study which set of drawings on the S-CIT or which particular pairings of drawings, or re-pairings, might make up the final set for the final test instrument which classroom teachers would be given, experimentally, at first, on just one day. The day could be determined by seeing which of the five days obtained the most "even" responses from the children who took the S-CIT. Perhaps Wednesday might be a good day to administer the S-CIT since this would tend to equate "freshness on Monday" with "tiredness on Friday" or vice versa 122

5. To study the use of the S-CIT right up through graduate school; just as most of Torrance's tests of creative thinking have been used experimentally. Some of the drawings might need to be changed for different age levels but the basic idea of seeing if people, creative in other ways, would select a Stimulus Line Type of drawing and if people, conforming in other ways, would select a completed Color Book Type or a Paint by the Number Type drawing 122

6. In addition to refining the S-CIT, one set of simpler drawings could be ranged from completeness to incompleteness. The first drawing would be complete in order to assess a degree of conformity; the second drawing would have certain lines deleted to make it less complete; the third one would have more lines deleted; the fourth drawing would have a few stimulus lines remaining and the fifth drawing would be a blank sheet of paper in order to assess a degree of creativity 122

Page

7. To study the Art Score which each child received when one of his responses on the initial administration of the TS coincided with an "art oriented" drawing on the TS 125

8. To study WHY some children did or did not shift on the Test of Suggestibility. Also, what degree of shift resulted from the effect of each of the three shift agents: other first grade children, fourth grade children, and art teachers . . . 126

9. To study the differences between white and non-white first graders; between children from different socio-economic areas; and even between children in the same school but in different classrooms. 131

10. To compile the responses and to write a summary of the data supplied by the twelve teachers on the short questionnaire given them to fill out concerning the study . . . . . None

11. To study the reliability of the S-CIT further by comparing the relationship of the seven part scores for each of the five days the instrument was used 167

12. To study the consistency of the selections made by the child on the S-CIT; on the TS, first administration; and the two drawings each child selected to take home after he had given the investigator his responses on the MTCT. It was hypothesized that the more creative child would consistently select the Stimulus Line drawings because he would be able to express himself more freely 278

Page

13. To study the comparison of the top ten or twenty percent of the high creative group with the top ten or twenty percent of the high conforming group, as determined by their scores on the MTCT, the S-CIT, and the TS, to see if there might be a significant negative correlation between them . . . . None

Recommendations to Schools, Parents, and the Community

In line with the investigator's great interest in fostering and enhancing creativity some recommendations are outlined which have been drawn generally from this study.

1. Since children, youth and adults need all the opportunities for creative activities that educators, parents, and patrons can provide them, our thinking needs to be directed toward providing these opportunities within the community.

2. The task of fostering and enhancing creativity in children, youth, and adults should not be relegated solely to the schools. The school can do at least two things: it can provide the facilities and materials for each student's development, and it can identify the highly creative students and give special attention to them.

3. Teachers need their skills developed, through teacher training institutions and in-service programs, in being able to provide all the creative activities possible. A number of possible ways of working with students have been suggested by Torrance and others.

4. A community wide group of interested and sensitive members, with

wide and varied backgrounds, trained professionally and otherwise, needs to be created. It would be responsible to determine the paths to follow in an organized effort to begin the information and education program for the community concerning the need and importance of creativity.

5. The next step would be to put into action a program of fostering and enhancing creative activities. After careful planning, a total action program involving the entire range of community life is vital.

6. Much needs to be done in establishing basic research studies with school children and with people of all ages so that significant findings are available for improving programs for fostering and enhancing creativity.

7. Findings need to be translated into practical demonstrated methods by educational psychologists, or others with inter-disciplinary backgrounds, and selected teachers, for use in the school system.

8. A number of possibilities exist for promoting the program in selected classrooms and for sharing the program outcomes with others in the school system in order to increase the creative opportunities in all schools. Several schools located in different areas might be the "stimulus schools" where innovations would be worked out and developed prior to working them into the remaining schools. Workshop activities can help provide teachers with ideas and skills. Resource people for the classroom could further stimulate new ideas and approaches. Materials of all sorts would need to be tested and the best things made available as supplemental aids to assist the teacher

in providing opportunities for all children to be creative.

9. The position of Consultant in Education Through Creativity, or Stimulizer, would be established to give direction and continuity to the overall program. Additional professional assistance would be essential.

10. Resources would need to be provided for making the position possible, and for other appropriate assistance such as secretarial help, a variety of materials and resources, and space and time to work.

11. A thirteen year study is recommended starting at the beginning of the school year. Initial planning and coordination would be done during the remainder of the school year as well as during the following summer so that the initial phases of the plan can be set in motion by September for the kindergarten level to be studied. During each succeeding year one more grade would be incorporated in the reorientation from kindergarten through high school. Constant changes will need to be made within each grade level from year to year as well as incorporating one higher grade level each year. This study would follow the initial class of kindergarten students through the senior year in high school. As the creative education program for all kindergarten students is phased into the whole school system the following year, that is, one year after the study of each succeeding level began, a number of programs in the community, involving parents particularly, could be initiated. A number of programs already underway could be supported and strengthened.

12. The emphasis must be on providing creative opportunities in all areas of the school curriculum as well as within the home and in the total community.

BIBLIOGRAPHY

Books

Anderson, Harold H. "Creativity in Perspective," Creativity and its Cultivation. Edited by Harold H. Anderson. New York: Harper & Brothers, 1959.

Asch, Solomon E. Social Psychology. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1952.

Ashton-Warner, Sylvia. Teacher. New York: Bantam Books, Inc., 1963.

Barron, Frank. "The Psychology of Imagination," A Source Book for Creative Thinking. Edited by Sidney J. Parnes and Harold F. Harding. New York: Charles Scribner's Sons, 1962.

Beittel, Kenneth. "Art," Encyclopedia of Educational Research. Edited by Chester W. Harris. 3rd ed. New York: The Macmillan Co., 1960.

Bird, Charles. Social Psychology. New York: D. Appleton-Century Company, 1940.

Brogden, Hubert E. and Sprecher, Thomas B. "Criteria of Creativity," Creativity: Progress and Potential. Edited by Calvin W. Taylor. New York: McGraw-Hill Co., 1964.

Burkhart, Robert C. Spontaneous and Deliberate Ways of Learning. Scranton, Pa.: International Textbook Company, 1962.

Crutchfield, Richard S. "Independent Thought in a Conformist World," Conflict and Creativity. Edited by Seymour M. Farber and Roger H. L. Wilson. New York: McGraw-Hill Co., 1963.

D'Amico, Victor. Creative Teaching in Art. Scranton, Pa.: International Textbook Co., 1953.

Flanagan, John E. "Implications of Research In Creativity," Future Implications of Creativity Research. A one day Symposium Co-Sponsored by Los Angeles State College and Chouinard Art Institute, J. Leonard Steinberg, Coordinator, Pasadena: March 10, 1962.

Fromm, Erich. "Forward," Summerhill: A Radical Approach to Child Rearing. By A. S. Neill. New York City: Hart Publishing Company, 1960.

Gardner, John W. Self-Renewal: The Individual and the Innovative Society. New York: Harper & Row, 1963.

Getzels, Jacob W. and Jackson, Philip W. Creativity and Intelligence. New York: John Wiley & Sons, Inc., 1962.

Goldberg, Miriam. "Preface," Productive Thinking in Education. Edited by Mary Jane Aschner and Charles E. Bish. Washington, D. C.: National Education Association and the Carnegie Corporation of New York, 1965.

Guilford, J. P. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill Book Company, Inc., 1956.

_____. "Creativity and Our Future," The Future Implications of Creativity Research. A One Day Symposium Co-Sponsored by Los Angeles State College and Chouinard Art Institute, J. Leonard Steinberg, Coordinator, Pasadena: March 10, 1962.

_____. "Progress in the Discovery of Intellectual Factors," Widening Horizons in Creativity. Edited by Calvin W. Taylor. New York: John Wiley & Sons, Inc., 1964.

Haefele, John W. Creativity and Innovation. New York: Reinhold Publishing Corporation, 1962.

Heil, Louie M., Powell, Marion, and Feifer, Irwin. Characteristics of Teacher Behavior and Competency Related to the Achievement of Different Kinds of Children in Several Elementary Grades. Washington, D. C.: Contract #SAE 7285 Cooperative Research, Office of Education, U. S. Dept. of Health, Education and Welfare, May 1960.

Lowenfeld, Viktor. "Creativity: Education's Stepchild," A Source Book for Creative Thinking. Edited by Sidney J. Parnes and Harold F. Harding. New York: Charles Scribner's Sons, 1962.

_____, and Brittain, W. Lambert. Creative and Mental Growth. 4th ed. New York: The Macmillan Co., 1964.

Ludington, Carol (ed.). Creativity and Conformity: A Problem for Organizations. Ann Arbor, Michigan: Foundation for Research on Human Behavior, 1958.

MacKinnon, Donald W. "Personality Correlates of Creativity," Productive Thinking in Education. Edited by Mary Jane Aschner and Charles E. Bish. Washington, D. C.: The National Education Association and the Carnegie Corporation of New York, 1965.

Maier, Norman R. F.,and Hayes, John J. Creative Management. New York: John Wiley & Sons, Inc., 1962.

Maslow, Abraham H. "Creativity in Self-Actualizing People," Creativity and Its Cultivation. Edited by Harold H. Anderson. New York: Harper & Brothers, 1959.

Mednick, Sarnoff A., and Mednick, Martha T. "An Associative Interpretation of the Creative Process," Widening Horizons in Creativity. Edited by Calvin W. Taylor. New York: John Wiley & Sons, Inc., 1964.

Melby, Ernest O. Education for Renewed Faith in Freedom. Columbus, Ohio: The Ohio State University Press, 1959.

_____. The Teacher and Learning. New York: The Center for Applied Research in Education, Inc., 1963.

Miller, Richard I. Education in a Changing Society. Washington, D. C.: National Education Association, 1963.

Mooney, Ross L. "A Conceptual Model for Integrating Four Approaches to the Identification of Creative Talent," A Source Book for Creative Thinking. Edited by Sidney J. Parnes and Harold F. Harding. New York: Charles Scribner's Sons, 1962.

Neill, A. S. Summerhill: A Radical Approach to Child Rearing. New York: Hart Publishing Company, 1960.

Reisman, David. Selected Essays from Individualism Reconsidered. Garden City, N. Y.: Doubleday & Company, Inc., 1954.

Rogers, Carl. On Becoming a Person. Boston: Houghton Mifflin Co., 1961.

Rokeach, Milton. The Open and Closed Mind. New York: Basic Books, Inc., 1960.

Rugg, Harold. Imagination. New York: Harper & Row, 1963.

Schachtel, Ernest G. Metamorphous: On the Development of Affect, Perception, Attention, and Memory. New York: Basic Books, Inc., 1959.

Sherif, Musafer, and Sherif, Carolyn W. Reference Groups: Exploration into Conformity and Deviation of Adolescents. New York: Harper & Row, 1964.

Stein, Morris I. Survey of the Psychological Literature in the Area of Creativity With a View Toward Needed Research, Cooperative Research Project No. E-3. New York: Research for Human Relations, New York University, 1962.

_____, and Heinze, Shirley J. Creativity and the Individual. Glencoe, Ill.: The Free Press, 1960.

Stoddard, George. "Creativity in Education," Creativity and its Cultivation. Edited by Harold H. Anderson. New York: Harper & Brothers, 1959.

Taylor, Calvin W. "Research Findings on Creative Characteristics," Creativity and Art Education. Edited by W. Lambert Brittain. Washington, D. C.: National Art Education Association, 1963.

_____. "Introduction," Creativity: Progress and Potential. Edited by Calvin W. Taylor. New York: McGraw-Hill Co., 1964.

_____. "Some Knowns, Needs, and Leads," Creativity: Progress and Potential. Edited by Calvin W. Taylor. New York: McGraw-Hill Co., 1964.

_____. "Preface," Widening Horizons in Creativity. Edited by Calvin W. Taylor. New York: John Wiley & Sons, Inc., 1964.

_____, and Holland, John. "Predictors of Creative Performances," Creativity: Progress and Potential. Edited by Calvin W. Taylor. New York: McGraw-Hill Co., 1964.

Taylor, Irving A. "Creativity Research for Future Creativity," Future Implications of Creativity Research. A One Day Symposium Co-Sponsored by Los Angeles State College and Chouinard Art Institute, J. Leonard Steinberg, Coordinator, Pasadena: March 10, 1962.

Thurstone, Thelma Gwinn. "Commentaries," Productive Thinking in Education. Edited by Mary Jane Aschner and Charles E. Bish. Washington, D. C.: National Education Association and The Carnegie Corporation of New York, 1965.

Tillich, Paul. The Courage To Be. New Haven: Yale University Press, 1952.

Toward Better Teaching: 1959 ASCD Yearbook. Washington, D. C.: Association for Supervision and Curriculum Development, 1959.

Torrance, E. Paul. Guiding Creative Talent. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1962.

_____. Education and the Creative Potential. Minneapolis: The University of Minnesota Press, 1963.

_____. "Education and Creativity," Creativity: Progress and Potential. Edited by Calvin W. Taylor. New York: McGraw-Hill Co., 1964.

_____. Rewarding Creative Behavior. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1965.

_____. "The Measurement of Creative Behavior in Children," Productive Thinking in Education. Edited by Mary Jane Aschner and Charles E. Bish. Washington, D. C.: National Education Association and The Carnegie Corporation of New York, 1965.

Toynbee, Arnold. "Is America Neglecting Her Creative Minority?" Widening Horizons in Creativity. Edited by Calvin W. Taylor. New York: John Wiley & Sons, Inc., 1964.

Walker, Edward L.,and Heyns, Roger W. An Anatomy for Conformity. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1962.

Walker, Helen, and Lev, Joseph. Statistical Inference. New York: Holt, Rinehart, and Winston, 1953.

Zajonc, Robert B. "Conformity," International Encyclopedia of Social Sciences. New York: The Macmillan Company, 1968 (sic).

Zimmerman, Wayne S. "Introduction and Overview," The Future Implications of Creativity Research. A One Day Symposium Co-Sponsored by Los Angeles State College and Chouinard Art Institute, J. Leonard Steinberg, Coordinator, Pasadena: March 10, 1962.

Zirbes, Laura. Spurs to Creative Teaching. New York: G. P. Putnam's Sons, 1959.

Periodicals

Anderson, Harold H. "The Nature of Creativity," Studies in Art Education, Washington, D. C.: National Art Education Association, I, No. 2 (Spring, 1960), 10-17.

_____. "Creativity and Education," AHE College and University Bulletin, Washington, D. C.: National Education Association, X, No. 14 (May 1, 1961), 1-4.

Brown, Rollo Walter. "Do We Want Creative Minds in America," Progressive Education, VI (April, May, June, 1929), 136-142.

Coffin, Thomas E. "Some Conditions of Suggestion and Suggestibility," Psychological Monographs, 53, Whole No. 241, Edited by John F. Bushnell, (1941). vii-ix, 1-123.

Collier, Raymond O., Jr. "A Note on the Multiple Regression Technique for Deleting Variables in the Discriminant Function," The Journal of Experimental Education, XXXI (Summer, 1963), 351-353.

Crutchfield, Richard S. "Detrimental Effects of Conformity Pressures on Creative Thinking," Psychologische Beitrage, VI (1961/62), 463-471.

_____. "Conformity and Character," American Psychologist, X (1955), 191-198.

Czurles, Stanley A. "Milestones in Research for Art Education," Research in Art Education: Art Education Bulletin, XIV (May, 1957), 13-14.

Eisner, Elliot W. "A Typology of Creativity in the Visual Arts," Studies in Art Education, IV (Fall, 1962), 11-22.

Goldman, R. J. "The Minnesota Tests of Creative Thinking," Educational Research, VII (November, 1964), 3-14.

Guilford, J. P. "Creativity," American Psychologist, V (1950), 444-454.

_____. "Three Faces of Intellect," American Psychologist, XIV (August, 1959), 469-479.

Hutchinson, Eliot Dole. "Material for the Study of Creative Thinking," Psychological Bulletin, XXVIII (1931), 392-410.

MacKinnon, Donald W. "The Nature and Nurture of Creative Talent," American Psychologist, XVII (July, 1962), 484-495.

_____. "Personality and the Realization of Creative Potential," American Psychologist, XX (April, 1965), 273-281.

McConnell, Thomas R., Jr. "Suggestibility in Children as a Function of Chronological Age," Journal of Abnormal and Social Psychology, LXVII (1963), 286-289.

"MAEA-DCT Help for Teaching Art," Michigan Education Journal, XLIII (May 1, 1966), 18.

Markey, Frances V. "Imagination," Psychological Bulletin, XXXII (1935), 212-236.

Myers, Garry C. "Creative Thinking in the Classroom," Highlights for Teachers. (March, 1966), 1-4.

Pepinsky, Pauline N. "A Study of Productive Nonconformity," The Gifted Child Quarterly, IV (Winter, 1960), 81-85, 88.

Wolfson, Bernice J. "Individualizing Instruction," NEA Journal, LV (November, 1966), 31-33.

Wonderly, Donald M. "The Evolution of Theories Concerning the Creative Process," The Gifted Child Quarterly, VIII (Spring, 1964), 26-31.

Yamamoto, Kaoru. "Research Frontier: 'Creativity' - A Blind Man's Report on the Elephant," Journal of Counseling Psychology, XII (1965), 428-434.

Unpublished Material

Bencetic, Stephen. "Picture Preferences of Elementary Children." Unpublished Ed.D. dissertation, Pennsylvania State University, 1959. Dissertation Abstracts, XX (February, 1960), 3117.

"The Concept of the Laboratory" (A Statement by the planning and development team of the Michigan-Ohio Regional Educational Laboratory, Stuart C. Rankin, Director; Detroit, Michigan: June 30, 1966.) (Mimeographed.)

Freyberger, Ruth. "Differences in the Creative Drawings of Children of Varying Ethnic and Socio-Economic Backgrounds in Pennsylvania Based on Samplings of Grades One Through Six." Unpublished Ed.D. dissertation, Pennsylvania State College, 1951. Abstracts of Doctoral Dissertations . . . Pennsylvania State College . . . , XIV (1951), 265-266.

Heilman, Horace. "An Experimental Study of Workbook Influence on the Creative Drawings of Second Grade Children." Unpublished Ed.D. dissertation, Pennsylvania State College, 1954. Abstracts of Doctoral Dissertations . . . Pennsylvania State College . . . , XVII (1954), 319-323.

Johnson, Richard. "The Growth of Creative Thinking Abilities in Western Samoa." Unpublished Ph.D. dissertation , University of Minnesota, 1963. Dissertation Abstracts, XXIV (November, 1963), 1922.

Mackler, Bernard,and Shontz, Franklin C. "Characteristics of Responses to Tests of Creativity." Unpublished manuscript, Teachers College, Columbia University: Institute of Urban Studies, 1964. (Mimeographed.)

Maslow, Albert R. "Some Relationships Between Social Conformity and Self Perception," Unpublished Ph.D. dissertation, The American University, 1961. Dissertation Abstracts, XXII (October, 1961), 1285.

Neff, George. "The Creative Imagination of Young Children as Revealed in a Puppet Construction and Puppet Performance Test," Unpublished Ed.D. dissertation, Pennsylvania State University, 1963. Dissertation Abstracts, XXIV (February, 1964), 3206.

Repucci, L. C. "Definitions and Criteria of Creativity." Unpublished manuscript, Midland, Michigan: The Dow Chemical Company, n.d. (Mimeographed.)

Student, Kurt R. "The Personality Correlates of Conformity: A Literature Review," Unpublished Ph.D. dissertation, The University of Michigan, 1965. (Mimeographed.)

Townsend, Edward Arthur. "A Study of Copying Ability in Children." Unpublished Ph.D. dissertation, Columbia University, 1950. Dissertation Abstracts, X (1950), 56-57.

Trezise, Robert L. "A Description Study of the Life Styles of a Group of Creative Adolescents." Unpublished Ph.D. dissertation, College of Education, Michigan State University, 1966.

Manuals

Rafter, Mary E., and Ruble, William L. Michigan State University Agricultural Experiment Station, STAT Series Description No. 8, Stepwise Deletion of Variables from a Least Squares Equation (LSDEL Routine). March, 1966. (Mimeographed.)

Ruble, William L., and Rafter, Mary E. Michigan State University Agricultural Experiment Station, STAT Series Description No. 6, Calculations of Basic Statistics When Missing Data is Involved (The MDSTAT Routine). January, 1966. (Mimeographed.)

Ruble, William L., Kiel, Donald F., and Rafter, Mary E. Michigan State University Agricultural Experiment Station, STAT Series Description No. 7, Calculation of Least Squares (Regression) Problems on the LS Routine. March, 1966. (Mimeographed.)

Torrance, E. Paul. Guide for Administering and Scoring Non-Verbal Form B: Minnesota Tests of Creative Thinking. Minnespolis: Bureau of Educational Research, College of Education, University of Minnesota, 1964. (Mimeographed.)

Welsh, George S. Preliminary Manual - Welsh Figure Preference Test, Research Edition. Palo Alto: Consulting Psychologists Press, Inc., 1959.

Yamamoto, Kaoru. Revised Scoring Manual for Tests of Creative Thinking: (Forms VS and NVA). Minneapolis: Bureau of Educational Research, The University of Minnesota, 1962. (Mimeographed.)

Newspapers

The State Journal. Lansing, East Lansing, Michigan. "Microelectronic Era Dawns in U.S.," December 6, 1965, C5.

The State Journal. Lansing, East Lansing, Michigan. "Mankind Must Decide Future Course of 'Genetic Tinkering,'" August 12, 1966, B3.

The State Journal. Lansing, East Lansing, Michigan. "Quest for Beauty," August 21, 1966, E3.

APPENDIX A

CONTINUATION OF DISCUSSION ABOUT THE DIFFERENCE BETWEEN THE POSITION OF TORRANCE AND CRUTCHFIELD - IS CREATIVITY ANTITHETICAL WITH CONFORMITY OR NOT?

In summarizing his first point, as given on page 99 in Chapter III, Crutchfield has this to offer:

> In short, it appears that extrinsic, ego-involved motivations in problem solving, as contrasted with intrinsic, task-involved motivations, are detrimental both to the ability of the creator and to free himself from the rigid constraints of old ways of thought and to his capacity to produce original insights.
>
> Part of the reason that conformity pressures may be expected to damage creative thinking thus become manifest. The other pressure and inner compulsion to conform arouse extrinsic, ego-involved motives in the problem solver. His main efforts tend to become directed toward the goals of being accepted and rewarded by the group, of avoiding rejection and punishment. The solution of the problem itself becomes of secondary relevance, and his task-involved motivation diminished.[1]

Elsewhere Crutchfield labels the extrinsic, ego-involved individual as the conformist thinker while the intrinsic, task-involved individual is the independent thinker.[2]

Concerning the second point, made on page 99, Crutchfield lists

---

[1]Richard S. Crutchfield, "Detrimental Effects of Conformity Pressures on Creative Thinking," op. cit., p. 465.

[2]Crutchfield, "Independent Thought in a Conformist World," Conflict and Creativity, ed. Seymour M. Farber and Roger H. L. Wilson, (New York: McGraw-Hill, 1963), pp. 209-210.

about eighteen personality traits which generally characterize the extreme conformist.[3]

In summarizing this position Crutchfield writes that:

> It seems undeniable that the differentiated pictures of the personalities of the highly conforming individual and the independent individual revealed in the above findings bear remarkable resemblance to many of the critically distinguishing features that are commonly thought to set off the noncreative from the creative person. Here then is strong supporting evidence for the antithetical relationship of conformity and creativity.[4]

It appears that Torrance and Crutchfield are in direct opposition to each other on the question of whether creativity is or is not antithetical with conformity. Upon referring to the particular study of Pepinsky, cited by Torrance, it is found that she is studying "'productive nonconformity' - or perhaps more precisely - 'productive independence.'"[5] She describes these productive nonconformist young ladies in her study as follows:

> For the characteristically productive students, independence seems to be a function of an internalized, well integrated set of values, whether verbalized as religious, ethical, or social. "Ego strength" is the term that suggests itself: these students have self control; they have developed their inner resources. They can be alone without discomfort, but they can and do form warm, non-exploitative attachments to others. They accept some limits as inevitable, but their attitude toward authority is one of critical respect rather than of unquestioning servility. They conform to the majority view in trivial matters, but where they differ on issues they see as important, they can maintain their positions under pressure. They are, however, willing to listen to and consider alternatives; their typical set is that nearly

---

[3]These traits have been included on page 82 of Chapter III.

[4]Crutchfield, "Detrimental Effects of Conformity Pressures on Creative Thinking," op. cit., p. 467.

[5]Pauline N. Pepinsky, "A Study of Productive Nonconformity," op. cit., p. 81.

> any situation is capable of constructive restructuring, and they relish an exchange of ideas and opinions. Because they "see both sides," they sometimes have trouble in reaching decisions, but they can and do get things done. They regard nonconformity as an end in itself as pointless.[6]

The type of person that Pepinsky is describing as a productive nonconformist seems to be very similar, upon comparison, to the personality characteristics which Crutchfield has defined as the type of person who is the independent thinker. Here is his distinction between the independent thinker and his conformist thinker:

> Independent thinking is distinguished from conformist thinking in both its aims and its processes. The aim of independent thinking is the solution of problems, the achievement of understanding and truth, the production of ideas that have valid relation to external reality or that can create a new reality. The aim is quite different from the aim of conformist thinking, where the person seeks to achieve a feeling of relief from pressure, an escape from anxiety, a sense of being in step with the group. Indeed, independent thinking typically involves a deliberate exposing of oneself to the challenges and discomforts of uncertainty, of confusion, of alienation from the secure beliefs of the group.[7]

One may conjecture that Torrance is using the term conformity in a very special way when he states that "creativity and conformity are not antithetical to each other." Perhaps Torrance is referring to the idea that these young college women "conform to the majority view in trivial matters, but where they differ on issues they see as important, they can maintain their positions under pressure." In this way, they are balancing the pressures of conformity in trivial matters with the need for creativity in the important areas so that they are successfully using and controlling conformity as well as creativity. Indeed, this should be the goal of all mankind.

---

[6] Ibid., p. 83.

[7] Crutchfield, "Independent Thought in a Conformist World," op. cit., pp. 209-210.

APPENDIX B

ACKNOWLEDGMENT OF PUBLISHERS AND OWNERS WHO GRANTED PERMISSION TO INCLUDE ADAPTED VERSIONS OF THEIR PAINTINGS OR DRAWINGS IN THIS DISSERTATION

(1) The drawings designated as CLOWN, BIRD, TOM, FISHING and TRAIN were adapted by the investigator from drawings copyrighted by the Waldman Publishing Corporation, 62 West 47th Street, New York, N. Y., and included with their permission.

(2) The drawing appearing in Appendix B, designated FIRST STEPS, was adapted by David L. Smith, the author, from the painting by Pablo Picasso, FIRST STEPS, and is included here with the permission of the owner: Yale University Art Gallery, New Haven, Connecticut, Gift of Stephen Carlton Clark.

(3) The drawing designated as FLAME was adapted by the investigator from one of the tasks of the Figural Form B of the Torrance Tests of Creative Thinking and included with permission of Dr. E. Paul Torrance, Department of Educational Psychology, University of Georgia, Athens, Ga.

(4) The drawing designated as PUFF was adapted by the investigator from a drawing by Nancy Madtes for John Anderson of Michigan State University, East Lansing, Michigan, and used with the latter's permission.

(5) The drawing designated as STILL LIFE was adapted by the investigator from a painting by Pablo Picasso, STILL LIFE WITH MILK CAN, and included here with permission of Time, Inc., Rockefeller Center, New York, 10020.

(6) The drawing designated as SEATED WOMAN was adapted by the

investigator from a painting by Pablo Picasso, SEATED WOMAN, and included here with permission of Harry N. Abrams, Inc., Publishers, 6 West 57th Street, New York 19, New York.

(7) The drawings designated CHEERING and PLAYER were adapted by the investigator from commercial illustrations painted by Bob Peak and included with permission of the Seven Up Company, 121 South Meramec Avenue, St. Louis, Missouri.

(8) The drawing designated WOMAN was adapted by the investigator from a painting by Henri Matisse, ANEMONES AND WOMAN: HARMONY IN BLUE, and included with permission of The Chanticleer Press with the provision that the dissertation not be published without requesting permission from the owner.

(9) The drawing designated PEOPLE AND DOG was adapted by the investigator from a painting by Joan Miro, PEOPLE AND DOG IN THE SUN, and included with permission of the Kunstmuseum Basel, St. Albangraben 16, Basel, Switzerland, and is from the Emanuel Hoffmann - Stiftung, Basel.

(10) The drawing designated VENDOR was adapted by the investigator from a painting by Diego Rivera, THE FLOWER VENDOR, and included with permission of the owner: The San Francisco Museum of Art, Veterans Building, Civic Center, San Francisco 2, California.

TYPE: COLORING BOOK

CLASS: TYPICAL

DESIGNATED: CLOWN

GROUP: A & B

MONDAY

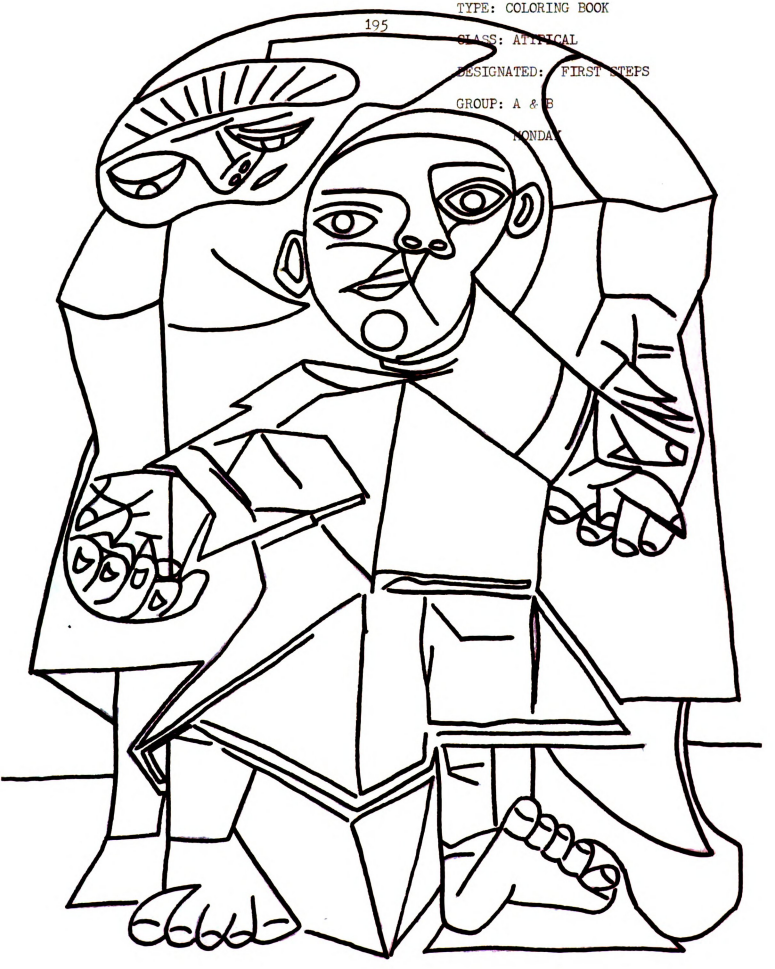
TYPE: COLORING BOOK

CLASS: ATYPICAL

DESIGNATED: FIRST STEPS

GROUP: A & B

MONDAY



196

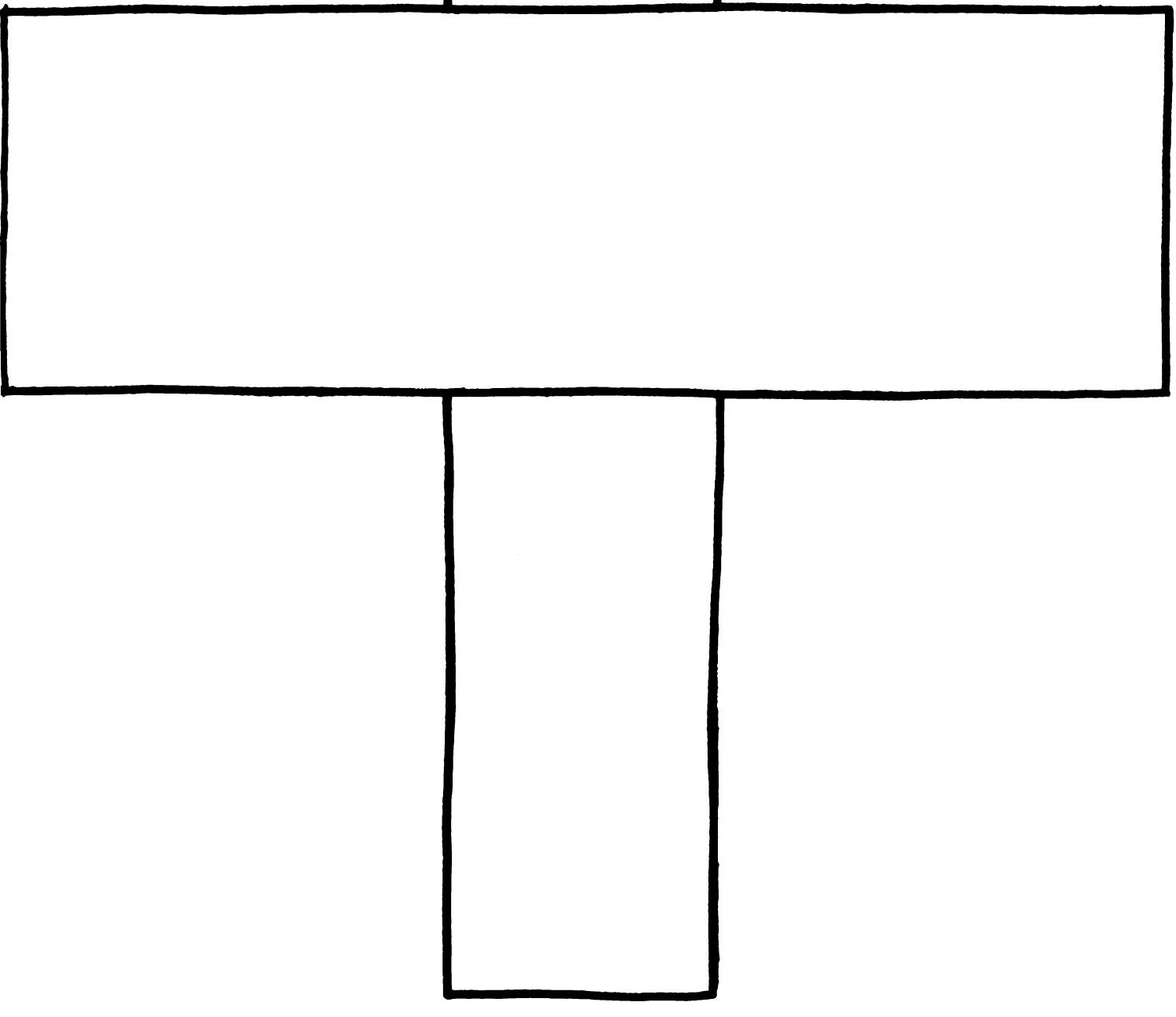
TYPE: GEOMETRIC DESIGN

CLASS: SIMPLE AND SYMMETRICAL

DESIGNATED: CROSS

GROUP: A & B

MONDAY



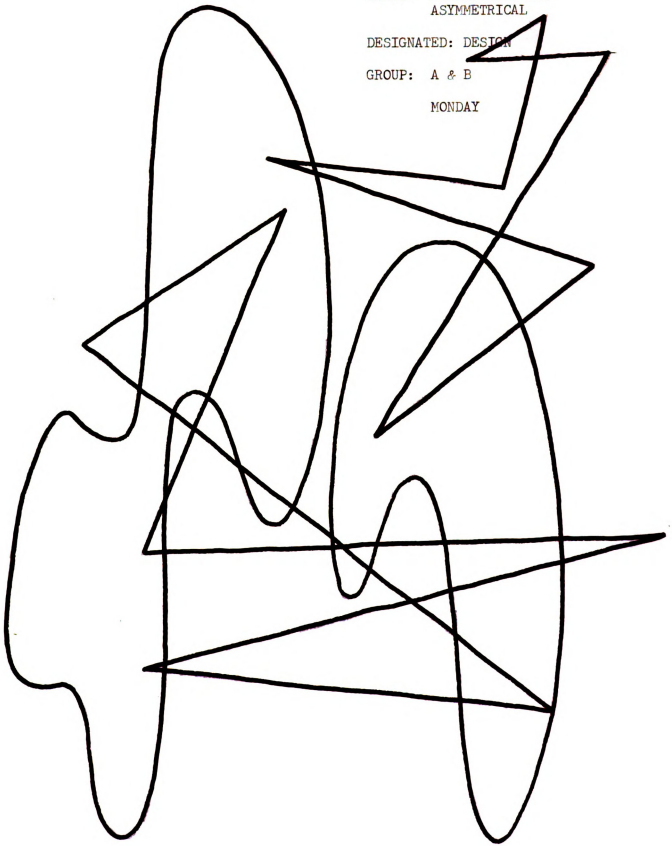
197 TYPE: GEOMETRIC DESIGN

CLASS: COMPLICATED AND ASYMMETRICAL

DESIGNATED: DESIGN

GROUP: A & B

MONDAY



198 TYPE: STIMULUS LINE

CLASS: CLOSED

DESIGNATED: FLAME

GROUP: A & B

MONDAY

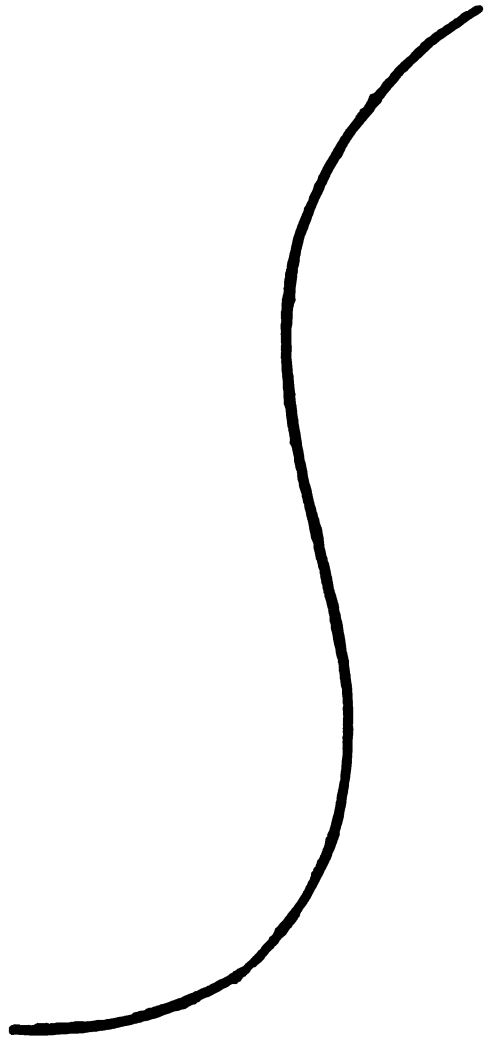
199 TYPE: STIMULUS LINE

CLASS: OPEN

DESIGNATED: S CURVE

CROUP: A & B

MONDAY



200 TYPE: COLORING BOOK

CLASS: TYPICAL

DESIGNATED: BIRD

GROUP: A

TUESDAY

TITLE: COLORING BOOK

CLASS: ATYPICAL

DESIGNED: PUPIL

GROUP: A

TUESDAY

202

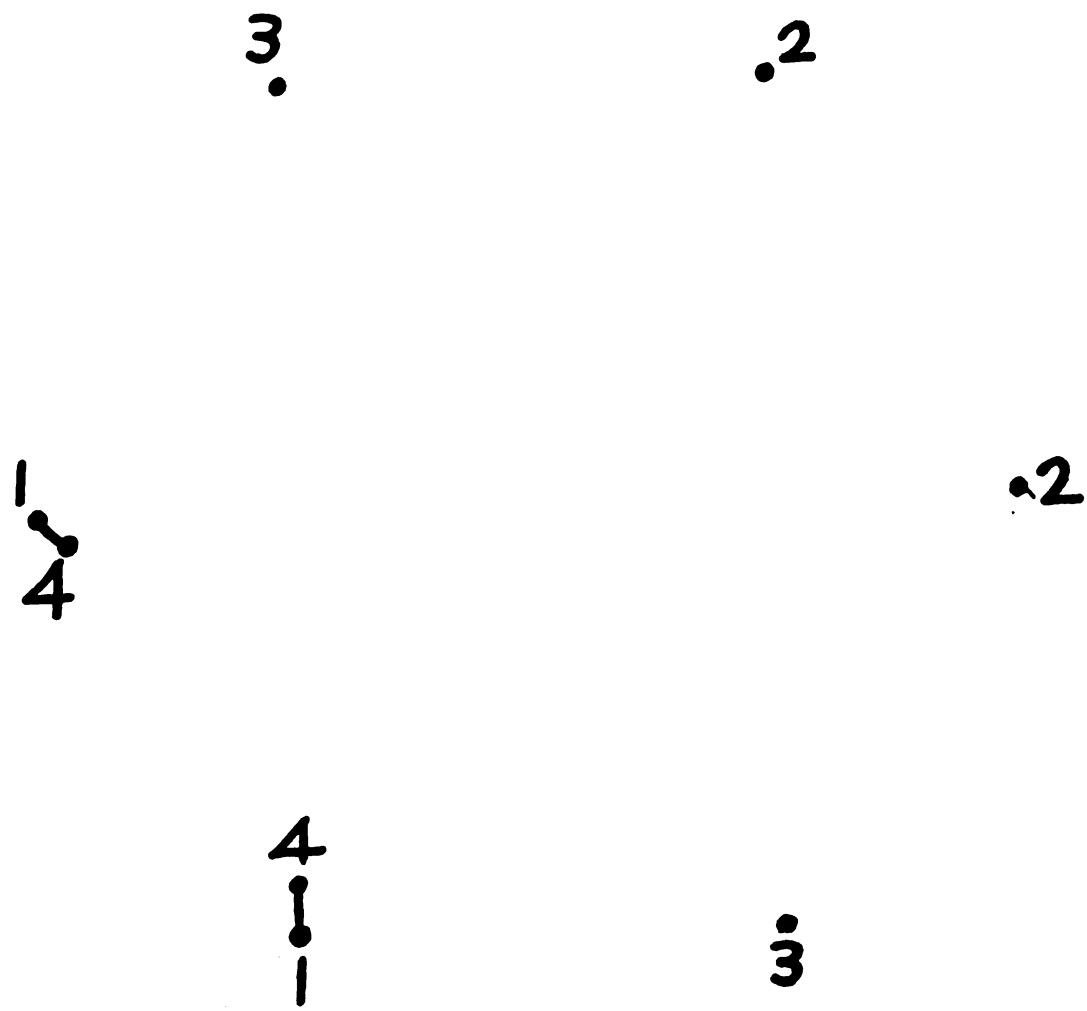
TYPE: DOT

CLASS: SIMPLE NUMBERED

DESIGNATED: 1-2-3-4

GROUP: A

TUESDAY



203

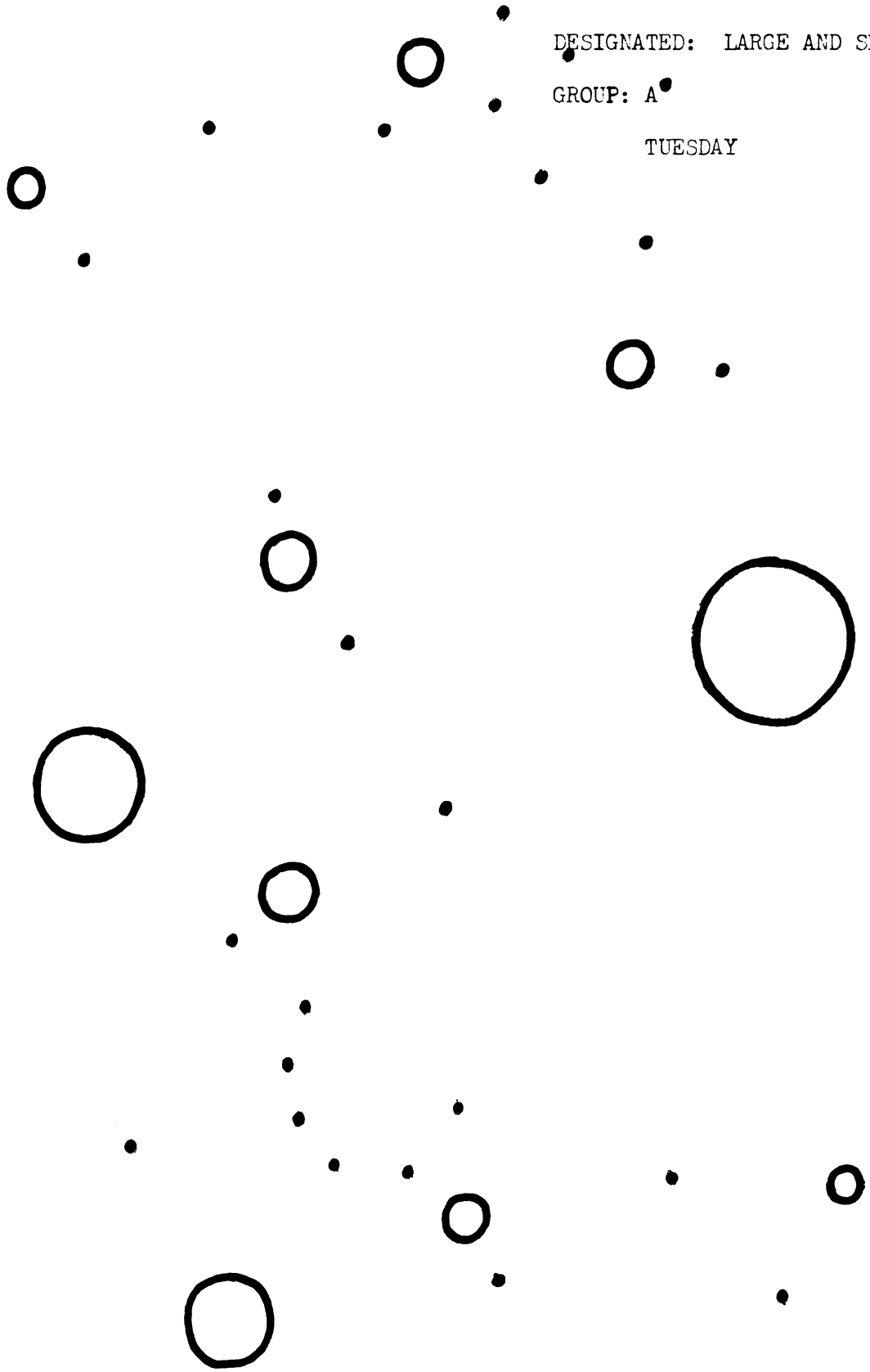
TYPE: DOT

CLASS: UNNUMBERED

DESIGNATED: LARGE AND SMALL

GROUP: A

TUESDAY



204

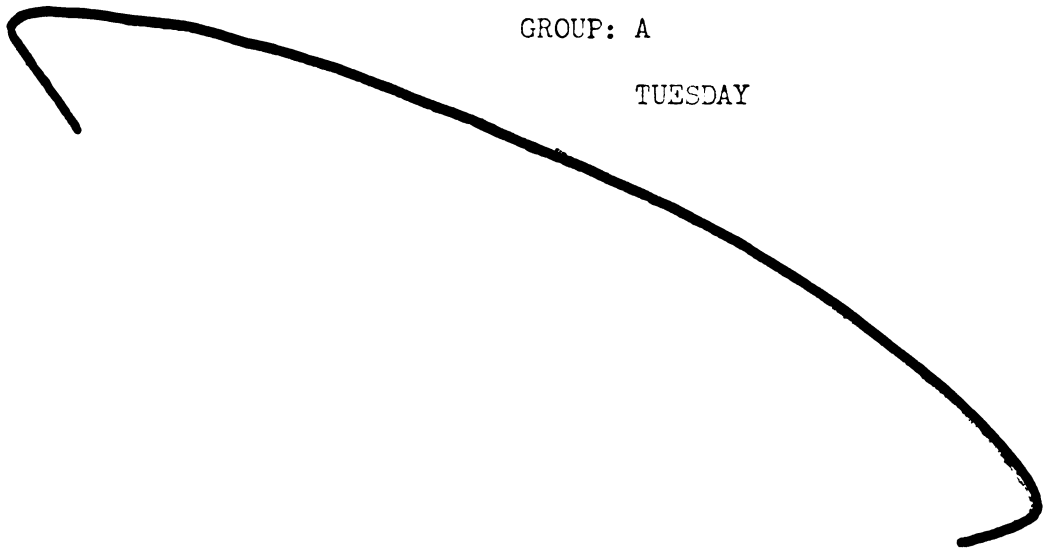
TYPE: STIMULUS LINE

CLASS: CLOSED

DESIGNATED: HAT

GROUP: A

TUESDAY



205

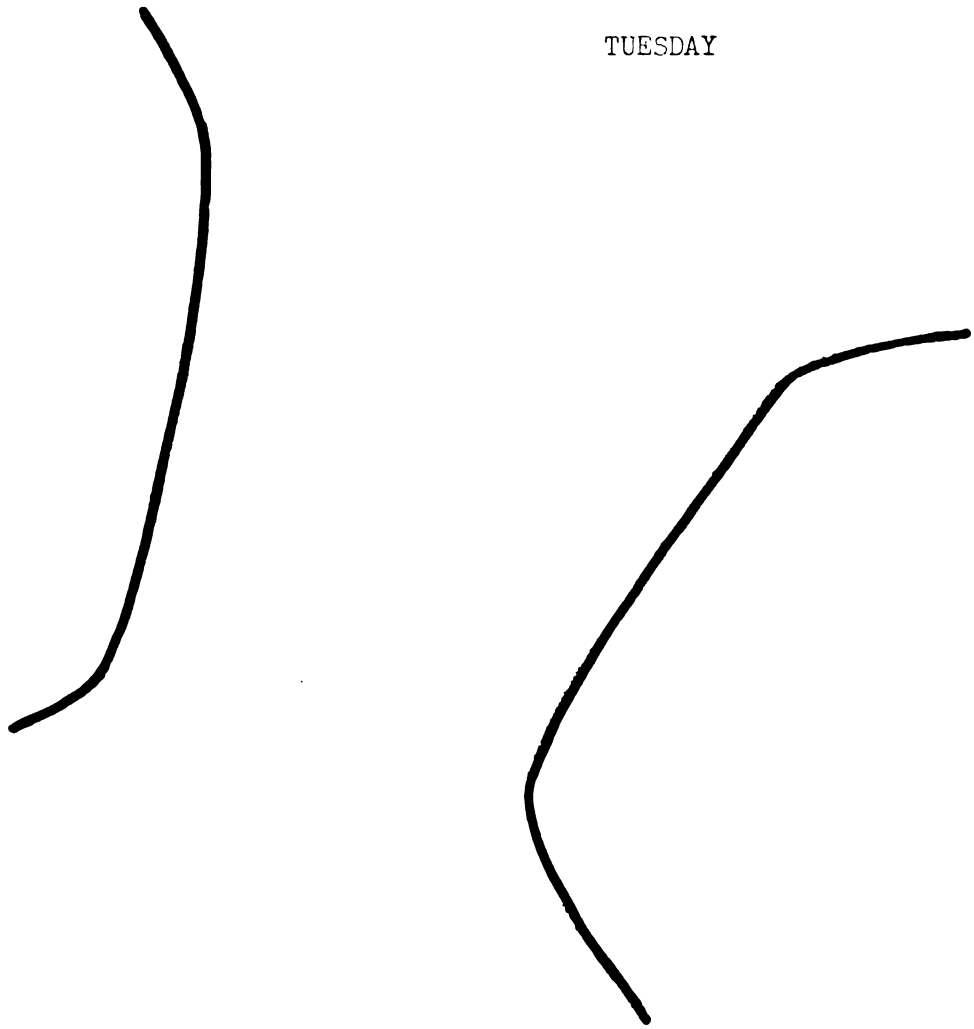
TYPE: STIMULUS LINE

CLASS: OPEN

DESIGNATED: WAIST

GROUP: A

TUESDAY



206

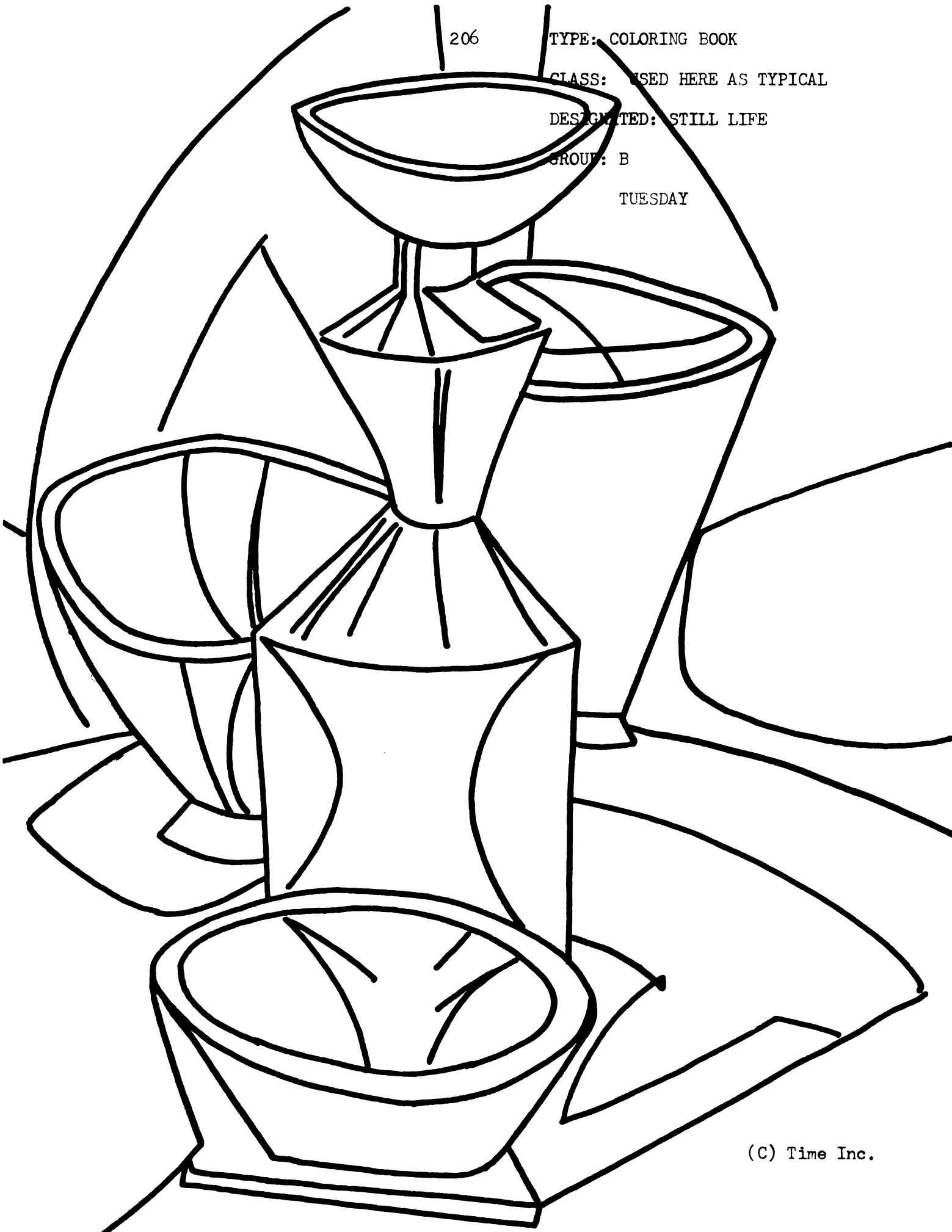
TYPE: COLORING BOOK

CLASS: USED HERE AS TYPICAL

DESIGNATED: STILL LIFE

GROUP: B

TUESDAY



208

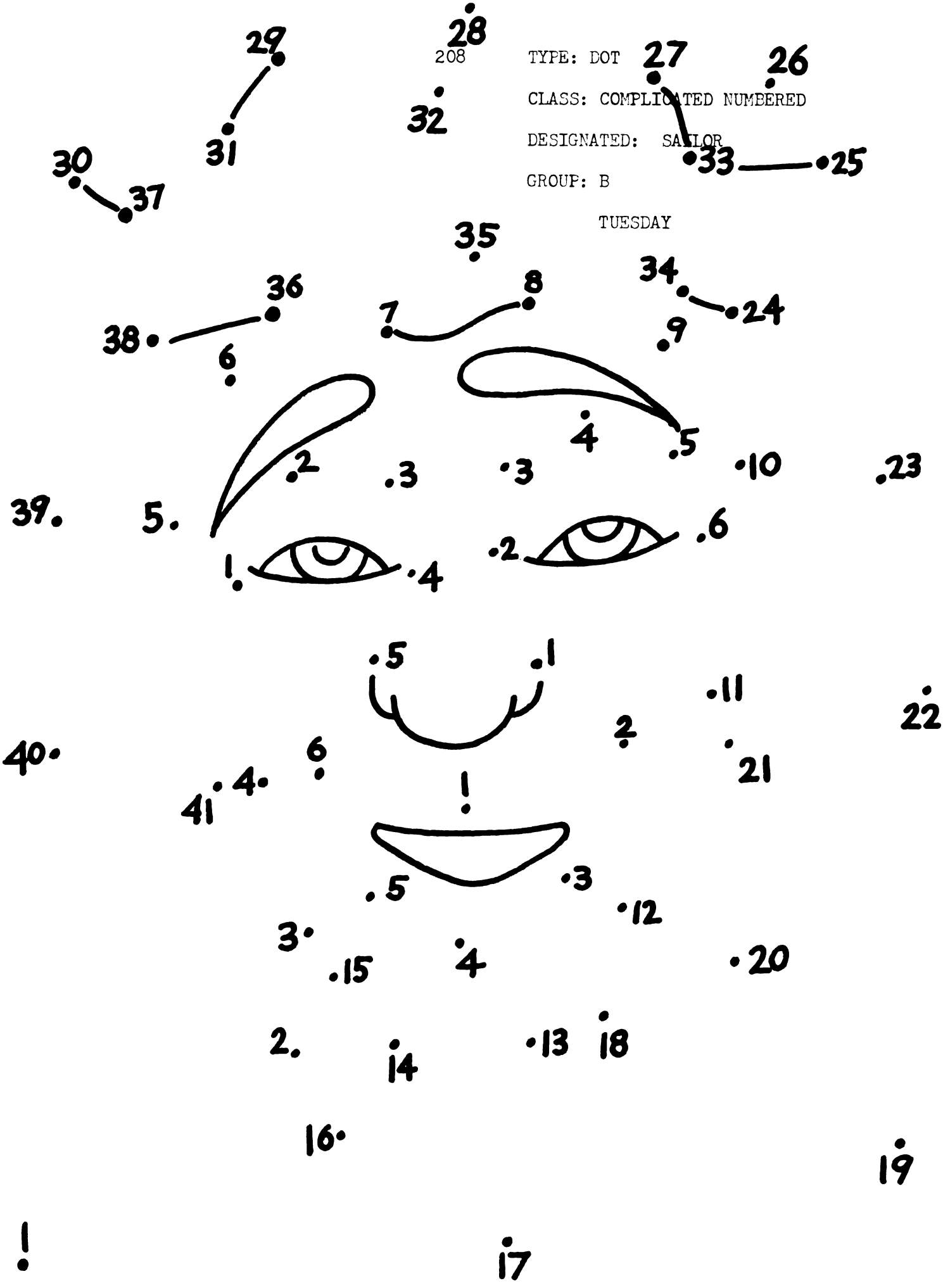
TYPE: DOT

CLASS: COMPLICATED NUMBERED

DESIGNATED: SAILOR

GROUP: B

TUESDAY



209

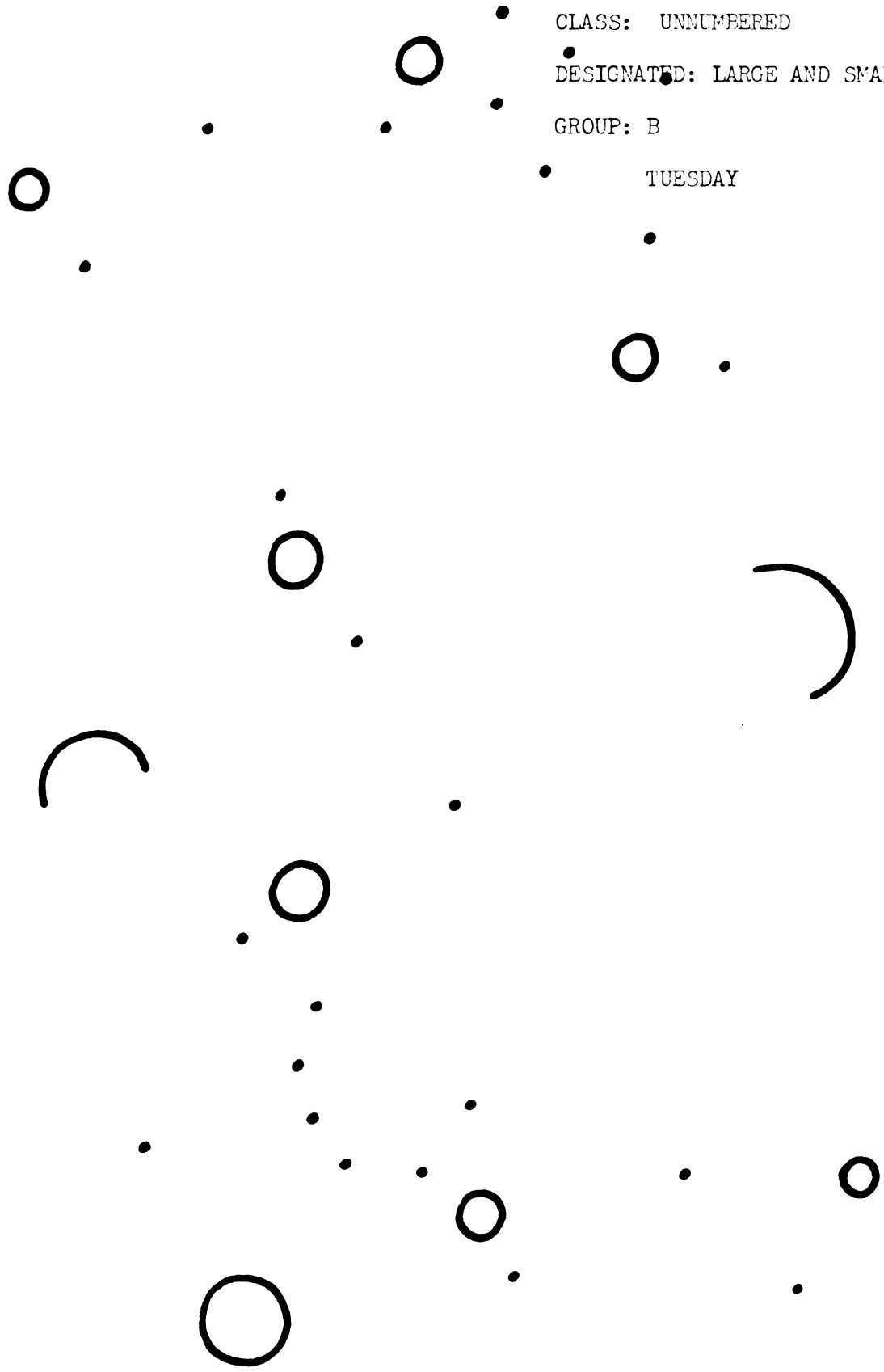
TYPE: DOT

CLASS: UNNUMBERED

DESIGNATED: LARGE AND SMALL

GROUP: B

TUESDAY



210

TYPE: STIMULUS LINE

CLASS: CLOSED

DESIGNATED: HAT

GROUP: B

TUESDAY

211

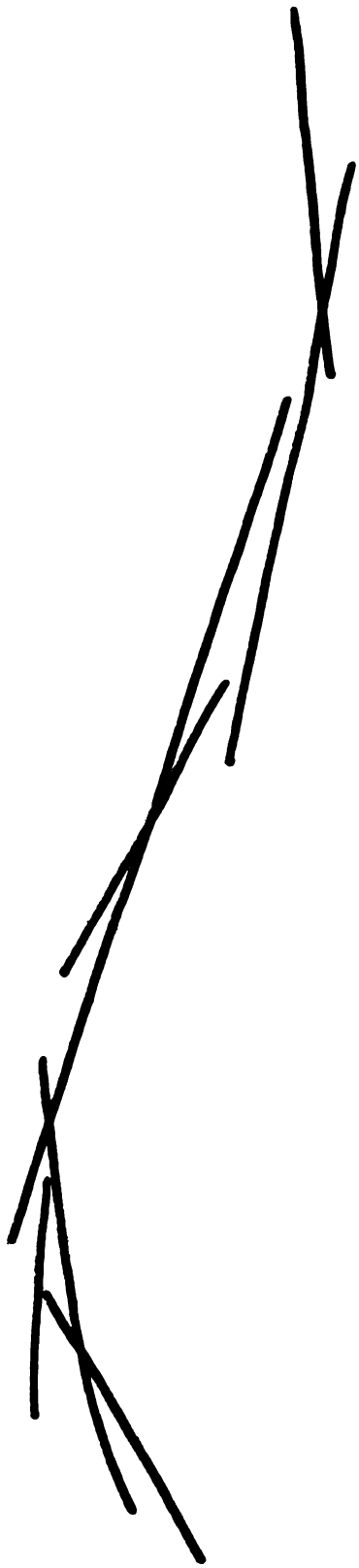
TYPE: STIMULUS LINE

CLASS: OPEN

DESIGNATED: STICKS

GROUP: B

TUESDAY



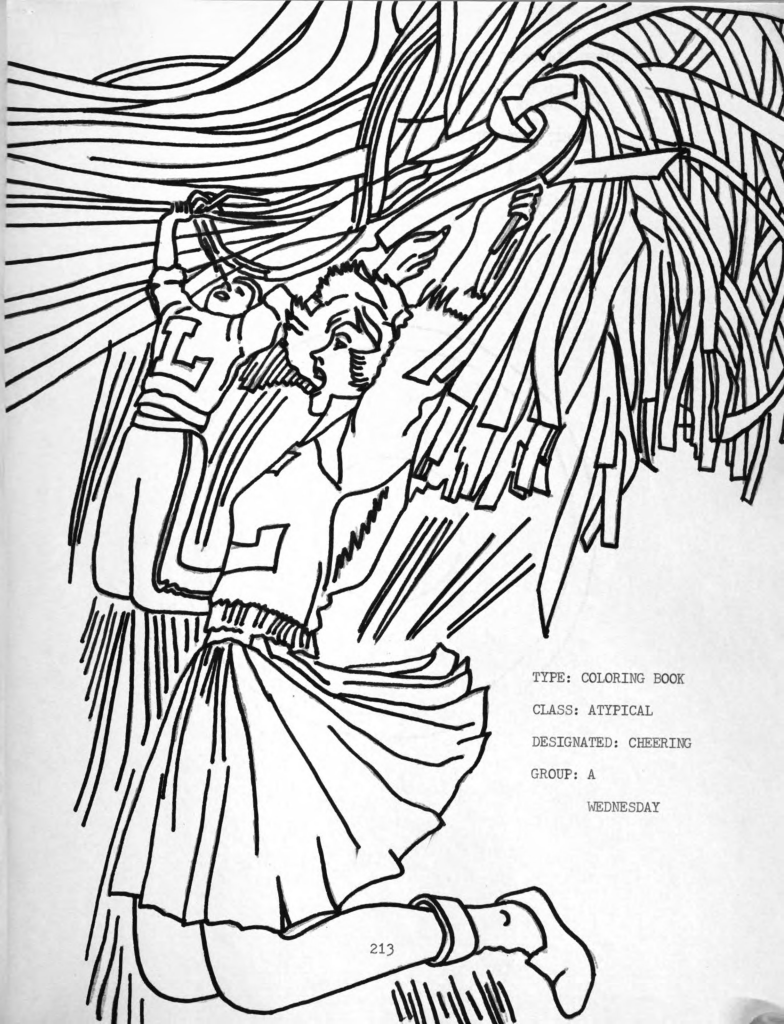
TYPE: COLORING BOOK

CLASS: TYPICAL

DESIGNATION: FISHING

GROUP: A

WEDNESDAY



TYPE: COLORING BOOK

CLASS: ATYPICAL

DESIGNATED: CHEERING

GROUP: A

WEDNESDAY

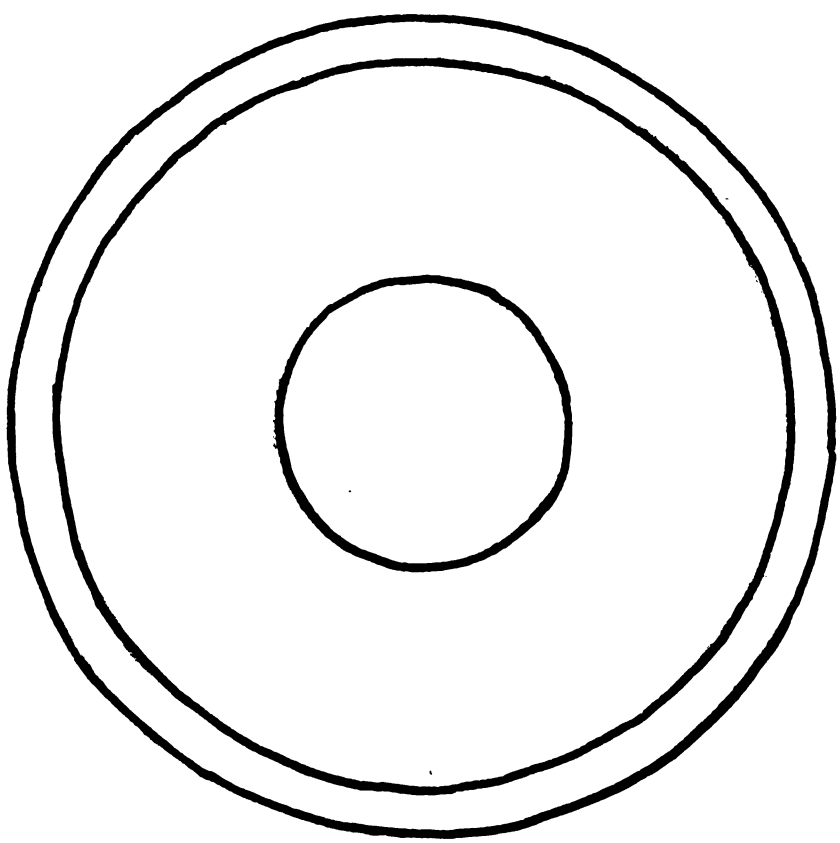
214 TYPE: GEOMETRIC DESIGN

CLASS: SIMPLE AND SYMMETRICAL

DESIGNATED: CIRCLE

GROUP: A

WEDNESDAY



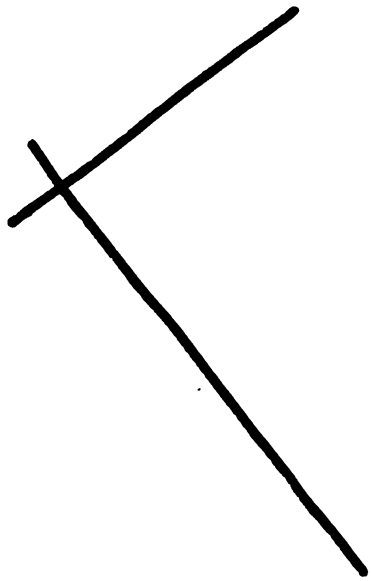
216 TYPE: STIMULUS LINE

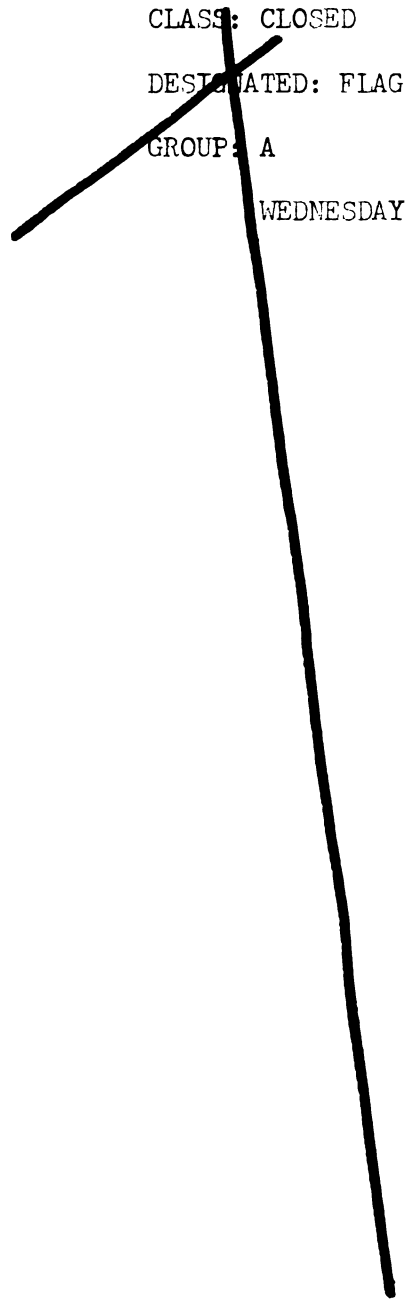
CLASS: CLOSED

DESIGNATED: FLAG

GROUP: A

WEDNESDAY





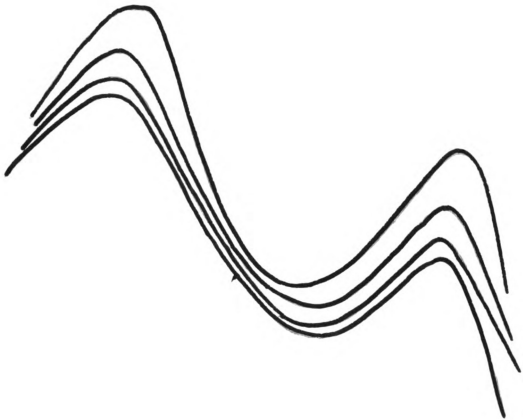
217 TYPE: STIMULUS LINE

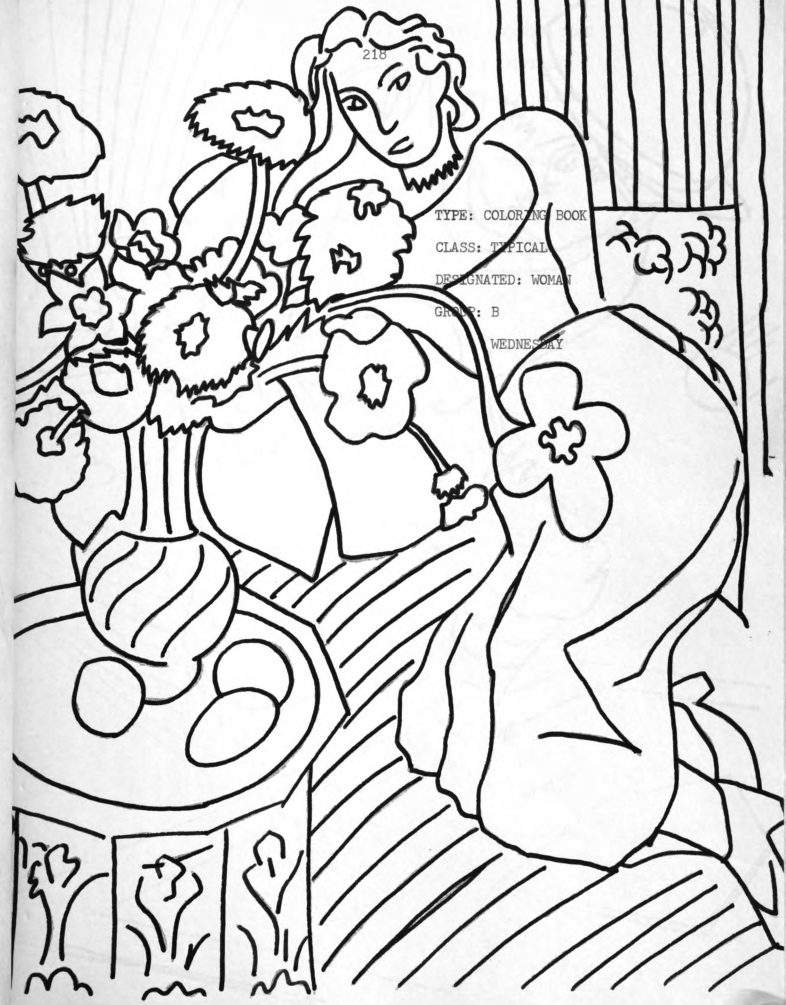
CLASS: OPEN

DESIGNATED: BEACH "H"

GROUP: A

WEDNESDAY




TYPE: COLORING BOOK
CLASS: TYPICAL
DESIGNATED: WOMAN
GROUP: B
WEDNESDAY

219 TYPE: COLORING BOOK

CLASS: ATYPICAL

DESIGNATED: PLAYER

GROUP: B

WEDNESDAY

220

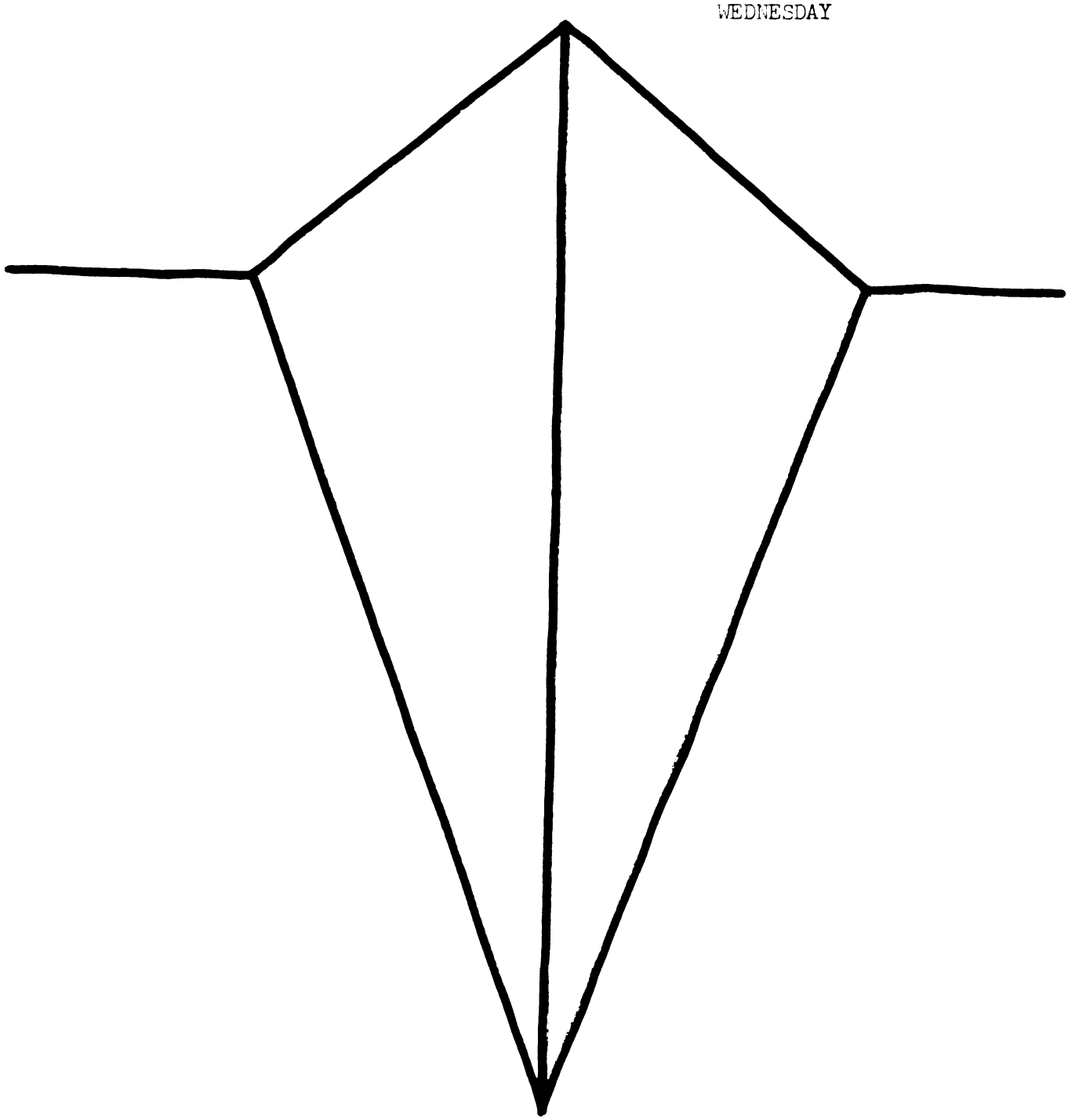
TYPE: GEOMETRIC DESIGN

CLASS: SIMPLE AND
SYMMETRICAL

DESIGNATED: TRIANGLE

GROUP: B

WEDNESDAY



221

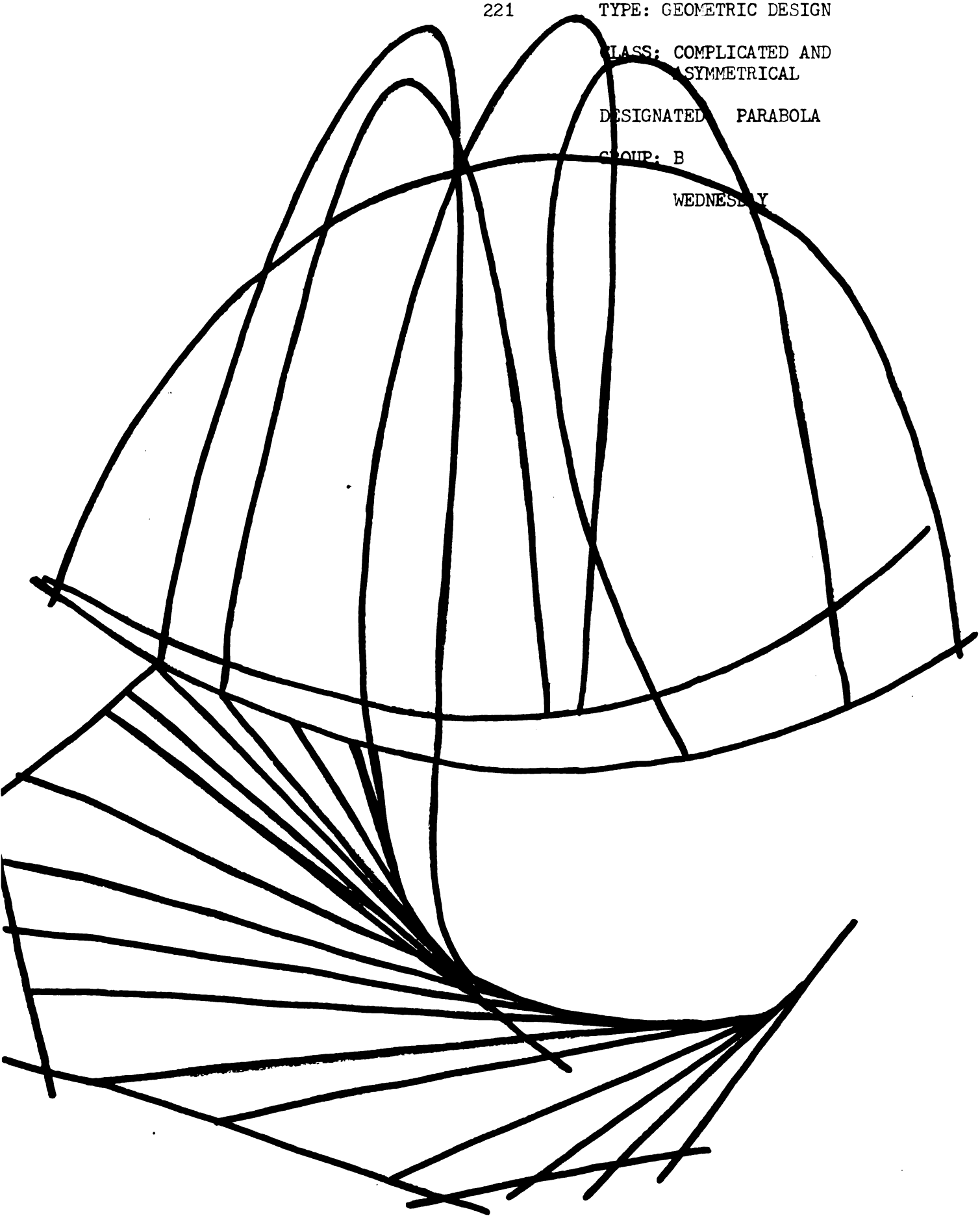
TYPE: GEOMETRIC DESIGN

CLASS: COMPLICATED AND ASYMMETRICAL

DESIGNATED PARABOLA

GROUP: B

WEDNESDAY



222

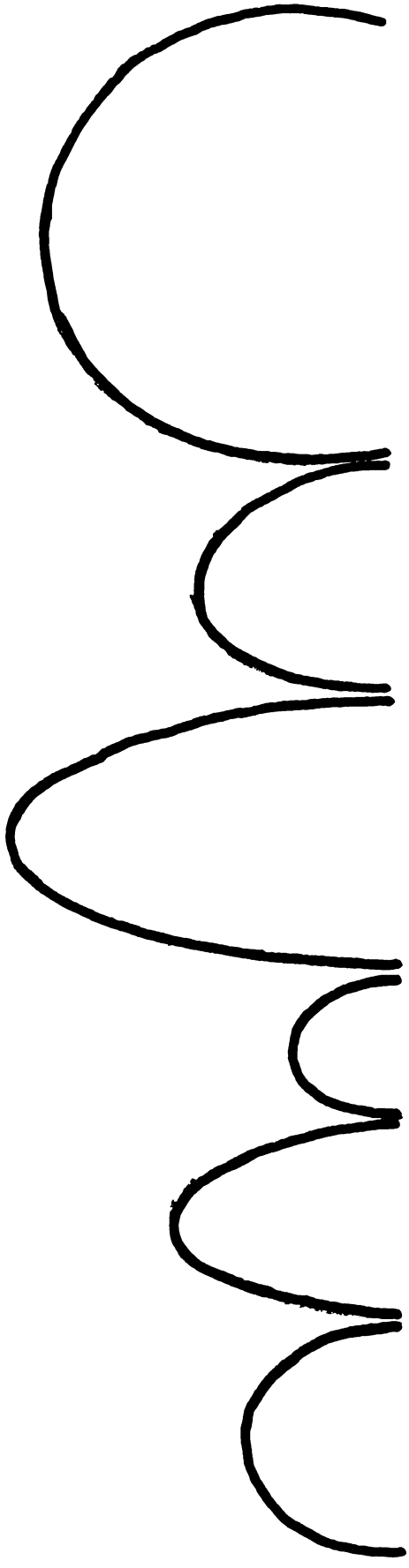
TYPE: STIMULUS LINE

CLASS: CLOSED

DESIGNATED: BUMPS

GROUP: B

WEDNESDAY



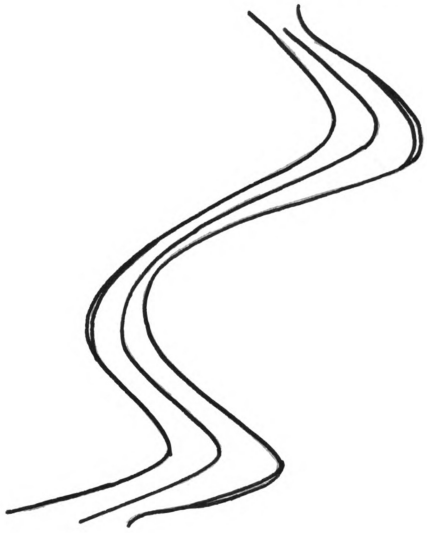
. 223 TYPE: STIMULUS LINE

CLASS: OPEN

DESIGNATED: BEACH "V"

GROUP: B

WEDNESDAY



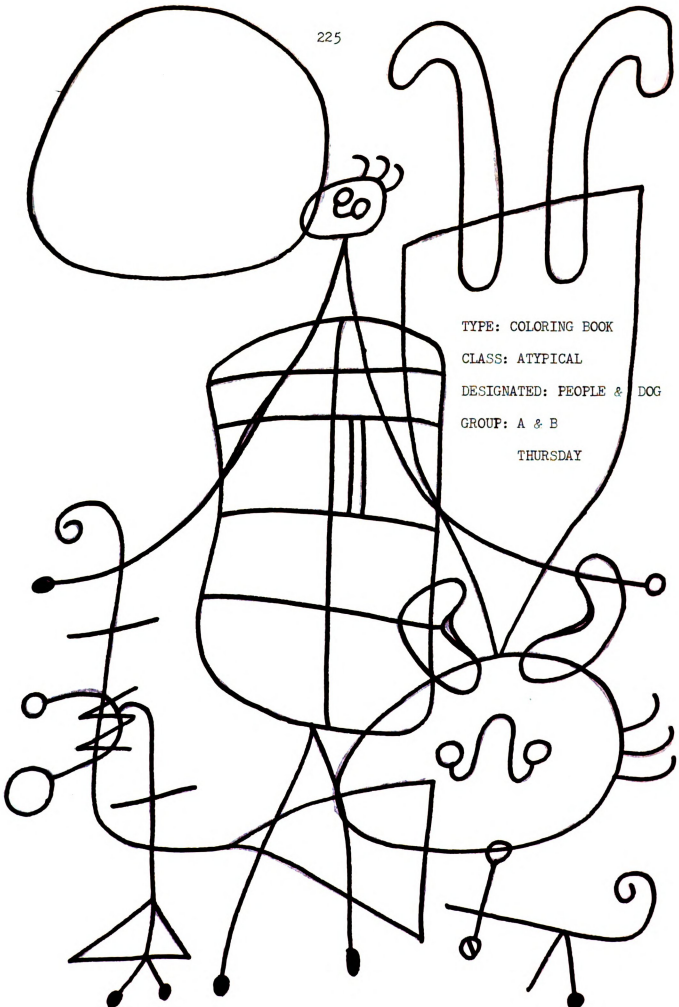
224 TYPE: COLORING BOOK

CLASS: TYPICAL

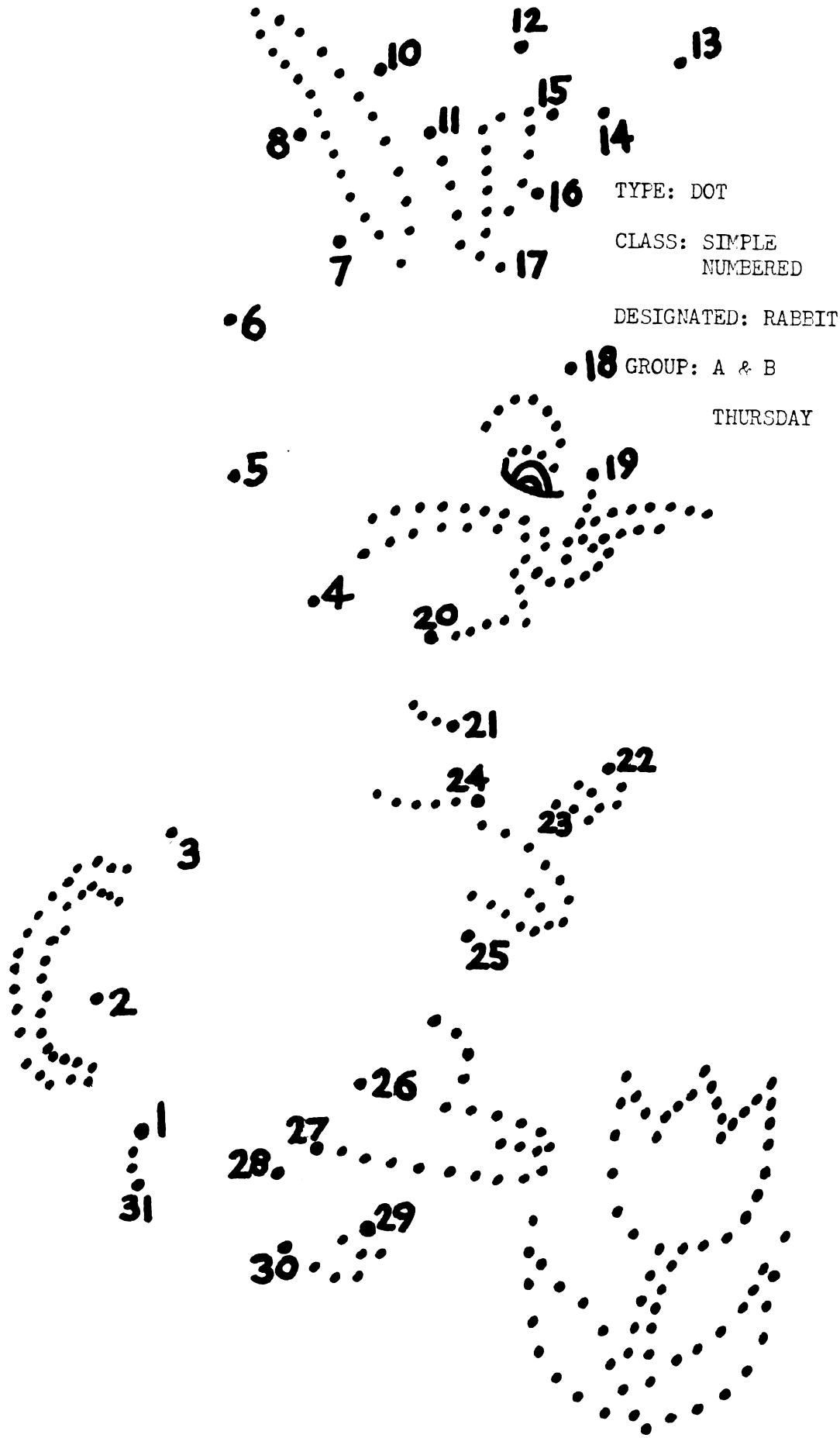
DESIGNATED: TOM & PIG

GROUP: A & B

THURSDAY


TYPE: COLORING BOOK
CLASS: ATYPICAL
DESIGNATED: PEOPLE & DOG
GROUP: A & B
THURSDAY

9.



TYPE: DOT

CLASS: SIMPLE
NUMBERED

DESIGNATED: RABBIT

GROUP: A & B

THURSDAY

227

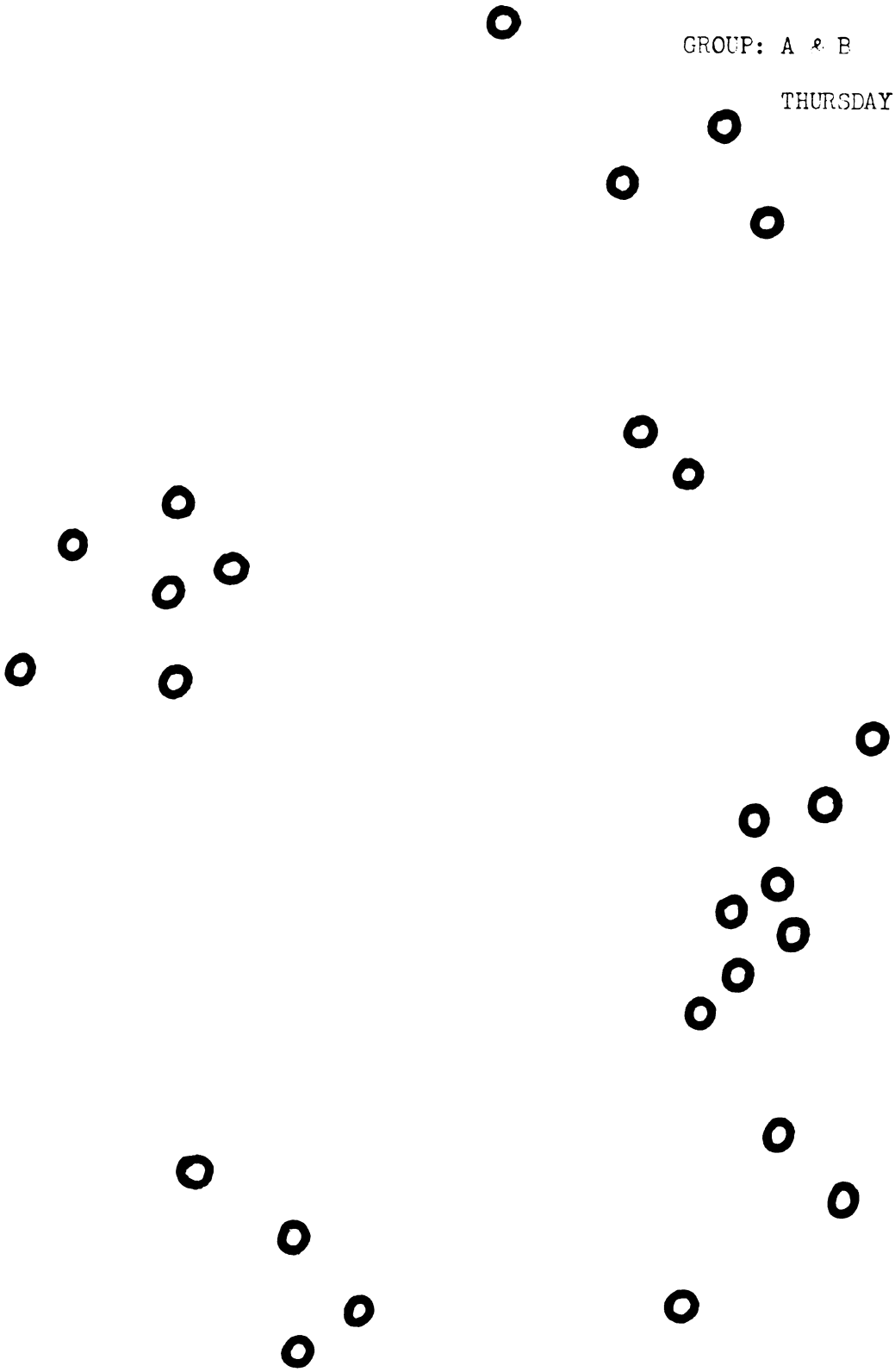
TYPE: DOT

CLASS: UNNUMBERED

DESIGNATED: DISPERSED

GROUP: A & B

THURSDAY



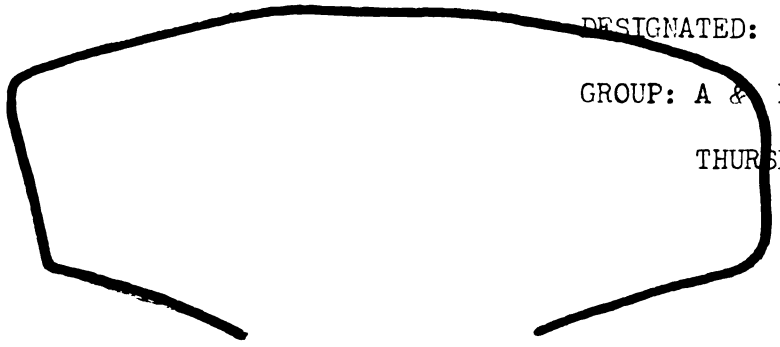
228 TYPE: STIMULUS LINE

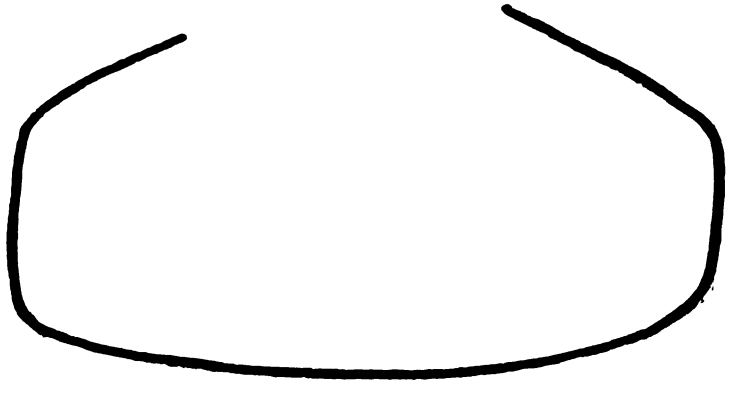
CLASS: CLOSED

DESIGNATED: WHEELS

GROUP: A & B

THURSDAY





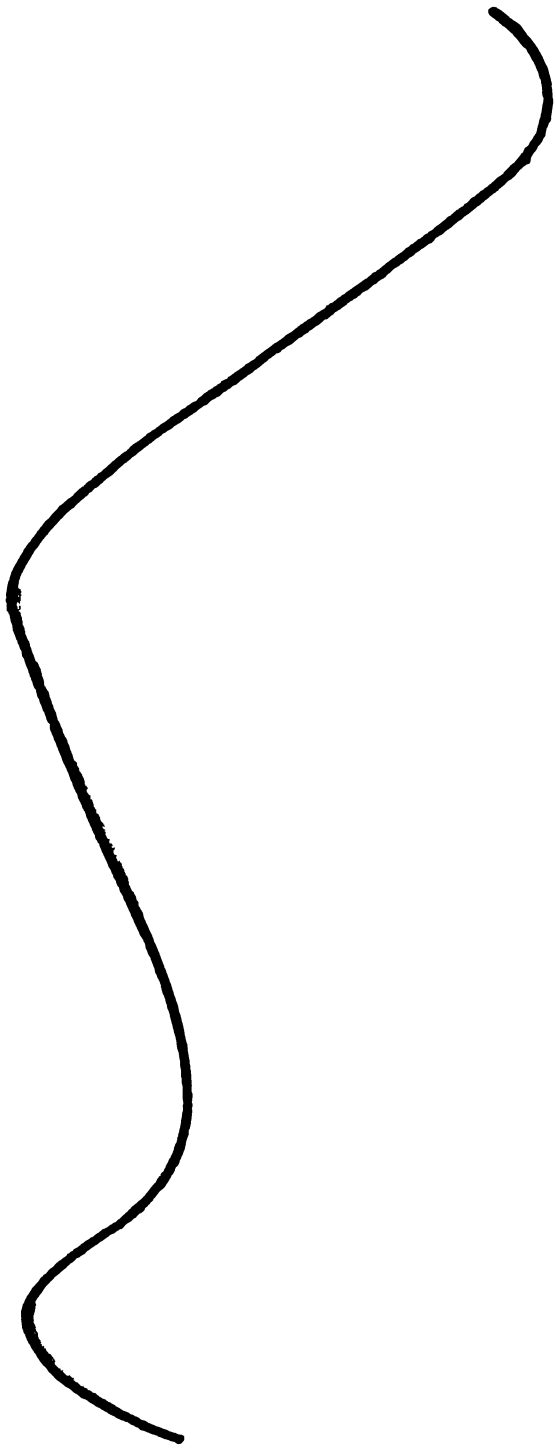
229 TYPE: STIMULUS LINE

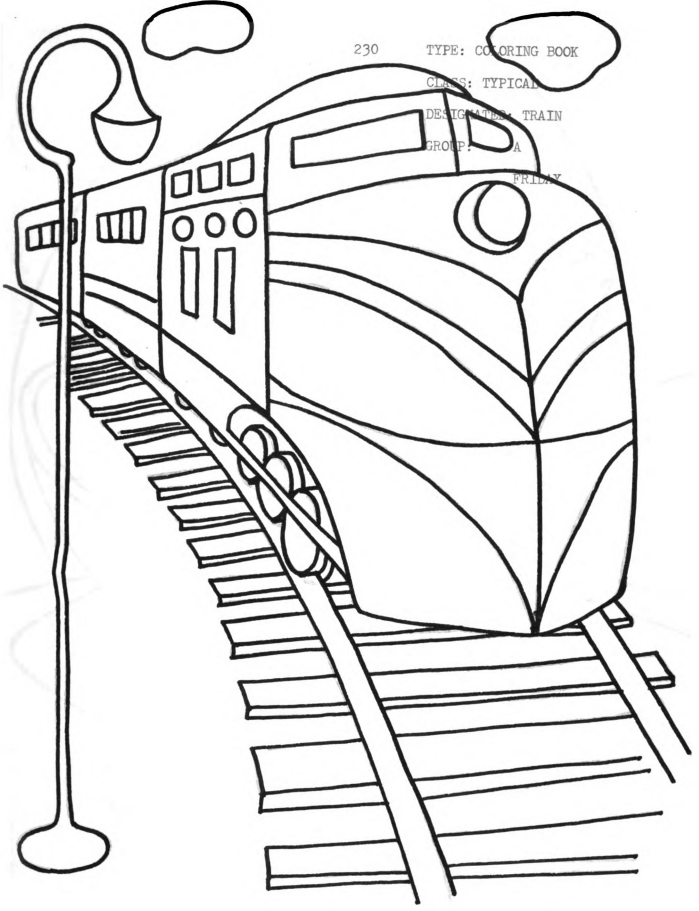
CLASS: OPEN

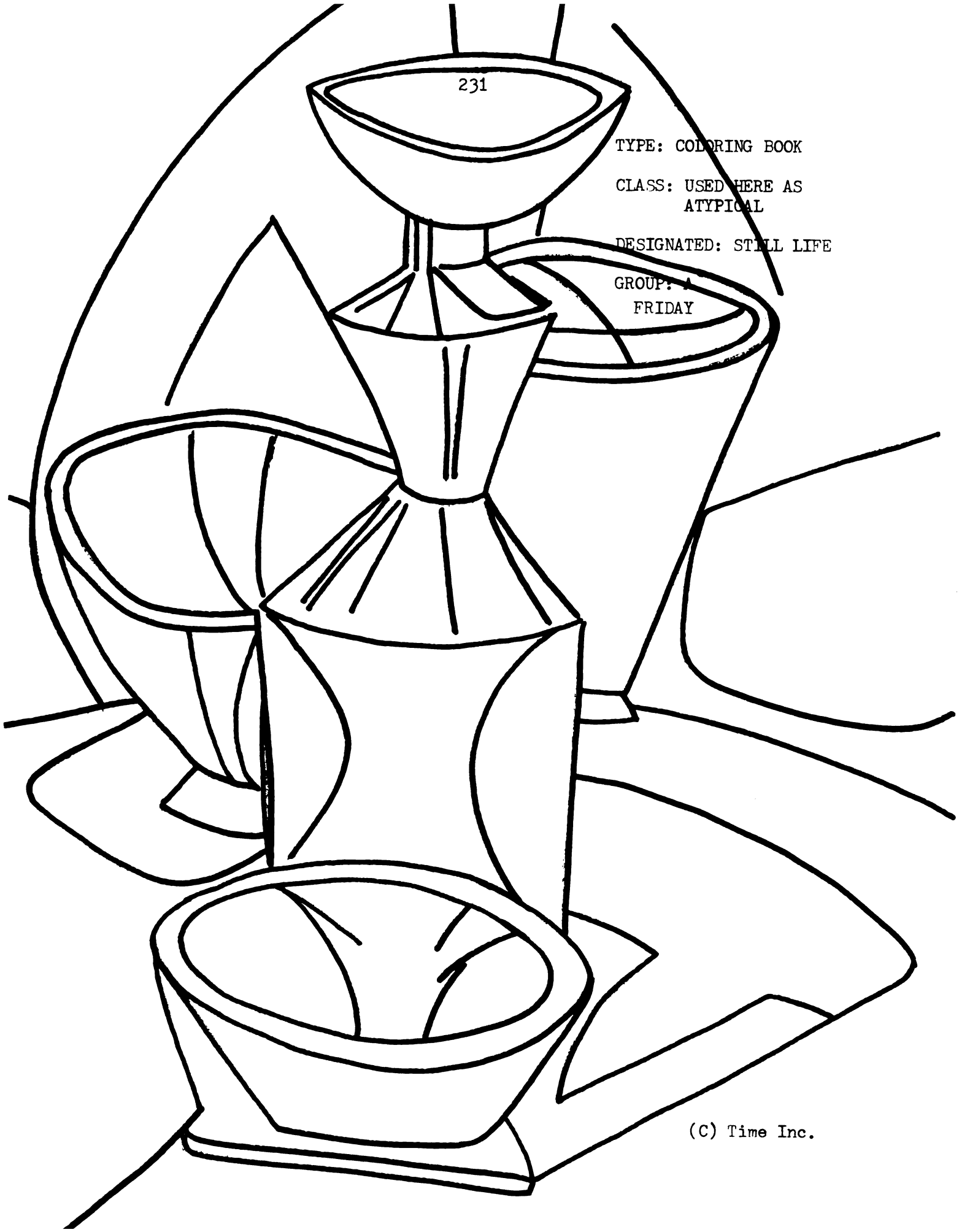
DESIGNATED: MOUNTAIN LINE

GROUP: A & B

THURSDAY




230 TYPE: COLORING BOOK
CLASS: TYPICAL
DESIGNATED: TRAIN
GROUP: A
FRIDAY



TYPE: COLORING BOOK

CLASS: USED HERE AS ATYPICAL

DESIGNATED: STILL LIFE

GROUP: A

FRIDAY

232

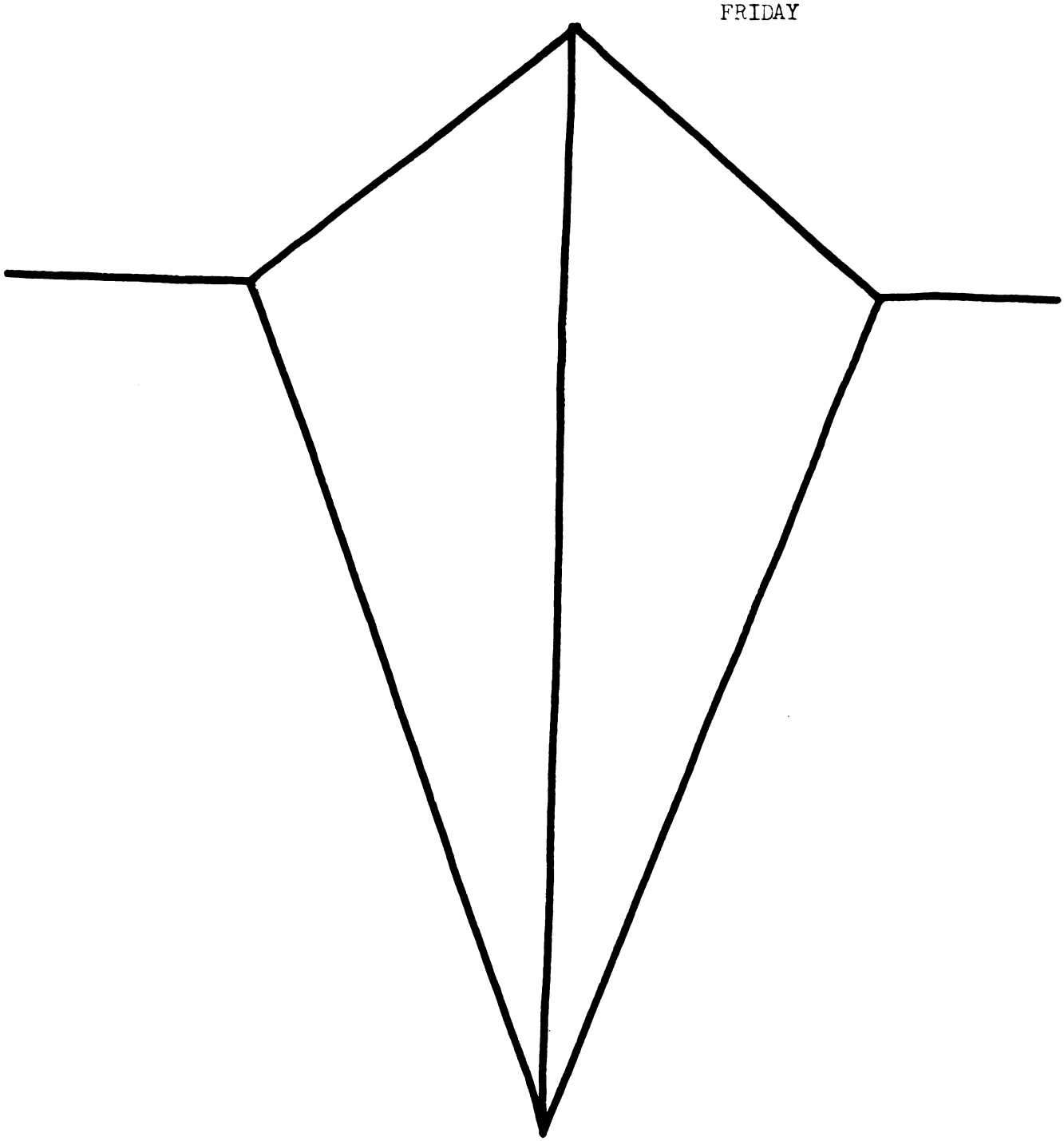
TYPE: GEOMETRIC DESIGN

CLASS: SIMPLE AND
SYMMETRICAL

DESIGNATED: TRIANGLE

GROUP: A

FRIDAY



TYPE: GEOMETRIC
DESIGN
CLASS: COMPLICATED
AND
ASYMMETRICAL
DESIGNATED: FLEXIBLE
GROUP: A
FRIDAY

234

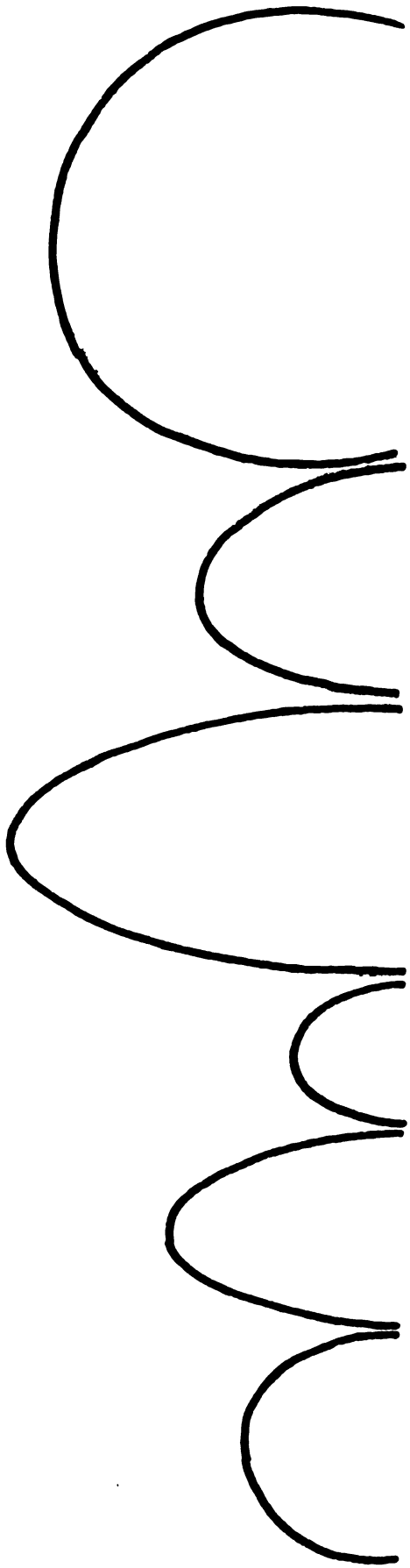
TYPE: STIMULUS LINE

CLASS: CLOSED

DESIGNATED: BUMPS

GROUP: A

FRIDAY



235

TYPE: STIMULUS LINE

CLASS: OPEN

DESIGNATED: STICKS

GROUP: A

FRIDAY


TYPE: COLORING BOOK
CLASS: TYPICAL
DESIGNATED: VENDOR
GROUP: B
FRIDAY


TYPE: COLORING BOOK
CLASS: ATYPICAL
DESIGNATED: PUFF
GROUP: B
FRIDAY
DURGS
HOTE
ON OFF

238

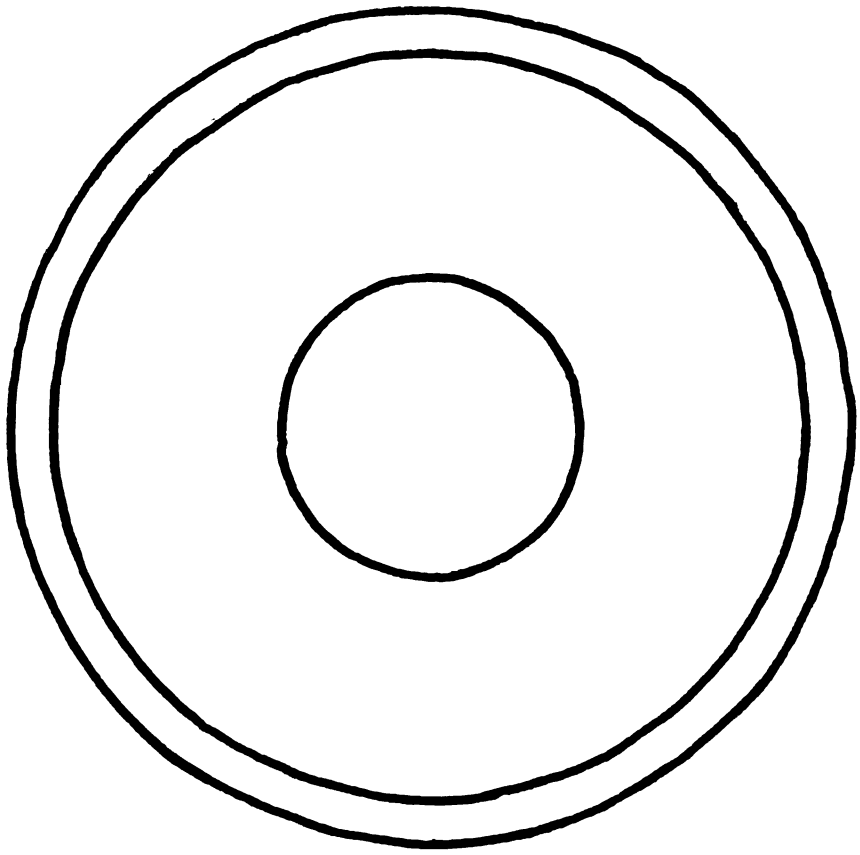
TYPE: GEOMETRIC DESIGN

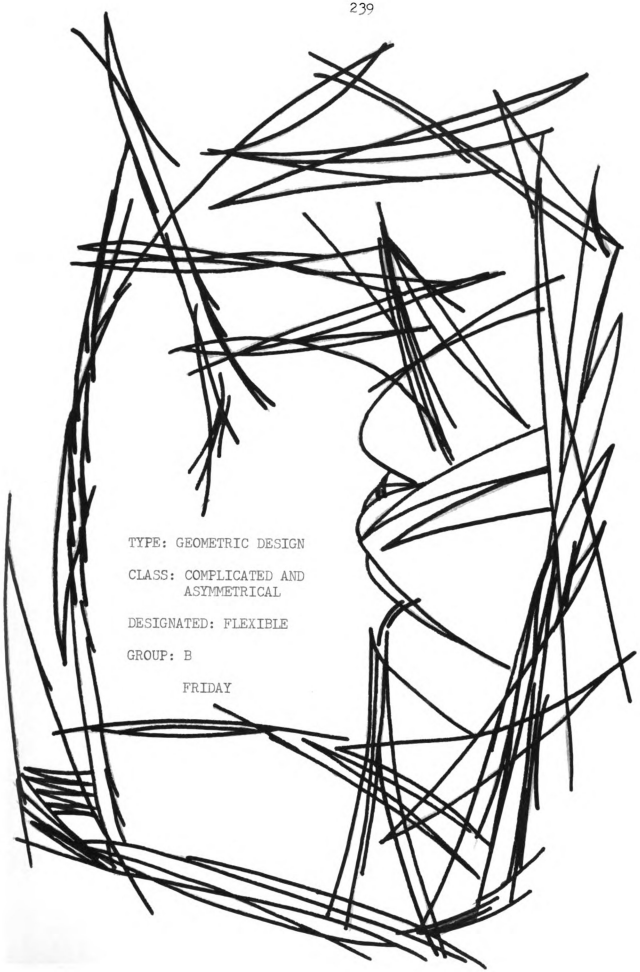
CLASS: SIMPLE AND SYMMETRICAL

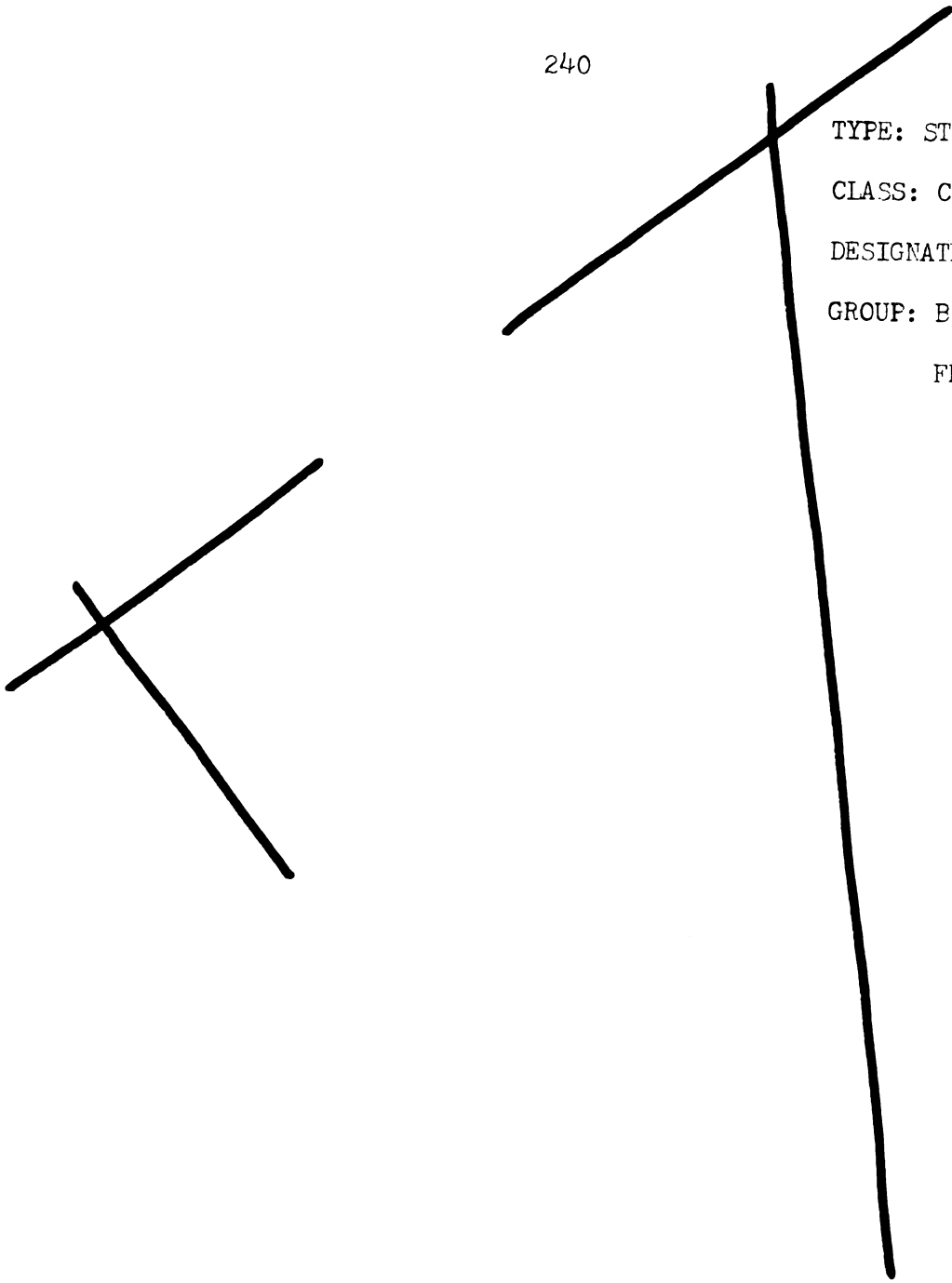
DESIGNATED: CIRCLE

GROUP: B

FRIDAY




TYPE: GEOMETRIC DESIGN
CLASS: COMPLICATED AND ASYMMETRICAL
DESIGNATED: FLEXIBLE
GROUP: B
FRIDAY



TYPE: STIMULUS LINE

CLASS: CLOSED

DESIGNATED: FLAG

GROUP: B

FRIDAY

241

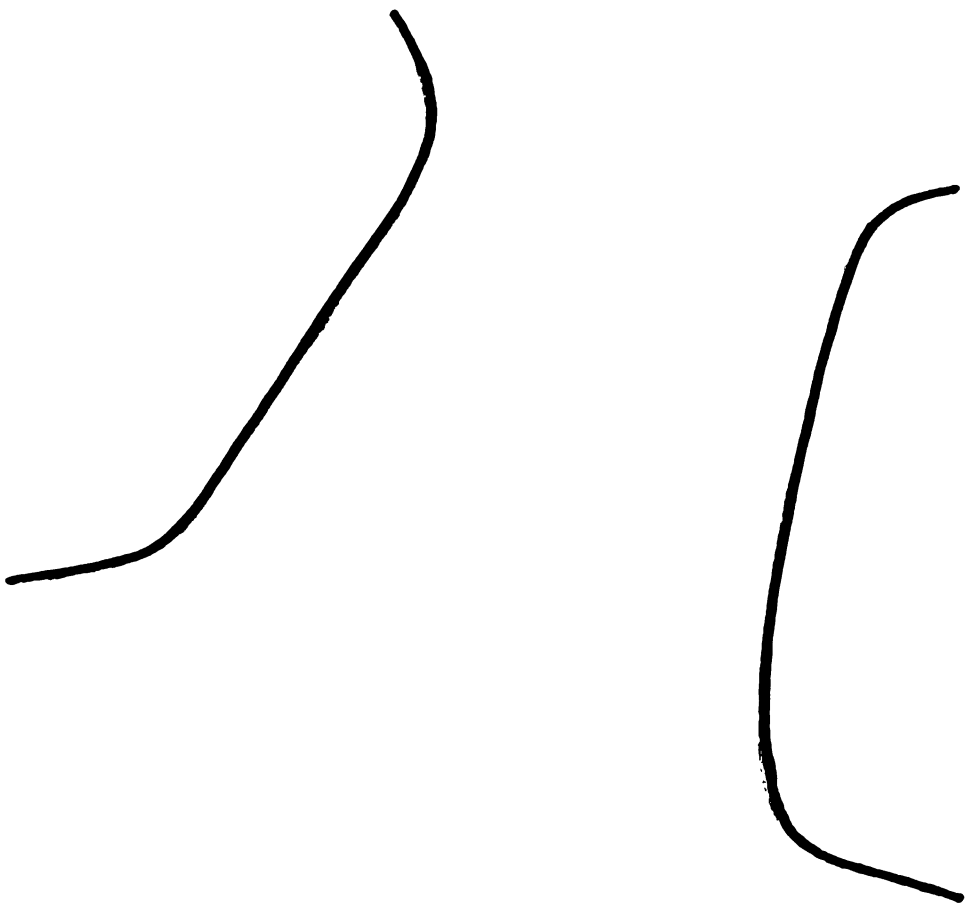
TYPE: STIMULUS LINE

CLASS: OPEN

DESIGNATED: WAIST

GROUP: B

FRIDAY



APPENDIX C

INFORMATION FOR ADMINISTERING STIMULUS DRAWINGS

1. Separate the drawings from the Monday envelope into separate piles so they are all easily and equally available for students to select from.

2. Select a 20 minute period in the morning each day when the children can select a drawing and color it in. Try to make the same 20 minutes[1] available each morning at the same time. Nine thirty to nine fifty might be a possibility.

3. Select a 20 minute[1] period in the afternoon each day when the children can select a second drawing and color it in. Try to make the same time available each afternoon at the same time, say at one to one twenty each day. Each child will have two opportunities to select, to add to his drawing, and color it - for a total of 10 selections for the five days.

4. When the time comes for the children **to select their first drawing** in the morning take a few minutes to hold up each drawing for the students to see before they select their own. Individual selection time may go faster this way.

5. Answer any questions the children may have.

---

[1]Time for each AM and PM session changed to 25 minutes on Tuesday.

6. Names should be printed on the back of each drawing turned in. Have the children print "AM" (for morning) or "PM" (for afternoon), the school's name, and the teacher's name plus the date. A sample entry on the blackboard should give most students the help they need for this. The list of information I need is this:

Name of student
AM or PM
School
Teacher
Date

7. Keep the AM and PM drawings paper clipped separately. I can collect them each day from the office, if you need to leave before I get around. I will have six widely scattered schools to pick up from each day.

8. The children can use their boxes of six crayons. Students may use their pencils first and then their crayons or they can add all lines with their crayons.

9. Concerning motivation:

Read to them each time before the children select their drawings:[2]

COMPLETE THE DRAWING YOU SELECT BY COLORING IT WITH YOUR CRAYONS. IF YOU PICK A DRAWING THAT NEEDS MORE LINES YOU MAY USE YOUR PENCIL AND YOUR CRAYONS TO ADD MORE LINES AND THEN COLOR THE DRAWING IN.

USE YOUR IMAGINATION WHEN YOU ADD YOUR LINES WHERE YOU WANT THEM. YOU CAN MAKE THE DRAWING INTO ANYTHING YOU WISH. TRY TO MAKE IT INTO SOMETHING THAT NO ONE ELSE WOULD THINK OF. TRY TO MAKE IT DIFFERENT THAN ANYBODY ELSE'S DRAWING. YOU MAY PICK ANY DRAWING

---

[2]Teachers found it unnecessary to repeat the directions after several readings to the students.

YOU WOULD LIKE TO WORK ON.

YOU HAVE 20 MINUTES TO DRAW AND COLOR. WHEN YOU ARE DONE TURN THE DRAWING OVER AND WRITE THE THINGS ON THE BACK WHICH I HAVE WRITTEN ON THE BOARD.

REMEMBER: WHAT MORE CAN YOU ADD TO THE DRAWING YOU SELECT BESIDES COLORING IT IN? USE YOUR IMAGINATION.

10. On the attached "Teacher Identification of Most Creative and Most Conforming" form, I would like you to list the names of your students whom you feel are especially creative. List as many as you feel would qualify. A short description of some qualities of creative children is included from Torrance's GUIDING CREATIVE TALENT. Please rank the most creative children from 1 to ___.

Please list the names of your students whom you feel are especially conforming. Again, list as many as you feel would qualify. A short description of some qualities of conforming children is included from a book by Heil, Powell, and Feifer: CHARACTERISTICS OF TEACHER BEHAVIOR RELATED TO THE ACHIEVEMENT OF CHILDREN IN SEVERAL ELEMENTARY GRADES. Please rank them.

11. When the children have selected their drawings pick up the rest of the drawings for the afternoon session. I will collect both the completed drawings and those unused.

19 May 1965

David L. Smith
5655 Hallendale Road
Haslett, Michigan

FE 98437

APPENDIX D

TEACHER IDENTIFICATION OF MOST CREATIVE AND MOST CONFORMING

List the names of the students you feel are your

MOST CREATIVE

children. List as many as you feel would qualify. Please rank them.

Creative children may not be well-rounded. They may diverge from sex norms. They prefer to learn on their own. They like to attempt difficult tasks; may undertake dangerous tasks; are searching for a purpose; have different values; search for their uniqueness. Some creative children can't stop working.[1]

List the names of the students you feel are your

MOST CONFORMING

children. List as many as you feel would qualify. Please rank them.

Conforming children are dependent; their self-confidence may not be very high. They look for approval from others. They tend to incoporate adult standards and place an emphasis on mature behavior. They maintain strict control of impulses; particularly, of hostility.[2]

1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____
6. _____	6. _____
7. _____	7. _____
8. _____	8. _____
9. _____	9. _____
10. _____	10. _____

RETURN TO DAVE SMITH AS SOON AS POSSIBLE.

[1]E. Paul Torrance, Guiding Creative Talent (Englewood Cliffs, N. J., Prentice-Hall, Inc., 1962), pp. 109-120.

[2]Louie Heil, Marion Powell, and Irwin Feifer, Characteristics of Teacher Behavior Related to the Achievement of Children in Several Elementary Grades (Washington, D. C.: Contract #SAE 7285 Cooperative Research, Office of Education, U. S. Dept. of Health, Education and Welfare, May 1960.), p. 26.

SCORING SHEET NAME ____________ SCHOOL ________ GROUP ________ TEACHER ____________ GRADE ____ DATE ________

(A) (C) (A) (B) RATING: CR CO NO. ____________ (D) (E) (F) (G)

REGION	1st	2nd	Col	MON A	MON P	TUES A	TUES P	WEDS A	WEDS P	THURS A	THURS P	FRI A	FRI P	ADD. A	ADD. P	TOTAL A	TOTAL P
2B Typ	1	0	Re														
Atyp	3	1	Or														
GD Sm	5	3	Ye														
Comp	7	5	Gn														
Ov Sm	5	3	Bu														
Om	6	4	Vi														
Unusu	7	5	Bk														
WE Cl	9	7	Wh														
Open	11	9	Gra														
BLANK	13	11	Br														
			Go														
			Si														
			Mix														
TOTAL																	

DAY	TYPE	TITLE OF DRAWING	ELAB. 1-0	ELAB. TOT.	ORIG	COVERAGE Ps.	COVERAGE −	COVERAGE =	DISPERSION Ps.	DISPERSION −	DISPERSION =
MI											
2											
TI											
2											
WI											
2											
THI											
2											
FI											
2											
ADI											
	(C) FLEX.										

MT of CT FLUENCY: ________ FLEXIBILITY: ________ ORIGINALITY: ________ ELABORATION: ________ MT of CT-TOTAL: ________

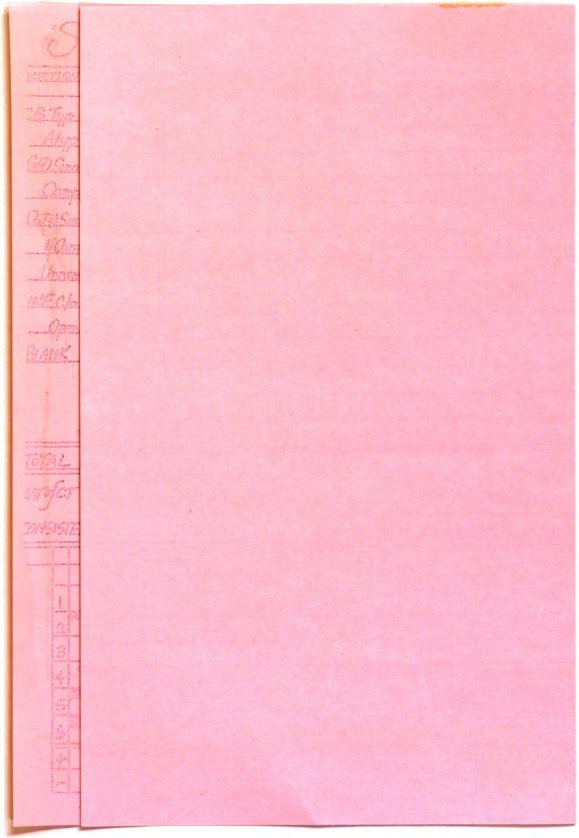
SMITH: E-____ C-____ D-____ TOT-________

CONSISTENCY (circle) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

	A 1st 2nd	B 1st 2nd	Sim		A 1st 2nd	B 1st 2nd	Sim		A 1st 2nd	B 1st 2nd	Sim		SCORES	TOTAL	MEAN
1	CLOWN	1ST STEPS		7	MIRO	TOAA		13	CHEERING	FISHING		A	SELECTION		
2	DIVISION	CROSS		8	RABBIT	DISPERSED		14	CIRCLE	PARABOLA		B	COLOR		
3	FLAME	S CURVE		9	WHEELS	MTN. LINE		15	BEACH-H	FLAG		C	FLEXIBILITY		
4	CREAM PUFF	VENDOR		10	WOMAN	PLAYER		16	STILL LIFE	FACE		D	ELABORATION		
5	LG & SM	1-2-3-4		11	FLEXIBLE	TRIANGLE		17	SAILOR	LG & SM		E	ORIGINALITY		
6	WAIST	FLAG		12	SHAPES	BEACH-V		18	STEM	HAT		F	COVERAGE		
												G	DISPERSION		
+													TOTAL		
−					TOOK								SUGGESTIBILITY		SHIFT
					HOME								ART SCORE:		

APPENDIX E

COMPOSITE SCORING FORM



NAME _____

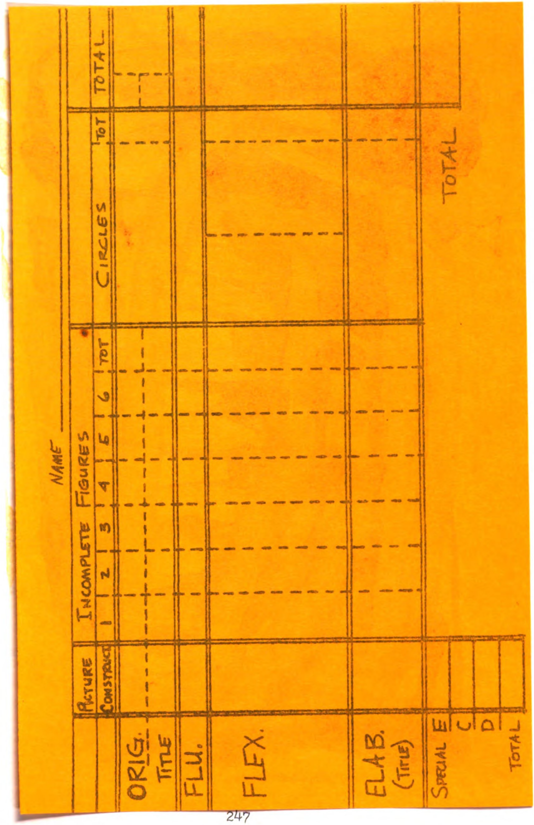
	Picture Construct	Incomplete Figures 1	2	3	4	5	6	Tot	Circles	Tot	Total
ORIG. Title											
FLU.											
FLEX.											
ELAB. (Title)											

Special E	
C	
D	
Total	

Total _____

APPENDIX F

SCORING SHEET FOR THE MINNESOTA TESTS OF CREATIVE THINKING



NAME ____________

	PICTURE	INCOMPLETE FIGURES									
	CONSTRUCT	1	2	3	4	5	6	TOT	CIRCLES	TOT	TOTAL
ORIG. TITLE											
FLU.											
FLEX.											
ELAB. (TITLE)											
SPECIAL E										TOTAL	
C											
D											
TOTAL											

APPENDIX G

UNIVERSITY OF Minnesota

COLLEGE OF EDUCATION
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY • MINNEAPOLIS, MINNESOTA 55455

April 6, 1965

Mr. Dave Smith
5655 Kallendale Road
Haslett, Michigan 48840

Dear Mr. Smith:

I appreciate your interesting letter of April 3rd and I am glad to learn about the plans for your research. As Perssonel Press, Inc. indicated, we hope that they will be publishing the alternate batteries Verbal and Figural Forms A and B. The final work is lagging, however, on account of my overloaded schedule. Meanwhile, we are continuing to grant permission for the use of the tests in experimental and research projects.

Unless you are prepared to administer tests individually, you are pretty much limited to the figural tests with first graders. The Product Improvement, Ask-and-Guess, Just Suppose, Mother Hubbard, and Cow Jumping Problems "work" with first graders, however, if you can do the administration individually.

I am not certain about the applicability of the Ideal Pupil Checklist with first graders. For the most part, I believe that it would. Thus, I am enclosing a copy herewith along with a list of publications in open sources.

I doubt that the Welsh Figure Preference Test would be appropriate for use with first grade children.

We have continued to collect reports, reprints, books, dissertations, etc. relative to creativity. Apparently this is something that only an individual or a research group will do and it is then a struggle to keep it up.

Thanks very much for the ZUKEPAS story.

Sincerely,

E. Paul Torrance

E. Paul Torrance, Professor
Educational Psychology

APPENDIX H

MINNESOTA TESTS OF CREATIVE THINKING
NON-VERBAL CREATIVE THINKING TASKS
FORM NVA

NAME_____ DATE_____

GRADE_____ TEACHER_____ SCHOOL_____

INSTRUCTIONS: In this booklet are three interesting things for you to do. All of them will give you a chance to use your imagination to think of ideas. We want you to think of as many ideas as you can in all of them. We also want you to think of interesting and unusual ideas - ideas that no one else in the class will think of. Keep adding to your ideas and building onto them whenever you can.

You will be given a time limit of ten minutes on each of these jobs, so don't waste time. Work quickly but don't rush. Get right down to work. If you run out of ideas before I call time, wait until I tell you before you turn to the next page.

Do not pay any attention to the rest of this page. Turn to the next page when I give you the signal.

SCORES:

	Picture Construction	Incomplete Figures	Circles	Total
ORIG.				
FLU.				
FLEX.				
ELAB.				

SMITH METHOD:

ELAB. _____

COVER._____

DISP. _____

TOTAL _____

BUREAU OF EDUCATIONAL RESEARCH
University of Minnesota
September 1960

Picture Construction Task

APPENDIX I

THE RATIONALE FOR EACH TYPE OF DRAWING USED IN THE S-CIT

Coloring Book Type - Typical Class

The drawings in TABLE I-1 for Coloring Book Type - Typical Class are shown by title for the days they were used.

TABLE I-1

DRAWINGS OF THE COLORING BOOK TYPE - TYPICAL CLASS USED IN THE S-CIT BY TITLE AND DAYS FOR GROUPS A & B[a]

Day	Group A	Group B
Monday[b]	Clown	Clown
Tuesday	Bird	Still Life (Picasso)
Wednesday	Fishing	Woman (Matisse)
Thursday[b]	Tom & Pig	Tom & Pig
Friday	Train	Flower Vendor (Rivera)

[a]See Appendix B, pages: 194, 200, 206, 212, 218, 224, 230, and 236.

[b]Groups A and B both received the identical sets of drawings on Monday and Thursday.

Each drawing included all the necessary lines to make it complete. Usually it was not possible to add more lines, though some children did. All the drawing had been done for the student and the only thing that needed to be done was the coloring in. The degree of a child's individual creative expression was definitely curtailed when all he had to do was

color something in. True, the selection of colors he used and how he colored in the drawing offered a degree of individual expression but it was extremely limited when compared with more desirable alternatives.

The typical coloring book drawings were selected for the S-CIT because it was assumed that the drawings would be very popular subjects with the children. This was indicated from the pre-test. Children would quickly pick these drawings because they would have a high attraction or affinity rating. The higher the attractiveness of the drawing the more one could anticipate the children picking it, and, thereby, moving to the norm, the expected, the predicted. It was determined to have drawings that would be so attractive for children that it would be quite difficult for the child NOT TO SELECT them. In other words, the selection of the Coloring Book Type drawing was made to be the expected, predicted, normal behavior of the students. The attempt was made to have the child conform to the behavior of selecting the common, the usual, the expected drawing.

According to Lowenfeld and Brittain:

> A child conditioned to coloring books will have difficulties in enjoying the freedom of creating. The dependency that such methods create is devastating. It had been revealed by experimentation and research that more than half of all children exposed to coloring books lose their creativeness and their independence of expression and become rigid and dependent.[1]

A total of 2917 drawings were selected, worked on, and colored in by the 301 first graders in the sample. Of these, thirty-seven percent were Coloring Book Type - Typical Class. Another thirteen percent selected the next Coloring Book Type - Atypical Class. In all, nearly

---

[1]Lowenfeld and Brittain, Creative and Mental Growth, op. cit., p. 24.

fifty-one percent of the 2917 drawings selected by the students were of the Coloring Book Type. This certainly indicates that this type of drawing was popular.

Coloring Book Type - Atypical Class

The drawings in TABLE I-2 for Coloring Book Type - Atypical Class are shown by title for the days they were used.

TABLE I-2

DRAWINGS OF THE COLORING BOOK TYPE - ATYPICAL CLASS USED IN THE S-CIT BY TITLE AND DAYS FOR GROUPS A & B[a]

Day	Group A	Group B
Monday[b]	First Steps (Picasso)	First Steps (Picasso)
Tuesday	Puff (Anderson)	Seated Woman (Picasso)
Wednesday	Cheering (Peak)	Player (Peak)
Thursday[b]	People & Dog (Miro)	People & Dog (Miro)
Friday	Still Life (Picasso)	Puff (Anderson)

[a]See Appendix B, pages: 195, 201, 207, 213, 219, 225, 231, and 237.

[b]Groups A and B received identical sets of drawings on these two days.

Again each drawing included all the necessary lines to make it complete. In the atypical class different orientations were introduced:

(1) The unusualness of the style of the artist. See Picasso's First Steps, Still Life, and Seated Woman and also Miro's People and Dog.

(2) The unusualness of viewpoint. See drawings adapted from the commercial artist Bob Peak entitled Cheering and Player.

and (3) The unusual situation in the drawing of Puff adapted from

the one used by John Anderson.

Perhaps the child with more imagination might select one of these drawings. However, he could not add many, if any, lines or ideas since the drawings were essentially complete. Thirteen percent of the 2917 drawings of this type and class were selected by the 301 children. This indicates a large difference between the Typical Class and the Atypical Class of the Coloring Book Type and makes it suitable to include in the ranged set of drawings.

It was hypothesized that the more conforming child would tend to select a Coloring Book Type, particularly of the Typical Class. A more imaginative child might select a drawing from the Atypical Class, but he would still be more conforming.

Geometric Design Type - Simple and Symmetrical Class

The drawings in TABLE I-3 for Geometric Design - Simple and Symmetrical Class are shown by title for the days they were used.

TABLE I-3

DRAWINGS OF THE GEOMETRIC DESIGN TYPE - SIMPLE AND SYMMETRICAL CLASS USED IN THE S-CIT BY TITLE AND DAYS FOR GROUPS A & B[a]

Day	Group A	Group B
Monday[b]	Cross	Cross
Tuesday	-----	-----
Wednesday	Circle	Triangle
Thursday[b]	-----	-----
Friday	Triangle	Circle

[a]See Appendix B, pages: 196, 214, 220, 232, and 238.

[b]Groups A and B received identical sets of drawings on these two days.

The idea for including simple, geometric shapes, as well as the complicated geometric designs presented in the next class, comes from the rationale used by Welsh and Barron for their Barron-Welsh Art Scale which is part of the Welsh Figure Preference Test (WFPT), Research Edition, which is used as a personality assessment test.

MacKinnon, working at the Institute of Personality Assessment and Research, writes about the Barron-Welsh Art Scale:

> The perceptiveness of the creative and his openness to richness and complexity of experience is strikingly revealed on the Barron-Welsh Art Scale of the Welsh Figure Preference Test which presents to the subject a set of 62 abstract line drawings which range from simple and symmetrical figures to complex and asymmetrical ones. In the original study [by Barron and Welsh in 1952] which standardized this scale, some 80 painters from New York, San Francisco, New Orleans, Chicago, and Minneapolis showed a marked preference for the complex and asymmetrical, or, as they often referred to them, the vital and dynamic figures. A contrasting sample of nonartists revealed a marked preference for the simple and symmetrical drawings.
>
> All creative groups we have studied have shown a clear preference for the complex and asymmetrical, and in general the more creative a person is the stronger is this preference. Similarly, in our several samples, scores on an Institute scale which measures the preference for perceptual complexity are significantly correlated with creativity. In the sample of architects the correlation is +.48.[2]

Geometric Design Type - Complicated and Asymmetrical Class

The drawings in TABLE I-4 for Geometric Design - Complicated and Asymmetrical Class are shown by title for the days when they were used.

As discussed above, the simple and symmetrical drawings

---

[2]Donald W. MacKinnon, "The Nature and Nurture of Creative Talent," American Psychologist, XVII (July, 1962), 488.

TABLE I-4

DRAWINGS OF THE GEOMETRIC DESIGN TYPE - COMPLICATED AND ASYMMETRICAL CLASS USED IN THE S-CIT BY TITLE AND DAYS FOR GROUPS A & B[a]

Day	Group A	Group B
Monday[b]	Design	Design
Tuesday	-----	-----
Wednesday	Parabola	Parabola
Thursday[b]	-----	-----
Friday	Flexible	Flexible

[a]See Appendix B, pages: 197, 215, 221, 233, and 239.

[b]Groups A and B received identical sets of drawings on these two days.

differentiated the nonartist from the artist who preferred, by far, the complicated and asymmetrical type of drawing. Barron, borrowing eighty-four subjects studied by Asch, forty-two of them who had remained independent and another forty-two who had yielded consistently to the false group consensus, using the Asch procedure to test for independence of judgment, found that, with these eighty-four subjects:

> Independence of judgment is linked not only to originality but also to the generalized preference for asymmetry, apparent imbalance and complexity described earlier. Subjects of the original Asch experiment were given the figure-preference test, and to a marked degree the independents preferred complex, asymmetrical figures. This makes sense, since in order to maintain his independence in the experiment the subject must come to terms with the troublesome fact that he is suddenly at odds with his fellows in a situation where, by ordinary standards of community of experience, he ought to be in agreement with them. Only a person who can live with complexity and contradiction, and who has some confidence that order lies

> behind what appears to be confusion, would be able to bear this kind of discord.[3]

At this point one may ask, what does all of this have to do with first grade children? It is felt that the more we know about the climate, the facilitators, the characteristics, the criteria, the inhibitors, the signs of, the more we will be able to foster and enhance creativity for all people, including first graders. Ideas found to have some validity with adults could possibly have some validity for children.

Welsh reports that the item content in his Preliminary Manual - Welsh Figure Preference Test - Research Edition is:

> . . . of such a nature that it is entirely suitable for children as well as adults. The child is asked to express his preference for a certain figure; he is not required to respond to items beyond his capacity and experience. In fact, the test in card form has been given to children as young as three years, four months.[4]

Concerning the scale descriptions and empirical scale, Welsh reports on the CHILDREN SCALE, CN:

> A CN scale of 59 items, 37 L (Like) and 22 DL (Dislike), was obtained from a study of 82 boys and girls between the ages of six and eight by comparison with 150 people-in-general. Since the scale has not as yet been cross-validated, it must be considered to be in preliminary form.[5]

No studies or references were found in the Manual concerning the characteristics of younger children who have taken the Barron-Welsh Art Scale. It was not possible to use the Barron-Welsh Art Scale in the

---

[3]Frank Barron, "The Psychology of Imagination," A Source Book for Creative Thinking, op. cit., pp. 234-235.

[4]George S. Welsh, Preliminary Manual - Welsh Figure Preference Test, Research Edition (Palo Alto: Consulting Psychologists Press, Inc., 1959), p. 5.

[5]Ibid., p. 9.

present study because the test is administered individually. It still could be used to study the high and low creative as determined by scores on the MTCT or the S-CIT by taking the top and low ten or twenty percent of the first graders and comparing these two groups after administering the Barron-Welsh Art Scale to them. Torrance doubted that the "Welsh Figure Preference Test would be appropriate for use with first grade children."[6]

Of the 2917 drawings selected by the sample, fifteen percent were the Geometric Design Type - Simple and Symmetrical Class and only about two percent were the Geometric Design Type - Complicated and Asymmetrical Class. This is a very dramatic example of the difference, not only between the Geometric Design Type and the Coloring Book Type, but between the Simple and Symmetrical and the Complicated and Asymmetrical drawings.

Dot Type - Numbered - Simple Class

The drawings in TABLE I-5 for Dot Type - Numbered - Simple Class are shown by title for the days when they were used.

The various Dot Type drawings were added to the set to increase the variety, the interest, and to provide an intermediary step between the Coloring Book Type drawing (where all the lines were supplied) and the Stimulus Line Type (where just a few lines were provided). It was felt that the slightly more creative student would select a Dot Type drawing to add ideas to and color in. To provide a range within the Dot Type drawings it was decided to number some of the Dot drawings and to leave some unnumbered. The more creative child would select the

---

[6]See Appendix G for Dr. Torrance's letter.

TABLE I-5

DRAWINGS OF THE DOT TYPE - NUMBERED - SIMPLE CLASS USED IN THE S-CIT BY TITLE AND DAYS FOR GROUPS A & B[a]

Day	Group A	Group B
Monday[b]	-----	-----
Tuesday	1-2-3-4	-----
Wednesday	-----	-----
Thursday[b]	Rabbit	Rabbit
Friday	-----	-----

[a]See Appendix B, pages 202 and 206.

[b]Groups A and B received identical sets of drawings on these two days.

Unnumbered Dot Type drawings because they would provide him with more opportunity to express himself in his own way except for the Stimulus Line Type which offered the greatest possibility. The two drawings indicated in TABLE I-5 were both quite simple. Of the two, the rabbit proved to be very popular among the children in both Groups.

Of the 2917 drawings selected by the sample, nine percent were the Dot Type - Numbered - Simple Class and about three percent were the Dot Type - Unnumbered which is a small proportion of the total.

Dot Type - Numbered - Complicated Class

The drawing in TABLE I-6 for Dot Type - Numbered - Complicated Class is shown by title for the days when it was used.

Because the Sailor was so difficult for the children to follow it was put in a class by itself entitled Complicated. There were several series of numbers: (1) one for the outline around the face, neck, and hat; (2) a series for each area around the two eyes; and

TABLE I-6

DRAWING OF THE DOT TYPE - NUMBERED - COMPLICATED CLASS USED IN THE S-CIT BY TITLE AND DAY FOR GROUP B ONLY[a]

Day	Group A	Group B
Monday[b]	-----	-----
Tuesday	-----	Sailor
Wednesday	-----	-----
Thursday[b]	-----	-----
Friday	-----	-----

[a] See Appendix B, page 208.

[b] Groups A and B received identical sets of drawings on these days.

(3) one for around the mouth. A teacher mentioned that even though some children did select it to do they became frustrated with trying to make it come out right. Because it was more complicated and more challenging it was given an additional point when scored for Selection. Perhaps the child who selected this drawing liked difficult and complex things to do and would be willing to try it. This would seem to indicate that the child might be more creative, yet not quite as creative as the child who selected an unnumbered drawing.

Dot Type - Unnumbered Class

The drawings in TABLE I-7 for Dot Type - Unnumbered Class are shown by title for the days when they were used.

These two drawings were composed of various sized dots or small circles placed around the paper. The drawing titled Large and Small, for Group A on Tuesday, was slightly different from the one for Group B used on Tuesday. They differ in the two large circles: Group A's

TABLE I-7

DRAWINGS OF THE DOT TYPE - UNNUMBERED CLASS USED IN THE S-CIT BY TITLE AND DAYS FOR GROUPS A & B[a]

Day	Group A	Group B
Monday[b]	-----	-----
Tuesday	Large & Small	Large & Small
Wednesday	-----	-----
Thursday[b]	Dispersed	Dispersed
Friday	-----	-----

[a]See Appendix B, pages: 203, 209, and 227.

[b]Groups A and B received identical sets of drawings on these two days.

drawing has two large whole circles while Group B's drawing had two large half circles. The hypothesis stated that the more creative child would select an Unnumbered Dot Type drawing before he would pick any of the other drawings mentioned above in the ranged set.

Because of the arrangements and various sizes of some of the small dots and circles, many students changed the drawings into a space oriented drawing, identifying the circles as planets or stars and adding space vehicles and other space apparatus.

Stimulus Line Type - Closed Class

The drawings in TABLE I-8 for Stimulus Line Type - Closed Class are shown by title for the days when they were used.

It was hypothesized that the more creative student would select a drawing on which he could add most of his own lines; on which he could make anything that was suggested by the stimulus line; and which would give him the greatest opportunity to express himself more completely.

TABLE I-8

DRAWINGS OF THE STIMULUS LINE TYPE - CLOSED CLASS USED IN THE S-CIT BY TITLE AND DAYS FOR GROUPS A & B[a]

Day	Group A	Group B
Monday[b]	Flame	Flame
Tuesday	Hat	Hat
Wednesday	Flag	Bumps
Thursday[b]	Wheels	Wheels
Friday	Bumps	Flag

[a]See Appendix B, pages: 198, 204, 210, 216, 222, 228, 234, and 240.

[b]Groups A and B received identical sets of drawings on these two days.

The Closed Class idea was introduced to add to the range or steps in the total instrument. The lines already included on the drawing would curve or point toward each other in such a way that would cause the student to complete the suggested shape and close in the drawing as his immediate response. This student would not be as creative as the student who selected the Open Stimulus Line Type drawing described next. The idea of closure has not been discussed very much in the study of creativity. Anderson discussed the Open and Closed Systems in Education;[7] Rokeach has written a book entitled The Open and Closed Mind;[8] and in art the term "closure" is a device used in designing. Closedness is implied in the idea of convergent thinking; in the problem solving method, to a

[7]Harold H. Anderson, "Creativity and Education," AHE College & University Bulletin, op. cit., p. 1.

[8]Milton Rokeach, The Open and Closed Mind (New York: Basic Books, Inc., 1960).

certain degree, when everything is pointed to the center, the end product, or the solution. Of course, a person can never remain Open and expect to solve problems so that converging on the solution is necessary, but as the person is more Open more possibilities will be brought into play prior to the solution.

The two drawings entitled Hat were slightly different. The two drawings entitled Flag had minor changes. Bumps were the same and Wheels were identical for both Group A and B, but they were paired with different Open Stimulus Line Type drawings on different days.

Stimulus Line Type - Open Class

The drawings in TABLE I-9 for Stimulus Line - Open Class are shown by title for the days when they were used.

TABLE I-9

DRAWINGS OF THE STIMULUS LINE TYPE - OPEN CLASS USED IN THE S-CIT BY TITLE AND DAYS FOR GROUPS A & B[a]

Day	Group A	Group B
Monday[b]	S Curve	S Curve
Tuesday	Waist	Sticks
Wednesday	Beach "H"	Beach "V"
Thursday[b]	Mountain Line	Mountain Line
Friday	Sticks	Waist

[a]See Appendix B, pages: 199, 205, 211, 217, 223, 229, 235, and 241.

[b]Groups A and B received identical sets of drawings on these two days.

The Stimulus Line idea was borrowed from Torrance and Franck who have used these kinds of lines to elicit creative responses from

subjects.[9] The line suggests something in particular to the subject which he then draws, elaborating the object as imaginatively as possible. The opportunity for making the Stimulus Line into many objects is practically unlimited. The statistically infrequent response of the child is considered to be more original and receives a correspondingly higher score. Most of the lines included in the S-CIT were of the Open Type. The drawings were all meant to be Open but as the students began to use the drawings Beach "H" and Beach "V" they tended to close them at each end where the several lines converge. A number of students closed Waist off across the top and the bottom to make it into a tree stump. This is an example of closedness in the student rather than so much in the Stimulus Line; just as the S Curve drawing could be closed by making it into a number "8." All of the Open Stimulus Line drawings with the same title were identical except for Beach "H" and Beach "V". Beach "H" had the several wavy lines placed horizontally on the page while Beach "V" had the several lines placed vertically.

Of the 2917 drawings selected by the sample of 301 students, nine percent were of the Closed Class and eight percent were of the Open Class for the Stimulus Line Type. This represents a small portion of the 2917 drawings. Are the children who selected these drawings more creative? The findings indicate that this was not necessarily true.

Blank Sheet of Paper Type - Six Colors Class

The original intent was to have a Blank Sheet of Paper Type of

---

[9]See Appendix G for the Incomplete Figures Task of the Minnesota Tests of Creative Thinking for other examples of Stimulus Lines.

various colors available at the end of the set of ranged drawings.[10] Originally, the hypothesis stated that the most creative child would select a blank sheet of paper on which he could originate a total thought for and by himself. He would be able to use his creative thinking to the maximum throughout the whole process of working. In the pre-test, children did select the Blank Sheet of Paper Type on which to draw and color. Because the blank sheet of paper added one more drawing to each set, making seven in all, it was felt that this would make too wide a range. There were no other drawings that might be deleted since each type and class was set up with paired drawings. As a result, the blank sheet of paper was dropped except for trying it just one day, on Thursday, when it was added to both Groups A and B as a 7th choice in the morning and the afternoon.

Of the 2917 drawings selected by the sample, nearly four percent were of the Blank Sheet of Paper Type with the six different colors.

Summary of the Breakdown of the 2917 Drawings Selected by the Sample of 301 First Graders

The breakdown for the total of 2917 drawings, selected by the 301 students from both Groups A and B is shown in TABLE I-10 by Type, Class, Group and Percentage of each drawing selected.

---

[10]The six colors used were these: White, Pink, Blue, Goldenrod, Green and Yellow. They are not included in the Appendix B.

TABLE I-10

NUMERICAL BREAKDOWN OF 2917 DRAWINGS BY TYPE AND CLASS FOR SAMPLE OF 301 FIRST GRADERS

Type	Class	Group A	Group B	Total	% of Class	% of Type
CB	Typical	627	466	1093	37.47	
CB	Atypical	182	210	392	13.44	50.91
GEO	Simp-Symm	179	249	428	14.67	
GEO	Comp-Asymm	24	20	44	01.51	16.18
DOTS	Num-Simp	106	78	184	06.31	
DOTS	Num-Comp	00	79	79	02.71	
DOTS	Unnum	42	42	84	02.88	11.90
STIM LINE	Closed	140	125	265	09.08	
STIM LINE	Open	111	127	238	08.16	17.24
BLANK	Six Colors	65	45	110	03.77	03.77
	Totals	1476	1441	2917	100.00	100.00

APPENDIX J

SPECIFIC DIRECTIONS FOR ADMINISTERING THE THREE TESTS USED IN THIS STUDY: THE S-CIT, THE MTCT, AND THE TS

Administration of the Selection and Color In Test - S-CIT

There were no advance preparations for the teachers to make prior to administering the S-CIT except to plan for about a 25 minute period each morning and each afternoon for the children to select and color in their particular selections. The teacher needed to find a convenient place where she could spread out the six different piles of drawings each day.

The teachers had received a copy of the Information for Administering Stimulus Drawings[1] as well as the first supply of six drawings.

On the Monday morning, when the S-CIT was to be administered, each teacher was asked to hold up the drawings beforehand and to answer any questions. Before the children selected their drawing the teacher read these standardized directions:

> Complete the drawing you select by coloring it with your crayons. If you pick a drawing that needs more lines you may use your pencil and your crayons to add more lines and then color the drawing in.
>
> Use your imagination when you add your lines where you want them. You can make the drawing into anything you wish. Try to make it into something that no one else would think of.

---

[1] See Appendix C.

> Try to make it different than anybody else's drawing. You may pick any drawing you would like to work on.
>
> You have 25 minutes to draw and color. When you are done turn the drawing over and print the things on the back which I have written on the board.
>
> Remember: What more can you add to the drawing you select besides coloring it in? Use your imagination.

Later on the teacher did not read the directions since the children had heard them a number of times already.

The children were asked to select one drawing, use his imagination in adding any lines to make it into something different and spend about 25 minutes each session working on the one drawing. Each child would have ten drawings by the end of the week and would have spent about 250 minutes during the week on this activity.

The investigator hesitates to call this a creative activity, at least for many children, since coloring in Coloring Book Type drawings is definitely not a creative activity for most children as seen from an art educator's viewpoint. On the lighter side, the investigator looked upon the test as a kind of artistic inoculation, analogous to the immunization shots children receive before going to school, hoping that a small amount of coloring book serum might be a preventative for the child from getting the coloring book habit and that the teacher might take preventive health measures that would promote opportunities for all kinds of truly creative types of activities to take place throughout the year. As noted in Appendix I, nearly fifty-one percent of the 2917 drawings selected were of the Coloring Book Type. The inoculation had come too late!

Teachers recorded the children's titles on the front or the back of each drawing. Some teachers encouraged the children to tell

stories about their drawing which they often wrote on the back of the drawing.

Drawings were collected and the AM drawings kept separately from the PM drawings each day. The set for the next day would be delivered the afternoon before at the same time the current day's drawings were being collected.

Administration of the Minnesota Tests of Creative Thinking - MTCT

Care was taken by the investigator to administer the MTCT[2] according to the directions proposed by Yamamoto[3] except for certain modifications made in the test, described here and below. All directions were eliminated from the top of each page of the three tasks. For the Circles Task forty-eight circles were used on the page instead of thirty-six.

While the class was attentive the test booklets were distributed. The children printed their name in the space provided. Other identifying information had been filled in before hand.

These directions on the cover page were read to the children:

> In this booklet are three interesting things for you to do. All of them will give you a chance to use your imagination to think of ideas. We want you to think of as many ideas as you can in all of them. We also want you to think of interesting and unusual ideas - ideas that no one else in the class will think of. Keep adding to your ideas and building onto them whenever you can.
>
> You will be given a time limit of ten minutes on each of these

---

[2]See Appendix H.

[3]Kaoru Yamamoto, Revised Scoring Manual for Tests of Creative Thinking (Forms VA and NVA), (Minneapolis: Bureau of Educational Research, The University of Minnesota, 1962), pp. 34, 42, and 50. (Mimeographed.)

jobs, so don't waste time. Work quickly but don't rush. Get right down to business. If you run out of ideas before I call time, wait until I tell you before you turn to the next page.

Task 1 - Picture Construction Task Using Colored Curved Jelly Bean Shape

Each child then selected one colored curved jelly bean shape from 13 different colors available from a specially prepared palette type board so he would have the shape ready to use. The shapes had been cut from pre-gummed paper.[4] Pans of water were already on the tables for the children to wet the shapes when they were ready to start. The children can stick the shape anywhere on the paper he wishes.

These modified directions were read:

You have selected a piece of colored paper cut out as a curved shape. Think of a picture or an object which you can draw with this shape as a part. Then lift up the shape and wet it with the water in the pans near you and paste it wherever you want it on your sheet of paper. Add lines with your pencil or your crayon to make your picture. Try to think of something that no one else in this class will think of.

Keep adding things onto it, putting into your picture as many interesting ideas as you can. When you have completed your picture, think up a name or a title for it and I will write it down for you at the bottom when we are all done with the projects for this (morning) (afternoon). Keep looking at your own work and use your own imagination. Any questions?

Stop when you are done and wait for me to give your instructions for the next project. You have ten minutes to work.

Task 2 - Incomplete Figures - also called Figure Completion - FORM A

For the next Task these modified directions were read:

By adding lines to the six figures below, sketch or draw some

---

[4]Torrance has the shape already in the test booklet and uses colored paper shapes which stick once you peel back the protective paper.

> object or design. Try to think of some object or design that no one else in the class will think of. Try to include as many different ideas as you can in your drawings. In other words, don't stop with your first idea for completing the figure. Keep building onto it.
>
> Make up a title for each of your drawings and I will help you write them at the bottom of each block next to the number of the figure when we are all done with the projects for this (morning) (afternoon). Just use your pencils on this task. On the next task you may use your crayons again, but on this task just use your pencils. Any questions?
>
> When you get done wait until I tell you about the next project before you turn the page. You have ten minutes to work.

Task 3 - Circles

So far the children had been working at a concentrated level for two ten minute periods with several minutes in between for the teacher to give them a one minute stretch exercise, for reading the instructions, and answering questions. Here are the modified directions given for the third, and last, task:

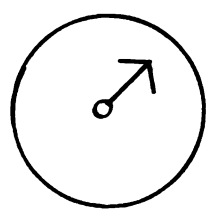
> This is the last task. In ten minutes see how many objects you can make from the circles below. A circle should be the main part of whatever you make. With pencil or crayon add lines to the circles to complete your picture. Your lines can be inside the circle, outside the circle, or both inside and outside the circle. Try to think of things that no one else in the class will think of. Make as many things as you can and put as many ideas as you can in each one. I will help you write names or titles for each of the objects you draw when we are all done with the projects this (morning) (afternoon).

If a child asks privately about connecting the circles the examiner gives permission to go ahead but this is not announced in the general directions.

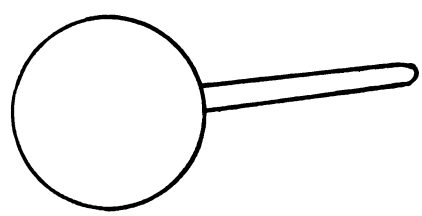
After the test had been administered to several classes it became apparent that a few children were picking one idea and duplicating it many times. This is permissible. But when it was noticed that some children were filling all the circles in with the letters of the alphabet

or the numbers from one to forty-eight the investigator decided to modify the directions. There was nothing that could be done about the children who had filled all their circles with letters or numbers. In spite of the fact that Torrance recommends that no examples be given, the directions were modified as follows: after reading the directions through, the investigator went to the blackboard and drew three large circles on the board. One by one he explained and drew the following examples.

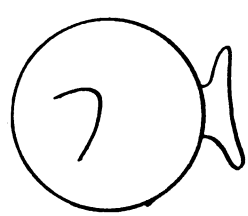
You may make an object by drawing inside the circle like this:



You may make an object by drawing outside the circle like this:



You may make an object by drawing inside and outside of the circle like this:



A few children would use the examples but there seemed to be no trend to use the letters of the alphabet or the numbers from one to forty-eight as had been done in several classes already. This of course

affects the standardization of the test and could affect the results. But in situations encountered while using an experimental test which are not anticipated and which could skew the results otherwise, modifications seem in order.

After the ten minutes was gone the test booklets were picked up and the teacher took the children outside for about twenty minutes for recess. On their return there was time planned for trips to the bathroom and the drinking fountain.

Administration of the Test of Suggestibility - TS

Once the children were ready, the two answer sheets were passed out, both identical, with eighteen pairs of numbers (1A - 1B) through (18A - 18B) divided into three sets (1A to 6A), (7A to 12A), and (13A to 18A) slightly offset under each other. One was green, the other was pink. The children printed their name at the top of both forms.[5] Other information had been filled in beforehand.

At the front of the room, elevated, was an easel with a 12" x 18" folder containing the eighteen pairs of drawings. These drawings were the same drawings that the children had selected from and colored in earlier. Some drawings in the folder were used twice, paired with a different drawing in each case. Because children in Group A had not seen some of the drawings used in Group B there were some drawings in the folder which the other group had not seen.

The green answer sheet was to be used first to record the neutral response of each student before the investigator attempted to

---

[5]See Appendix K for a sample of each form.

influence their choice during the second run through the folder of paired drawings. Care was taken to go slowly and explain carefully what each child was to do. The blackboard was used to help show how the answer sheet was to be marked to show the one choice of each pair the student liked the best. When it appeared that the children understood the directions the investigator began the test by opening the booklet to the first pair of pictures and saying:

> Here we have drawings 1A (pointing to 1A - CLOWN) and 1B (pointing to 1B - PICASSO'S FIRST STEPS). If you could pick one of these two drawings to take, add things to, and color it in as you did some drawing (last week) (two weeks ago) which drawing would you pick out? Don't tell me out loud but let me know by circling 1A or 1B on your green answer sheet. If you like 1A best (pointing to 1A again) put a circle around 1A on your green sheet. If you like 1B best (pointing to 1B again) draw a circle around 1B. Pick the drawing you like the best and only circle one number. Now draw a line underneath 1A and 1B so you won't lose your place.

Just a few students said their choice out loud. They were urged to circle their choice and to keep watching. It appeared that the children had gotten the idea of how to mark their answer sheet with their own choice. As the children's eyes came up for the next pair, the next page would be turned and the same instructions repeated, the drawings pointed to, and the children circling their responses until the eighteen pairs of drawings had been shown. If a child became confused he was started off at the particular pairings being shown at the moment. In general the administration of the test appeared to go smoothly. The green answer sheet was picked up to avoid any peeking.

The pink answer sheets were readied. It was explained that the children would see all of the eighteen pairs of drawings again but this time the investigator would explain something special about the different pairs of drawings. They would still select the drawing they liked

the best and circle the one they liked on the pink answer sheet. This procedure needed no further explanation so the booklet was opened to the first pair of drawings, 1A and 1B again and it was explained:

> Here we have drawings 1A (pointing to 1A) and 1B (pointing to 1B). The next six pairs of drawings you will see were all shown to some other first grade boys and girls in Lansing and they told me which ones they liked the best so I know which ones they liked the best. I am going to show you the one here they liked the best (pointing to 1B in this case since this was the false norm). Do you like it the best too? Now I want you to show me again which one you like the best by drawing a circle around 1A (pointing to 1A) or by drawing a circle around 1B (pointing to 1B) if you like that the best.

The "other first grade boys and girls" constituted the shift agent on the pairs of drawings (1A to 6A). For pairs of drawings (7A to 12A), the phrase "other fourth grade boys and girls" was simply substituted for the next shift agent in this Test of Suggestibility. For pairs of drawings (13A to 18A) the phrase "other Art Teachers" was substituted for the last shift agent.

The purpose, as mentioned before, was to see if first grade children would shift more, according to an hypothesized prestige factor, to the responses desired by the investigator, according to the drawings liked best by other first graders, or other fourth graders, or other art teachers. The fact that children did respond as the investigator tried to influence them, and away from their first response, was meant to indicate a degree of conformity of that student at that moment in time on that particular task in that particular testing situation. As indicated by Tuddenham, children are more conforming than adults. Elsewhere in the research it was found that persons who conform once or more are likely to conform on succeeding occasions. This might possibly be true with certain children in certain situations at certain times.

Last of all, the pink form was picked up. The boys and girls were thanked for helping with the various projects during the morning. The children asking about getting their drawings back were told that they would probably have to be kept for a long time and not returned. The teacher than took over the class again and began other work with them while the investigator retired to a corner of the room.

Each student was called over to sit next to the investigator so each could see the objects drawn on the MTCT. Titles for each drawing were given by each student and written down by the investigator for the three tasks of the MTCT. In some cases this was done quickly, and in some cases it took awhile if the student had many responses or was unsure. The investigator spoke softly and asked each student what he could write down for them. When each had finished they could select two drawings, used in the Selection and Color In Test, to take home for helping with the project. These selections were also recorded so that a comparison of consistency might be made at some future date, that is, did the students take the same drawings that they had seen in the Test of Suggestibility and chosen as their response or that they had selected to color in from the Selection and Color In Test? It was hypothesized that the more creative children would be more consistent primarily because they would remember better what drawings they had seen and liked and had selected to color in.

In several schools, either because the children took more time to give their responses, or because the class was a large one, or because there were many more responses to record, the investigator returned the next free day to get the rest of the titles recorded.

Since the tests were administered during Tuesday, Wednesday, and Thursday of the two weeks there was time to get back without undue delay on Friday or Monday.

NAME _____ SCHOOL _____

TEACHER _____ GRADE _____ DATE _____

CIRCLE NUMBER AND LETTER OF THE DRAWING YOU WOULD LIKE TO SELECT AND ADD LINES TO AND COLOR IN OF EACH PAIR YOU SEE TOGETHER.

SELECT ONE YOU LIKE BEST OF EACH PAIR.

1A	1B
2A	2B
3A	3B
4A	4B
5A	5B
6A	6B

7A	7B
8A	8B
9A	9B
10A	10B
11A	11B
12A	12B

13A	13B
14A	14B
15A	15B
16A	16B
17A	17B
18A	18B

NAME _____ SCHOOL _____

TEACHER _____ GRADE _____ DATE _____

CIRCLE NUMBER AND LETTER OF THE DRAWING YOU WOULD LIKE TO SELECT AND ADD LINES TO AND COLOR IN OF EACH PAIR YOU SEE TOGETHER.

SELECT ONE YOU LIKE BEST OF EACH PAIR.

1A	1B
2A	2B
3A	3B
4A	4B
5A	5B
6A	6B

7A	7B
8A	8B
9A	9B
10A	10B
11A	11B
12A	12B

13A	13B
14A	14B
15A	15B
16A	16B
17A	17B
18A	18B