

AN ANALYSIS OF THE VALIDITY  
OF THE TORRANCE TESTS OF  
CREATIVE THINKING

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## CHAPTER I

### THE RESEARCH PROBLEM

#### Introduction

Creativity is an abstract concept that social scientists have been researching for many years. Because creativity is an aspect of human behavior, it is extremely difficult to define and measure. It is exhibited in many different areas of endeavor. An inventor, a scientist, or a medical researcher displays as much creativity as an artist, an actor or a musician. Researchers are striving to identify and predict creativity in individuals. Years of study have resulted in a range of definitions and theories and the development of many devices to test for different aspects of creativity.

The definitions and theories deal with subjects such as the origins of creativity, the creative process or stages, creative end products, and the creative personality. There are many variations in thought within the different approaches to the study of creativity.

The myriad approaches to creativity have resulted in the development of a range of testing devices. The purpose of these devices is for the identification and prediction of creativity in individuals. The main categories of

instruments are personality inventories and divergent thinking tests.

One widely used measuring device of divergent thinking is the Torrance Tests of Creative Thinking, developed by E. Paul Torrance in the 1960's. The sets of tests are meant to measure the traits that Torrance feels comprise basic creative ability. They have been evaluated extensively to determine their reliability and validity as measuring devices of creativity.

#### Statement of the Problem

Most creativity tests have been developed to be applicable to a wide age span of the general population. They should also be valid over a long period of time. It would be logical to assume that a test of creativity would be a good measure for a specialized population of interior design students since creative abilities are a vital part of interior design education. The Torrance Tests of Creative Thinking were given to several groups of interior design students in the same program. The tests, which were developed in the early 1960's, should be a valid and reliable measure of creativity in a specific population in today's society.

#### Objectives

The specific objectives of this study are as follows:

1. To determine the validity of the scoring guide as a

measure of a specific sample of today's society.

2. To compare within test reliability in order to evaluate the differences between the scoring guides.
3. To compare the relationship between the figural and the verbal scores.

### Assumptions

The fundamental assumption behind this research is that creativity is an facet of human behavior that can be measured.

A second assumption is that there is a relationship between interior design education and creativity.

A third assumption is that society has changed significantly in the years since the scoring guides for the Torrance Tests of Creative Thinking were developed.

### Limitations

Several limitations exist in this study. The Torrance Tests of Creative Thinking were administered to several groups over a period of several months. This provided the opportunity for discussion between subjects who had not taken the Torrance Tests and those who had. This may have biased some of the individual scores of the later tests.

Second, the subjects took both the verbal and figural tests at one time. Test fatigue may have been a factor in performance on the second set of tests.

Finally, some of the Torrance Tests were administered

on days when subjects had major projects due. Stress and fatigue from working on projects may also have been a factor in overall test performance.

#### Definition of Terms

creativity - due to the abstract nature of creativity it is impossible to provide a concrete definition of the term that all researchers would agree on. The review of literature covers many definitions and theories. For the purpose of this study creativity is defined as "a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies: testing and retesting them; and finally communicating the results" (Torrance, 1974, p. 8).

trait - "any distinguishable, relatively enduring way in which an individual differs from another" (Guilford, 1950, p. 444).

ability - the quality of being able to do something; power to perform.

divergent thinking - problem solving; analysis where there is no single correct answer but multiple possibilities.

convergent thinking - "type of thinking which narrows down the possibilities and focuses upon producing a single solution" (Taylor, 1964, p. 20).

verbal tasks - require the subject to respond to directions with written answers.

figural tasks - require the subject to respond to directions with drawn answers.

fluency - "the ability to produce many ideas, verbal or nonverbal, for an open-ended problem or question" (Davis, 1986, p. 51).

flexibility - "the ability to take different approaches to a problem, think of ideas in different categories, view a problem from different perspectives" (Davis, 1986, p. 51).

originality - "uniqueness, nonconformity in thought and action" (Davis, 1986, p. 51).

elaboration - "the important ability to add details to an idea, which includes developing, embellishing, and implementing the idea" (Davis, 1986, p. 51).

### Summary

The study of creativity is one that has no absolutes as it is also the study of human behavior. It is important to understand because it can play a role in the success of an individual in many areas of endeavor. This study is to review past research as well as analyze the ability of a particular test of creative thinking to measure students in a creative field of study.

## CHAPTER II

### REVIEW OF LITERATURE

#### Introduction

The literature over creativity is extensive and varied. This review covers many of the definitions and theories of creativity, testing instruments, and a discussion of the Torrance Tests of Creative Thinking.

#### Definitions of Creativity

The last 35 years of extensive creativity research were motivated by a 1950 speech of the President of the American Psychological Association. In his address, J. P. Guilford (1950) spoke of the lack of research in the area of creativity and the social importance of creativity. He also presented definitions, theories and hypotheses on the subject. The concepts presented in this speech are the basis for the majority of the creativity research which has followed.

The definitions of creativity are as varied as the research that has been conducted. Generally, the definitions deal with the creative person, the creative process, or the creative product.

Guilford (1950) defines creativity in terms of the



motivational and temperamental personality traits that propel a person with creative abilities to actually produce creative results. He calls this the creative personality. A personality is defined as an individual's "unique pattern of traits," with a trait being "any relatively enduring way in which persons differ from one another" (p. 444).

Guilford sums up these definitions by saying that "creative personality is then a matter of those patterns of traits that are characteristic of creative persons" (p. 444).

The characteristics of creative persons fall into two different categories. First, there are the personality and motivational traits generally associated with creativity, and then there are the mental abilities possessed by creative persons.

There are many personality and motivational characteristics that have been identified as belonging to creative persons. Lingeman's study (cited in Davis, 1986) resulted in a list of 55 traits that were found in an extensive literature review. The traits had to meet one of two criteria. Each trait had to be "related to creativeness at a statistically significant level in at least five research studies, or . . . statistically significantly related to creativity in three studies and mentioned as a creativity trait in two other sources" (p. 43). An example of the traits that met the criteria are: adventurous, aggressive, curious, dissatisfied, emotional, impulsive, independent, liberal, non-conforming, playful,

sensation seeking, tolerant of ambiguity, and versatile. There are many traits that researchers claim are related to creativity. Davis (1986) makes the important observation that not all traits are characteristic of all creative people.

Jones (1972) divides the mental abilities possessed by creative people into four groups. These are "cognitive operations - the processes of becoming aware; memory operations - retaining what has been cognised; productive thinking process" - convergent or divergent thinking according to the type of solution(s) desired, and "evaluative processes" or assessment of what has been "mesmerised, cognised, or produced" (p. 14).

Davis (1986) has compiled from literature a list of abilities that seem to be important to creativity. These abilities are "fluency, flexibility, originality, elaboration, sensitivity to problems, problem defining, visualization, imagination, ability to regress, metaphorical thinking, analysis, synthesis, evaluation, transformation, extending boundaries, intuition, predicting outcomes, resisting premature closure, concentration, and logical thinking" (p. 50).

The second area of definitions covers the creative process. The traditional model of the stages in the creative process was developed by Wallas (1976) in 1926. The four stages are preparation, incubation, illumination, and verification. Preparation is the "stage of hard,

conscious, systematic, and fruitless analysis of the problem" (p. 70). This prepares the way for incubation when "we do not voluntarily or consciously think on a particular problem" and a "series of unconscious and voluntary mental events may take place" (p. 71).

Illumination is "the culmination of a successful train of association, which may have lasted for an appreciable time, and which has probably been preceded by a series of tentative and unsuccessful trains" (p. 72). The final stage is verification, the period "in which both the validity of the idea was tested, and the idea itself was reduced to exact form" (p. 70). The four stages are continuously overlapping as a person pursues different problems.

E. Paul Torrance (1974) defines creativity in terms of a creative process. He says it is

the process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for hypotheses about the deficiencies; testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results (p. 8).

Cobb (1967) discusses "sensitivity, imagination, and the ability to function on the plane of the intuitive or superconscious" (p. 53) as the main qualities contributing to the creative process. Sensitivity is an awareness of

what is going on around a person; an ability to observe. Imagination enables the creative person to organize information into new ideas, and intuition is a subconscious perception of the truth or innate knowledge of rightness without conscious reasoning.

Henle (1962) approaches the creative process from the angle of conditions of creative thinking. The first condition is receptivity or being open to new ideas. Immersion is complete involvement with the problem. The third condition is the ability to see the problem or the question. Also important is the ability to accept mistakes and errors and being able to utilize them to arrive at better solutions. Finally, detached devotion is important since it means combining a passionate interest and dedication to the work with the ability to stand back from it and analyze it objectively.

The third category of definitions defines creativity in terms of the creative product. Barron (1976) states that "creativity may be defined, quite simply, as the ability to bring something new into existence" (p. 190). Many authors add the dimension of social worth. Young (1985) calls creativity "the skill of bringing about something new and valuable" (p. 78). Rogers (1976) combines the process and the product in defining the creative process as "the emergence in action of a novel relational product, growing out of the uniqueness of the individual on one hand, and the materials, events, people,

or circumstances of his life on the other" (p. 71).

Many definitions focus on the product and criteria for judging whether that product is creative. Jackson and Messick (1965) give four qualities that a product must possess before it can be called creative. The first quality is novelty, unusualness, or originality. This is the relative frequency of occurrence within the defined universe of the object. The second quality is the appropriateness of the product or answer to the demands of the problem or situation. A bizarre answer that has nothing to do with the problem cannot be considered creative. Third, the product should "involve a transformation of material or ideas to overcome conventional constraints" (p. 315). This involves seeing relationships of items in a new perspective in order to produce new combinations. Finally, creative products possess the criteria of condensation. This is the property of endurance; the quality that makes one want to reexamine and reexperience the product.

Amabile (1983) says "a product or response will be judged as creative to the extent that (a) it is both a novel and appropriate, useful, correct or valuable response to the task at hand, and (b) the task is heuristic rather than algorithmic" (p. 38). A heuristic task is one does not have a clear or straight forward solution. It must also be a problem that is identified by the problem solver rather than simply given to him.

The definitions given are an example of the variety that can be found in the literature over creativity. A single, concise definition of creativity does not exist.

### Theories of creativity

Owing to the complex nature of creativity there are many ideas, including the definitions given, that can be considered theories of creativity. The following is a review of the most prominent theories.

Taylor (1976) reviews theories on the psychological origins of creativity. He divides the theories into four groups: reaction origins, interaction origins, transaction origins, and environmental stimulation. The reaction theories of origin imply a reaction to external or internal forces outside the control of the individual. These theories include vitalism, where creativity is seen as the result of divine inspiration or mystic reality; nativism, which says that creativity is hereditary, inborn, and unobtainable; romanticism, where a dramatic occasion leads to creative inspiration; and serendipity or the "happy accident" (p. 195). More current reaction theories are the psychoanalytic position that the source of creativity lies in the unconscious, and the cultural point of view where individuals "merely react to and are shaped by differential cultural experiences" (p. 195).

The interaction theories are concerned with "origins involving an internally controlling and responsible person

interacting with forces external to his or her control and responsibility" (Taylor, 1976, p. 195). These theories are: empirical, where creativity is a condition to be learned; interpersonal dynamics, where creativity comes out of personal interaction; and personal causation or self actualization. (Taylor, 1976)

Taylor (1976) holds the view that the origin of creativity lies in both transaction and environmental stimulation. With transaction origins, he states that "the essential nature of the organism is to shape or design its environment rather than to be shaped or designed by it" (p. 198). Environmental stimulation is seen a motivational force that evokes creative behavior.

Davis (1986) gives the psychoanalytic, behavioristic, and self-actualization viewpoints as the traditional approaches to creativity. The basic premise to the psychoanalytical approach is that creativity is a result of activity within the unconscious or preconscious mind. There are several variations to the psychoanalytic approach. Freud dealt with aspects of creativity in different contexts but never presented a single systematic statement of his theories. Getzels and Jackson (1962) summarize the major points in the Freudian approach to creativity as follows:

- (1) Creativity has its genesis in conflict, and the unconscious forces motivating the creative "solution" are parallel to the unconscious forces motivating the

neurotic "solution"; (2) the psychic function and effect of creative behavior is the discharge of pent-up emotion resulting from conflict until a tolerable level is reached; (3) creative thought derives from the elaboration of the "freely rising" fantasies and ideas related to day-dreaming and childhood play; (4) the creative person accepts these "freely rising" ideas, the noncreative person suppresses them; (5) it is when the unconscious processes become, so to speak, ego-syntonic that we have the occasion for "achievements of special perfection"; (6) the role of childhood experience in creative production is emphasized, creative behavior being seen as "a continuation and substitute for the play of childhood." (pp. 91-92)

Another psychoanalyst, Kris, discusses preconscious versus unconscious mental processes. He believes that creativity is a process that occurs in the preconscious mind. He gives Freud's definition of preconscious as that which is "capable of becoming conscious easily and under conditions which frequently arise" (Kris, 1950, p. 542). Unconscious processes are differentiated "in the case of which such a transformation is difficult, can only come about with considerable expenditure of energy or may never occur" (p. 542). Kris believes that creativity is a process that occurs in the preconscious mind.

The theoretical difference between Freud and Kris



concerns the ego and the id. According to Freud, in creativity or "fantasy, the processes of the ego are largely in the service of the id" (Kris, 1976, p. 137). Kris, however, believes that creativity is in the service of the ego since "the ego exercises some voluntary control over regression and over the shifting of preconscious ideas to the conscious mind" (Davis, 1986, p. 23).

Kubie (1976) has a third psychoanalytical theory of creativity. He contends that there are three types of mental processes: conscious, unconscious, and preconscious; and creativity occurs in freely flowing preconscious processes. Conscious processes are symbolic processes anchored in reality. From learning and experience the relationship between a "symbol and what it represents is intact, with the result that in this area we know most of what each symbol connotes" (p. 145). At the other extreme are the unconscious symbolic processes. This is where "the relationship of the symbol to what it represents is impaired, distorted, or actually lost" (p. 146). Both the conscious and unconscious processes are rigid, fixed and inflexible. In the middle of the two extremes are the preconscious processes where creativity occurs. The freely flowing preconscious is "free in the sense that it is not anchored either to the pedestrian realities of our conscious symbolic processes, or to the rigid symbolic relationships of the unconscious areas of the personality" (p. 147).

The behavioristic approach generally focuses on visible behavior instead of the mental processes that control the behavior. Three different behavioristic theories are those of Skinner, Maltzmann, and Mednick. Skinner (1976) argues that there is no such thing as creativity; that the creator is not directly responsible for his creation. He says that the process of creation is simply a matter of the creator putting together "bits and pieces," from his past history, to make a composition. Novelty is explained as "random changes in structure [which] were selected by their consequences" (p. 270). In other words, novelty occurs out of a decision based on what the resulting consequences of the behavior will be. If the consequences are good it may strengthen, or reinforce, the person's tendency to act the same way again. Skinner says "it is not some prior purpose, intention, or act of will which accounts for novel behavior; it is the 'contingencies of reinforcement'" (p. 271).

The research performed by Maltzman (1960) is based on the S-R (stimulus-response) theory of behaviorism and concerns the training of originality. His goal was to increase the frequency of an uncommon behavior, original responses. This is achieved by providing appropriate conditions to stimulate the unusual responses and then rewarding correct behavior. The reinforcement then increases the probability that other original behavior will occur.

Mednick's (1962) behavioristic view of creativity focuses on mental associations. He states "all creative thinking, . . ., consists of the forming of mutually distant associative elements into new combinations which are useful and meet specified as well as unforeseen requirements" (1968, p. 213). Associational thinking is based on habit and past experience and is a process of putting the proper existing ideas together to create new associations. Mednick says that "any condition or state of the organism which will tend to bring the requisite associative elements into ideational contiguity will increase the probability and speed of a creative solution" (1962, p. 221); and serendipity, similarity, and mediation are the three methods of bringing the required elements together. Serendipity is the simultaneous, accidental appearance of stimuli which produce the required associative elements. Similarity of the associative elements or of the stimuli producing the elements can also produce the requisite elements, as well as mediation or the use of common symbols or elements to evoke the proper elements. The requisite associational elements must then be used to form new combinations that meet certain criteria of creativeness.

Mednick (1962) feels that a highly creative person is one who possess a large number of verbal and non-verbal mental associations since these associations are then available for recombination into creative ideas. Less creative persons have only a few, highly dominant mental

associations and therefore do not have the capacity to recombine many associations into new, creative ideas.

The self-actualization viewpoint of creativity is based on the premise of "man's tendency to actualize himself, to become his potentialities" (Rogers, 1976, p. 298). Rogers (1976) describes this tendency as:

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, to the extent that such activation enhances the organism or the self. (p. 298)

Maslow (1976) differentiates between the creativity associated with great achievements in a few and the potential for self-actualized creativity in everyone. Special talent creativeness is not necessarily synonymous with psychological health. Self-actualized creativity, on the other hand, comes out of the wholeness of a healthy, self-accepting person. It is a creativity that everyone has the potential for. Rogers (1976) gives three internal conditions of an individual which are closely associated with the potential for a creative act. First, there is extensionality or openness to experience. The individual must have a sensitive awareness and receptiveness to all facets of human experience. The second condition is having an internal locus of evaluation. This is where the basis of evaluation of the creative product lies within the

creative person himself. If the product feels, to the creator, to be an actualization of potentials within himself then it is satisfying and creative. The final condition is the ability to toy with elements and concepts. This enables many different combinations of ideas to be constructed and considered.

Rogers (1976) says that certain external conditions must be established in order to foster and nourish the internal conditions above. These conditions of psychological safety and freedom help maximize the potential for creativity. Psychological freedom occurs "when a ... facilitating person permits the individual a complete freedom of symbolic expression" (p. 304). This allows the individual to do and to be, responsibly, anything. This, in turn, fosters security. Psychological safety is established by three related processes. The first is "accepting the individual as of unconditional worth" (p. 303). This occurs when another person feels the individual has value and is deserving of unconditional faith. This gives the individual a feeling of security and safety in that he can be himself. The second process is "providing a climate in which external evaluation is absent" (p. 303). In order to do this, a person cannot foster his judgement, or own locus of evaluation, onto another person. This provides freedom for the second individual to recognize his own locus of evaluation. The final process in establishing psychological safety is

"understanding empathically" (p. 304). This is acceptance based on complete understanding of the individual.

This was a brief review of some of the many ideas on creativity. The existing theories are as varied as the persons who developed them, but concurrent themes do exist between some of them.

### Measurement of Creativity

Many different instruments have been developed for the measurement of creativity. Hocevar (1981) has divided the techniques for assessing creativity into categories. The most prominent of these categories will be discussed here.

Attitude and interest inventories are based on the assumption that creative persons will have creative interests and attitudes. The Preconscious Activity Scale by Holland and Baird (1968) is a list of 38 items written to correspond to Kubie's theories of preconscious mental activity. The subjects give true or false responses to such questions as "I would rather be a research scientist than a scientific administrator" or "day dreaming is a poor way to solve problems" (p. 218). The higher the number of given answers that correspond with the key, the higher the subject is on the originality scale. The authors point out that the themes of flexibility, openness to new ideas, and the acceptance of irrationality in oneself, which were included in Kubie's psychoanalytic ideas, are also common to most other theories of creativity, thus making this scale useable as a general

measure of originality.

Taylor, Sutton, and Haworth (1974) developed the Creative Behavior Disposition Scale on which the subject responds to each of the 75 items the degree to which each, on a scale of 0 to 100, reflects his behavior. The instrument is based "on the concept of 'creative transactualization' which expands on self-actualization to include actualization of the environment" (p. 114). The scale measures five creativity dispositions and relates them to five areas of creativity. The five dispositions are:

- (1) expressive creativity, characterized by spontaneity and freedom;
- (2) technical creativity, characterized by proficiency and skill;
- (3) inventive creativity, characterized by ingenuity in usefully combining materials;
- (4) innovative creativity, or modification and development of ideas; and
- (5) emergentive creativity, involving the origination of an essentially new idea. (p. 114)

The five areas of creativity to which these dispositions are related are: "(1) a transacting person who designs his external environment (2) through transformation processes such as analogies or reversals of (3) basic or generic problems into (4) fruitful or generating products facilitated by (5) a dynamic or stimulating climate" (p. 114).

Research performed by Taft and Gilchrist (1970) used the Zimmerman Guilford Interest Inventory to compare creative attitudes with creative productivity. The instrument is

described as "a 15-item, true - false scale indicating interest in a diversity of activities such as thinking up plots for novels or finding unique ways of expressing thoughts or emotions" (p. 137). Two other attitude and interest inventories are A Study of Values (AVL) and Runner Studies of Attitude Patterns. The AVL measures theoretical, economic, aesthetic, social, political, and religious values on the premise that a certain pattern of values will usually discriminate a creative person. The Runner Studies have shown a positive correlation with Freedom Orientation Scales and a negative correlation with Control Orientation Scales to measures of creative behavior. (Kaltsounis, 1971; Hocevar, 1981)

Personality inventories are a common instrument used in the identification of creativity. Several researchers have used the Adjective Check List (ACL) to construct scales for creativity. The ACL is an alphabetical list of 300 adjectives selected to include a broad spectrum of theoretical positions and human behaviors. The primary use has been for self-description where the subject is asked to check all adjectives which describe him. In their research, Smith and Schaefer (1969) and Domino (1970) first determined creativity through various methods and then administered the ACL to the creative individuals. The end results were lists of adjectives common to creatives. Some of these adjectives are: artistic, imaginative, original, quick, resourceful, sharp-witted, and spontaneous.



Torrance and Khatena (1970) have created a personality screening device called "What Kind of Person are You?" The test items are arranged in pairs of characteristics of differing ranks in a forced choice format. The authors describe the test items in the following manner:

In some cases, the item calls for a choice between two socially desirable characteristics and in others, between two socially undesirable characteristics. Similarly, there are items that call for choices between two characteristics that differentiate between creative and relatively non-creative people in a positive direction and some, in a negative direction. the rationale is that the creative person will choose the response that is more central or essential to creative functioning. (p. 72)

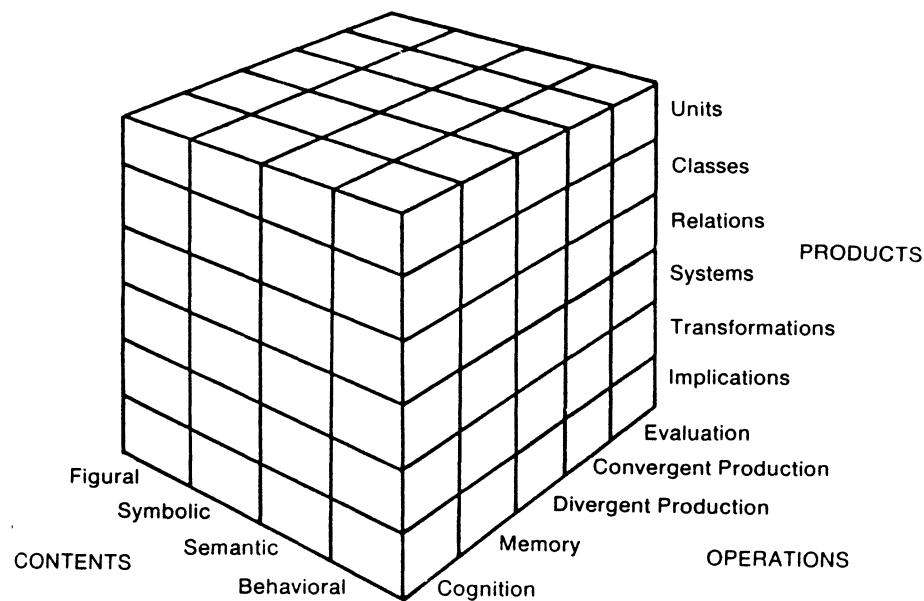
Another personality inventory was created by Holmes (1976) as a result of extensive research. Holmes incorporated the research results of five sources into a 72 item instrument called "A Questionnaire Measure of the Creative Personality". The questionnaire is scored by computing the sum of the responses to positively and negatively worded items.

Tests of divergent thinking are the most widely used approach to studying creativity. This type of test requires multiple appropriate answers in place of a single correct reply to the problem. The basis for tests of divergent thinking comes from Guilford's (1956, 1967, 1975) structure-

of-intellect (SI) model. In this model, Guilford describes the structure of human intellect in terms of factors. He defines intelligence as "a collection of abilities or functions for processing information" and information as "that which we discriminate" (1975, p. 38) both in content and in form of product. According to Guilford, different intellectual operations create different products of information out of each kind of content, or form of information. Content, operation, and product are the three parameters of Guilford's three dimensional model (Figure 1). These dimensions create 120 cells that are each considered to be a unique cognitive ability that can be measured by tests.

The four kinds of content are figural, semantic, symbolic, and behavioral. Figural information is obtained from the sense organs as perception. Semantic content consists of the thoughts that occur from the initial perception. The third type of content is symbolic, or signs or labels that stand for other types of information. Finally, behavioral content is "social intelligence" or an ability to derive meaning from other people's behavior or "body language". (p. 39)

There are six different products, or "brain produced constructs" (p. 39) within each content area. The basic construct is a unit which may stand by itself or be formed into other constructs. Classes are units with one or more common properties grouped together. Implications occur when one unit suggests another. A relationship happens when a



Source: Guilford, J. P. (1967) The Nature of Human Intelligence. New York: McGraw-Hill, p. 63.

Figure 1. The Guilford Structure of the Intellect Model

definite connection exists between two units such as "finger" and "hand". A system is formed when more than two units are connected. This happens in such forms as a sentence, a story, or a theory. The final type of product is a transformation. This is "any kind of change in an item of information, including redefinitions and substitutions" (p. 40).

Intellectual operations are the basic abilities needed for processing information from any one of the content areas and in the form of any of the products. Knowing or structuring information is the function of cognition. This

involves coding information into one of the content areas and in the form of one of the products. Memory is the storage of information, and divergent and convergent production are the operations that retrieve stored information. Divergent production is a broad search of memory resulting in a number of possible answers. Convergent production results in a single appropriate answer. The type of production used is dependent on the nature of the problem. The final type of operation is evaluation. This is where information is judged for suitability.

Creativity predominantly involves divergent production. The "generating of logical alternatives to fit a cognized situation" (Guilford, 1975, p. 43) is imperative to the production of original and creative products. Different fields of creative performance correspond to different structure of the intellect categories of content. Persons working in the visual arts are using visual-figural information. Composers and arrangers use auditory-figural information. Mathematicians use the symbolic category, and writers, speakers, and teachers use semantic information. Finally, persons such as salesmen, teachers, and judges use behavioral information. (Guilford, 1975)

There are different divergent thinking tests to measure twenty-four abilities; the six areas of products multiplied by the four areas of content (Davis, 1986). Guilford (1967) says the main characteristic of divergent thinking tests is that they have tasks that specify, neither too broadly or

narrowly, some class property or properties, and require the subject to list members of the class specified. One example of these tests is the Sketches test which tests divergent production (operation) of figural (content) units (product). In Sketches, the subject is given a simple basic figure, such as a circle, and told to add enough detail to make it into a recognizable object. A second test area involving units is the the Consequences test which measures divergent production of semantic units by asking the subject to list consequences of a given situation. An example of tests in the classes area of product is the Unusual Uses test which requires the subject to list all of the uses he can think of for a given item such as a newspaper, tire, or shoe. This test measures divergent production of semantic classes. These examples are a few of the many tests that Guilford has compiled to measure the divergent production area of his structure of the intellect model. This work is the basis for most divergent production creativity tests.

The Torrance Tests of Creative Thinking, developed by E. Paul Torrance, are the most widely used tests of divergent thinking. The Torrance Tests reflect the work that Torrance performed for the Bureau of Educational Research at the University of Minnesota in developing the Minnesota Tests of Creative Thinking. These tests find their basis in Guilford's structure of the intellect theories. (Torrance, 1962)

The Torrance Tests are available in two forms, A and B,

with seven verbal and three figural tasks comprising each form. Torrance (1968, 1974) provides rationales for the different tasks included in the tests. The first three verbal tasks fall under Ask-and-Guess Activities and require asking questions, guessing causes, and guessing consequences about a given picture. Torrance feels that "much of the essence of creative thinking, . . ., is captured in the process of asking and guessing" (1974, p. 11). The first task, Asking, is designed to reveal the subject's ability to be sensitive to what is unknown and cannot be obtained by looking at the picture, and to ask questions to fill the gaps in knowledge. The Guessing Causes and Guessing Consequences activities are designed to "reveal the subject's ability to formulate hypotheses concerning cause and effect" (1968, p. 169). The fourth verbal task is Product Improvement. This activity requires the subject to list improvements that might be made to a simple stuffed animal to make it more interesting and fun to play with. This task permits the subject "to 'regress in the service of the ego' and enables them to play with ideas that they would not dare express in a more serious task" (1974, p. 12). The Unusual Uses Activity is a modification of Guilford's Unusual Uses test. In Torrance's task, the subject is asked to list as many different uses as possible of either a tin can or a cardboard box. This is "in part a test of ability to free one's mind of a well-established set" (1974, p. 12). The Unusual Questions Activity requires the subject to ask unusual

questions about common objects, such as a cardboard box. This exercise is designed to measure the ability to ask other than factually oriented questions. The final activity on the verbal test is the Just Suppose Activity. This activity is also a modification of one of Guilford's tests. In this task, the subject is given an improbable situation and is asked to pretend it has happened and then to predict the consequences. This type of thinking, the ability to entertain an improbable situation, is important in creative behavior.

The three activities in the figural tests are designed to measure different aspects of creative functioning. The Picture Construction Activity requires the subject to create a picture in which a given shape is an integral part. This "sets in motion the tendency toward finding a purpose for something that has no definite purpose and to elaborate it in such a way that the purpose is achieved" (1968, p. 173). The second figural task is Figure Completion which asks the subject to add lines to the incomplete figure to create an object. This task deals with the tendency toward structuring and integrating. It is based on the theory that "an incomplete figure sets up in an individual tensions to complete it in the simplest and easiest way possible" (1974, p. 14). The subject must delay gratification and not complete the figure in the simplest way if he is to produce original responses. The final task, Repeated Figures, provides stimulus in the form of circles or sets of parallel

lines and requires the subject to make different objects from the repeated figures. This tests "the ability to make multiple associations to a single stimulus" (1974, p. 14).

All of the activities in the Torrance Tests, with the exception of Picture Completion, are scored for fluency, flexibility, and originality. The figural activities are also scored for elaboration. The Picture Completion Activity is only scored for originality and elaboration since it just has one stimulus figure and does not require multiple answers.

#### Summary

This chapter presented a general overview of creativity to familiarize the reader with the topic. It presented different definitions and theories on the subject as well as providing an overview of the most common methods and devices for measuring creativity.



## CHAPTER III

### METHODOLOGY

#### Introduction

The purpose of this chapter is to identify the methodological and statistical procedures used in this study. This chapter will discuss the research design of the study. Specifically it will discuss the subjects who participated in the research, the instrumentation used, and the statistical analysis procedure.

#### Research Method

The purpose of this study was to determine if a specific test of creativity was a valid measure of a specific sample of today's population. This research is a type of descriptive study called evaluation. A descriptive study is "concerned with conditions or relationships that exist. . . . It is primarily concerned with the present, although it often considers past events and influences as they relate to current conditions" (Best, 1981, p. 93). Evaluation "adds the ingredient of value judgment of the social utility, desirability, or effectiveness of a process, product, or program, and it sometimes includes a recommendation for some course of action" (Best, 1981, p. 93).

## Population and Sampling Procedures

The population for this study consisted of all Oklahoma State University students enrolled in major courses, from the freshman to the senior level, for the study of interior design in the department of Housing, Interior Design and Consumer Studies (HIDCS). The initial class used was the Fall, 1986 class, HIDCS 1123, Graphic Design for Interiors. Other classes tested in the Fall, 1986 semester were HIDCS 2223, Presentation Techniques for Interior Design; HIDCS 3343, Design and Space; HIDCS 4263, Interior Design Studio III. The two sections of HIDCS 1123 held during the Spring, 1987 were also included in the testing. By choosing these classes all of the students working on an interior design degree during the 1986-87 academic year were used.

## Instrumentation

The object of this study was to measure the validity of a creativity test over a period of time. The Torrance Tests of Creative Thinking were chosen because they are a widely used instrument for the measurement of divergent thinking, which is an accepted aspect of creativity (Davis, 1986). Verbal and figural form A of the Torrance Tests (see Appendix A) were the instruments used in this study. All of the activities, seven verbal and three figural, were used. The tests are provided in two separate booklets. The verbal booklet is 15 pages and the figural booklet is eight pages. Space for answers to each activity is provided.

### Administration of Instrument

The Torrance Tests were administered according to the instructions in the Directions Manual and Scoring Guide provided for both the verbal and the figural tests (see Appendix B). General preliminary instructions were read before each set of either verbal or figural activities. Specific directions for the activities were read before the start of each, with students following along with the printed instructions in the test booklets.

The tests were administered within a single class period. Including preliminary instructions and handing out test booklets, the tests took approximately 1 hour and 30 minutes. Individually, the different test tasks require the following amounts of time: verbal tasks Asking, Guessing Causes, Guessing Consequences, Unusual Questions, and Just Suppose each require five minutes; all three figural tasks along with verbal tasks Product Improvement and Unusual Questions each require ten minutes.

### Scoring Instrument

The Torrance Tests were scored according to directions and the scoring guide provided in the Directions Manual and Scoring Guide for each set of activities (see Appendix B). All seven verbal and the three figural test activities were scored for fluency, flexibility, and originality. Additionally, the figural tests were scored for elaboration. Individual scores for each activity were combined to provide

cumulative scores for both sets of tests.

The primary objective of this study was to analyze the validity and reliability of the Torrance Tests of Creative Thinking for a specific sample of today's society. It was decided that this could be achieved by creating a new scoring guide and rescoring the Torrance Tests by that guide. The new scores could then be compared statistically to the old to determine what relationship existed between the two methods of scoring.

The relevancy of the scoring guide provided with the Torrance Tests of Creative Thinking was questioned because of the age of the copyright dates and the type of sample used in creating the guide. The verbal scoring guide was copyrighted in 1974 and the figural guide in 1966. It was felt that the subjects taking the test today would give responses that were original when the guides were created but are no longer original due to advances in today's society. The sample used to create the scoring guide consisted of 500 students ranging from kindergarten through college. It was felt that a specific sample, within a small age range and within a certain area of study, would reply differently than a broad sample such as the one originally used.

The four concepts which are scored in the Directions Manual and Scoring Guide are fluency, flexibility, originality, and, in the figural activities, elaboration. It was decided to include only originality in the new scoring guide as this was the only concept which seemed to have the

potential for major difference. Since fluency is simply the number of answers given by the subject, it would not change with rescoring. Flexibility is the ability to shift categories of thinking and is scored by assigning each answer to a category provided in the scoring guide. The categories provided do overlap in some places but not to an extent that would create any significant difference through modification of the categories and rescoring of the tests. Elaboration is the addition of detail beyond the initial response to the stimulus. This is scored by counting the extra details added. No improvement seemed to be needed in this. Originality is determined by the frequency of a response. The more frequent the response, the less original it is. Since there seemed to be a discrepancy in the frequency of responses given by the students and the responses considered original in the scoring guide, originality was the aspect used in creating a new scoring guide.

The activities included in the new scoring guide were verbal activities Guessing Consequences, Product Improvement, and Unusual Uses (activities 3, 4, and 5 respectively); and figural activities Picture Completion and Lines. These activities were chosen because they represented a variety of the different rationales that Torrance (1968, 1974) gives for the different tasks included in the tests (rationals are discussed the Review of Literature, pages 27-19).

Five activities of the Torrance Tests were scored a second time for originality with the new scoring guide (see

Appendix C). This guide was created by listing all of the answers given, and the number of times each was used, by the students in the sample. The frequency of each answer was determined by dividing the number of times the answer was used by the total number of responses in the particular exercise. For example, in verbal activity three the answer "take a bath" was given 16 times. The total number of answers in the activity, 1300, was divided into 16 to give the frequency percentage. Each answer appearing as more than 5% of the responses was given a weight of zero points. An answer appearing between 2% to 4.99% of the responses received a weight of one point. A weight of two points was assigned to those replies that were less than 2% of the responses. This method of assigning weights to the frequency of the responses was derived from both the verbal and figural Direction Manual and Scoring Guide (Appendix B).

#### Data Analysis

The primary statistical analysis used in this study was the Pearson Product-Moment Correlation. Basic frequencies, means, and standard deviations were also computed for some variables. The variables used in the calculation of correlations were the new and old originality scores, for each person, for each of the five activities which were rescored. These analytical procedures were computed with the Statistical Analysis System (SAS) at the Computer Center of Oklahoma State University. The correlation coefficients

obtained in the statistical calculations for objectives two and three were compared through z-transformation and a test of homogeneity of correlation coefficients. These calculations were carried out by hand.

## CHAPTER IV

### ANALYSIS OF DATA

#### Introduction

The purpose of this chapter is to explain the results of the data analysis. It will provide a description of the sample and an analysis of the statistical data relating to the objectives of the study.

#### Sample Description

The sample for this study was comprised of those students present in each of the classes on the days the Torrance Tests of Creative Thinking were administered. The total number of students in the sample was 120. The majority of the students were tested in the Fall, 1986 semester. In the first class, HIDCS 1123, 33 students were tested. Nine students were tested in HIDCS 2223 and 29 in HIDCS 4263. In HIDCS 3343, 23 students were administered the test. Finally, 26 students were tested in the Spring 1987 sections of HIDCS 1123. There were 15 males and 105 females in the sample. The majority of the students were between the ages of 18 and 23. Table I summarizes the descriptive data for the sample.



TABLE I  
CHARACTERISTICS OF THE SAMPLE  
(N=120)

Characteristic	Frequency	Percent
CLASS BREAKDOWN		
HIDCS 1123	59	49.2
HIDCS 2223	9	7.5
HIDCS 3343	23	19.1
HIDCS 4263	29	24.2
SEX		
Male	15	12.5
Female	105	87.5
AGE		
18	7	5.9
19	27	22.7
20	28	23.5
21	23	19.3
22	14	11.8
25 -29	14	11.8
30 -39	2	1.7
40 -49	4	3.3

Note: one value is missing from the age variable

### Statistical Results by Objective

This portion of the chapter discusses statistical results. The statistical procedures were based on the objectives for this study as given in Chapter One.

The first objective was to determine the validity of the scoring guide as a measure of a specific sample of today's society. This objective was addressed by using a Pearson

Product-Moment Correlation to examine the strength of the relationship between the scores generated by the old and new scoring guides. The results of this statistical procedure, which are summarized in Table II, show a very strong positive relationship between the scores produced by the two different scoring guides.

TABLE II  
CORRELATION COEFFICIENTS BETWEEN SCORES  
FROM THE NEW AND OLD SCORING GUIDES

ACTIVITY	CORRELATION COEFFICIENT	Na
Verbal 3	0.93944*	119
Verbal 4	0.84051*	119
Verbal 5	0.92470*	119
Figural 2	0.70845*	120
Figural 3	0.84056*	120

\* Significant at .0001 level  
a N's not equal due to an unscorable verbal test

The major difference between the results of the guides can be seen in the mean values of the scores for each activity. The mean score increased in four of five activities when they were scored with the new scoring guide. Figural activity two is the only mean score which decreased with the new scoring

(see Table III). The observations from each activity are shown plotted in Appendix D. The plotted data illustrate the strong, positive, linear relationships between the observations within each category of variables.

TABLE III  
MEAN SCORES FROM THE NEW AND OLD SCORING GUIDES  
BY ACTIVITY

ACTIVITY	MEAN FROM OLD GUIDE	MEAN FROM NEW GUIDE	N
Verbal 3	15.56	19.18	119
Verbal 4	14.71	29.87	119
Verbal 5	20.54	34.27	119
Figural 2	7.92	6.08	119
Figural 3	17.07	30.48	119

The second objective was to compare the within test reliability in order to evaluate the differences between the scoring guides. This was accomplished by using the Pearson Product-Moment Correlation procedure on the sets of old and new scores. This created two sets of correlations between the variables within each set. The correlation coefficients for each set of scores are shown in Table V. It was observed that there was a stronger relationship in six of the

correlations of the variables from the new scoring guide than in the same variables from the old scoring guide. The correlations for each set of variables from both tables were then changed into a z-score through z-transformation. The pairs of z-scores were compared for homogeneity of correlation coefficients, a test of the difference between two population values. It was determined that only two sets of correlations were different at a significant level. These correlations were the correlation between verbal four and verbal three and the correlation between figural two and verbal 5. Both of these correlations were higher with the new scoring guide.

The final objective was to compare the relationship between the figural and the verbal scores. This was accomplished by summing the three figural and two verbal scores for each set (old and new) of scores. A Pearson Product-Moment Correlation was run on both sets of scores. The results can be seen in Table VI. Both sets showed a positive correlation between verbal and figural scores with the correlation between the new scores being slightly higher. A z-transformation and test of homogeneity of correlation coefficients did not result in a significant difference between the correlations.

#### Summary

This chapter presented the results of the statistical analysis. A description of the sample of students used in

the study was provided. Statistical data was presented in its relationship to the objectives of the study.

TABLE V  
INTERCORRELATIONS FOR OLD AND NEW  
SCORING GUIDES

OLD SCORING

---

	Verb. 3	Verb. 4	Verb. 5	Fig. 2	Fig. 3
Verb. 3		0.38008**	0.43076**	0.21562*	0.21617**
Verb. 4			0.50856**	0.13904	0.26454*
Verb. 5				0.23639*	0.37241**
Fig. 2					0.38899**
Fig. 3					

---

\* Significant at .05 level  
\*\* Significant at .0001 level

NEW SCORING

---

	Verb. 3	Verb. 4	Verb. 5	Fig. 2	Fig. 3
Verb. 3		0.51524**	0.51397**	0.15454	0.27316*
Verb. 4			0.61977**	0.29974*	0.31193*
Verb. 5				0.22346*	0.37173**
Fig. 2					0.29761*
Fig. 3					

---

\* Significant at .05 level  
\*\* Significant at .0001 level

TABLE VI  
FIGURAL AND VERBAL CORRELATIONS  
FOR OLD AND NEW SCORES

OLD SCORES	
Verbal	
Figural	0.39048*

NEW SCORES	
Verbal	
Figural	0.41774*

\* Significant at the .0001 level

## CHAPTER V

### CONCLUSIONS, SUMMARY, AND RECOMMENDATIONS

#### Introduction

The purpose of this chapter is to discuss conclusions drawn from the statistical analysis of Chapter IV and to summarize the contents of this research paper. The chapter will also include recommendations for further research.

#### Conclusions

Certain conclusions can be made based on the methodological procedures used and the statistical analysis performed. These conclusions will be discussed in the order of the objectives of the study.

The first objective of this study was to determine the validity of the scoring guide as a measure of a specific sample of today's society. The Torrance Tests of Creative Thinking were administered to the sample and scored with the scoring guide developed by E. Paul Torrance. A new scoring guide for originality was then developed and the tests were scored by this scoring guide. The individual scores from each method of scoring were correlated to determine the relationship between the two methods of scoring. The resulting high positive correlations, all of which were at a

high level of significance ( $p < .0001$ ), indicates that there is direct relationship between the methods of scoring. This strong direct relationship leads to the conclusion that the new scoring guide did not make any significant difference in the scores of the subjects in this sample; therefore, the original scoring guide is a valid measure for this specific sample of today's society.

The second objective was to compare the within test reliability in order to compare the differences between the scoring guides. Six of the correlations between activities in the new scoring guide were slightly, but not significantly, higher than the correlations between the same activities in the old scoring guide. Three correlations were higher with the old scoring guide and one correlation was approximately the same. When the correlations were analyzed by transformation into z-scores and a test for the homogeneity of correlation coefficients, there were only two pairs that showed any significant difference ( $p < .25$ ). It is concluded that there is not any significant difference in the strength of the relationships between the activities when they are scored by either the old or new scoring guides.

The final objective was to compare the relationship between the verbal and the figural scores for both the old and new scoring guides. The correlation between the verbal and figural scores for the new scoring guide was not significantly higher than the correlation for the old scoring guide. Both correlations were in the moderate range and a z-



transformation and test of homogeneity of correlation coefficients did not show any significant difference. It can be concluded that there is a moderately strong relationship between the figural and verbal scores, and the new scoring guide does not significantly affect the strength of the relationship between the figural and verbal scores.

#### Recommendations

The following recommendations are made for further research based on the results of this study:

1. In order to increase the validity of the research, this study should be repeated using a larger sample size.
2. This study could be repeated with specific groups other than interior design in order to compare the results of the studies using two different groups.
3. A large percentage of the possible responses on the old scoring guide were not original (given a higher score) compared to the same responses on the new scoring guide which were original. An indepth study comparing the individual responses (on both guides) for originality might determine the reason for this difference.
4. Based on the assumption that the level of creativity of students enrolled in a creative program, such as interior design, increases as the student progresses through the program, a longitudinal study comparing

students' creativity as freshmen and as seniors is suggested.

### Creativity and Interior Design Education

This research over creativity resulted from concern about the creativeness of interior design students. Creativity is a vital aspect in the field of interior design. It is one of the things that professional designers are paid for: their ability to produce creative solutions which are beyond the abilities of the average person. This creative aptitude must either be present or taught in students involved in an interior design program. A student must be able to produce useful, original solutions to the problems with which he or she is faced with in the course of their studies. This can be done by learning the four qualities of fluency, flexibility, originality, and elaboration that Torrance deals with in his tests. It is important to be able to think of many different, divergent ideas, to determine the best single solution, and to implement it and carry the idea through by elaboration. Creativity combined with the requisite knowledge for interior design can produce a successful professional from any student.

### Summary

Research on creativity has resulted in the development of many definitions, theories, and instruments for measurement of creative abilities and personalities. It is

important that these instruments be valid and reliable tools in order for them to present an accurate picture of an individual's creativeness. This research focused on the validity of the Torrance Tests of Creative Thinking as a measure of a specific sample of today's society. The Torrance Tests were administered to a sample of 120 interior design students. The tests were scored by the scoring guide provided with them. A new scoring guide for originality was then developed by determining the frequency of each answer given. The tests were scored with the new scoring guide and the resulting scores were correlated with those from the old scoring guide. The resulting statistics showed no significant difference in the scores obtained from the old and new scoring guides.

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## APPENDIXES

APPENDIX A

TORRANCE TESTS OF CREATIVE THINKING

VERBAL AND FIGURAL FORM A





# THINKING CREATIVELY WITH WORDS

By E. Paul Torrance

## VERBAL BOOKLET A

NAME \_\_\_\_\_

AGE \_\_\_\_\_ SEX \_\_\_\_\_

SCHOOL \_\_\_\_\_

GRADE \_\_\_\_\_

CITY \_\_\_\_\_

DATE \_\_\_\_\_



SCHOLASTIC TESTING SERVICE, INC.  
480 Meyer Rd., Bensenville, IL 60106

## Activities 1-3: ASK-AND-GUESS

The first three activities will be based on the drawing below. These activities will give you a chance to see how good you are at asking questions to find out things that you don't know and in making guesses about possible causes and consequences of happenings. Look at the picture. What is happening? What can you tell for sure? What do you need to know to understand what is happening, what caused it to happen and what will be the result?



**Activity 1. ASKING.** On this page, write out all of the questions you can think of about the picture on the page opposite this one. Ask all of the questions you would need to ask to know for sure what is happening. Do not ask questions which can be answered just by looking at the drawing. You can continue to look back at the drawing as much as you want to.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
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19. \_\_\_\_\_
20. \_\_\_\_\_
21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_

GO ON TO NEXT PAGE

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**Activity 2. GUESSING CAUSES:** In the spaces below, list as many *possible* causes as you can of the action shown in the picture on page 2. You may use things that might have happened just before the things that are happening in the picture, or something that happened a long time ago that made these things happen. Make as many guesses as you can. Don't be afraid to guess.

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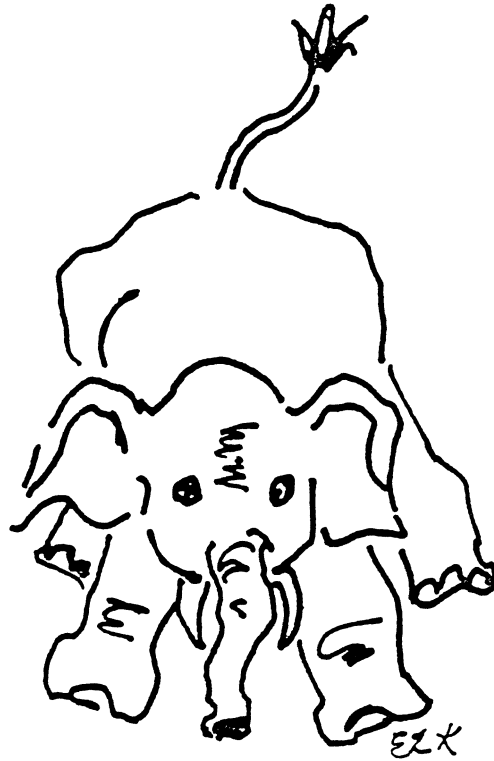
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**Activity 3. GUESSING CONSEQUENCES:** In the spaces below, list as many possibilities as you can of what might happen as a result of what is taking place in the picture on page 2. You may use things that might happen right afterwards or things that might happen as a result long afterwards in the future. Make as many guesses as you can. Don't be afraid to guess.

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Activity 4: PRODUCT IMPROVEMENT

In the middle of this page is a sketch of a stuffed toy elephant of the kind you can buy in most dime stores for about one to two dollars. It is about six inches tall and weighs about a half pound. In the spaces on this page and the next one, list the cleverest, most interesting and unusual ways you can think of for changing this toy elephant so that children will have more fun playing with it. Do not worry about how much the change would cost. Think only about what would make it more fun to play with as a toy.



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**Activity 5: UNUSUAL USES (Cardboard Boxes)**

Most people throw their empty cardboard boxes away, but they have thousands of interesting and unusual uses. In the spaces below and on the next page, list as many of these interesting and unusual uses as you can think of. Do not limit yourself to any one size of box. You may use as many boxes as you like. Do not limit yourself to the uses you have seen or heard about; think about as many possible new uses as you can.

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**Activity 6: UNUSUAL QUESTIONS**

In this activity, you are to think of as many questions as you can about cardboard boxes. These questions should lead to a variety of different answers and might arouse interest and curiosity in others concerning boxes. Try to think of questions about aspects of cardboard boxes which people do not usually think about.

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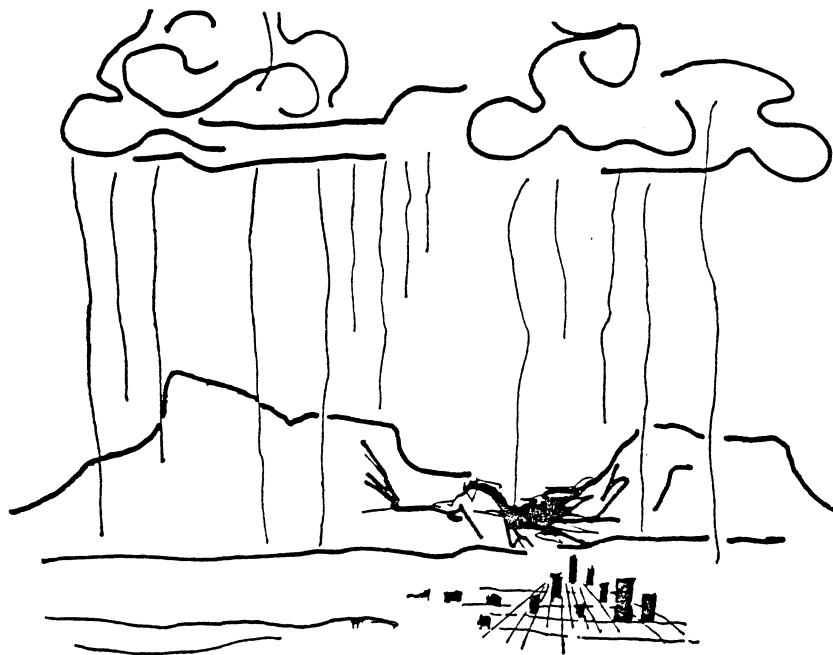
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**Activity 7: JUST SUPPOSE**

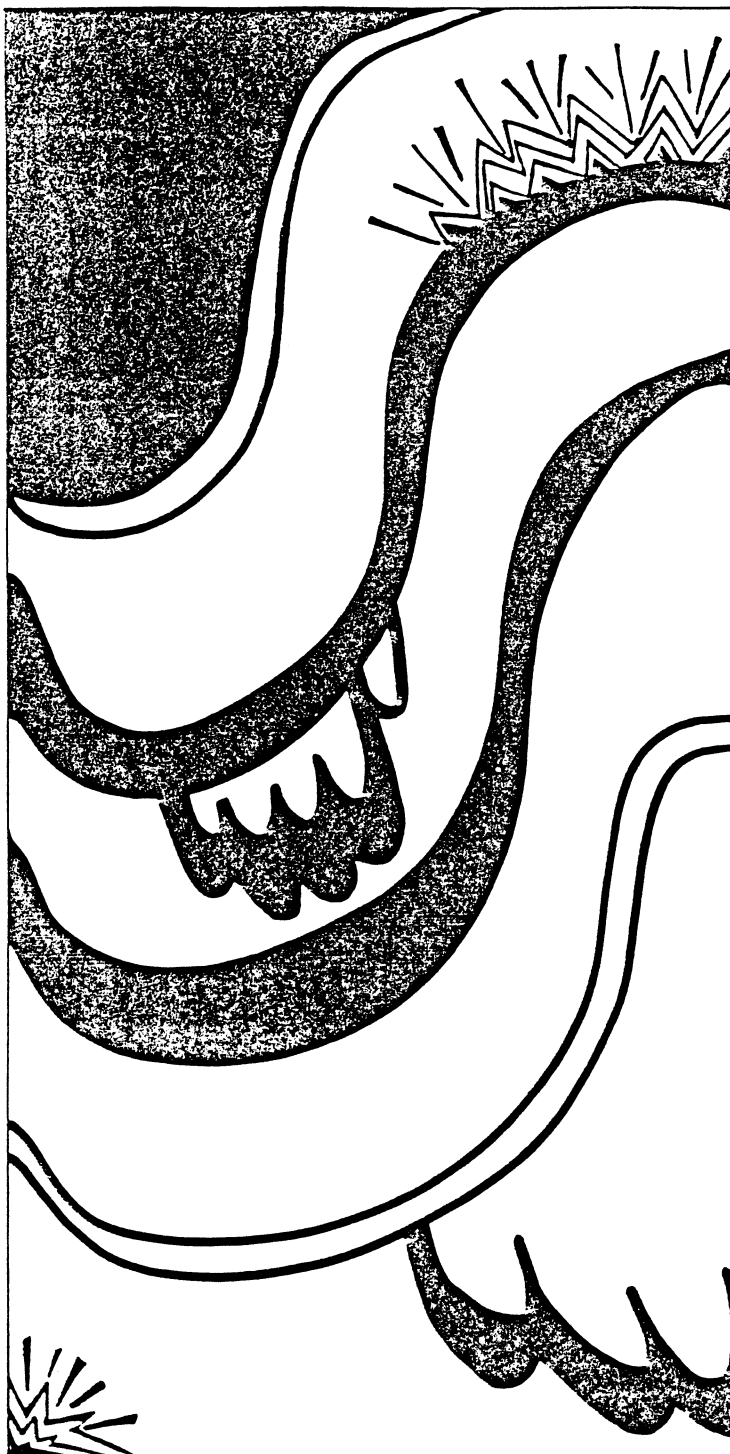
You will now be given an improbable situation—one that will probably never happen. You will have to *just suppose* that it has happened. This will give you a chance to use your imagination to think out all of the other exciting things that would happen IF this improbable situation were to come true.

In your imagination, *just suppose* that the situation described were to happen. THEN think of all of the other things that would happen because of it. In other words, what would be the consequences? Make as many guesses as you can.

The improbable situation—JUST SUPPOSE *clouds had strings attached to them which hang down to earth.* What would happen? List your ideas and guesses on the next page.



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# THINKING CREATIVELY WITH PICTURES

By E. Paul Torrance

## FIGURAL BOOKLET A

NAME \_\_\_\_\_

AGE \_\_\_\_\_ SEX \_\_\_\_\_

SCHOOL \_\_\_\_\_

GRADE \_\_\_\_\_

CITY \_\_\_\_\_

DATE \_\_\_\_\_



SCHOLASTIC TESTING SERVICE, INC.  
480 Meyer Road, P.O. Box 1056  
Bensenville, IL 60106-8056

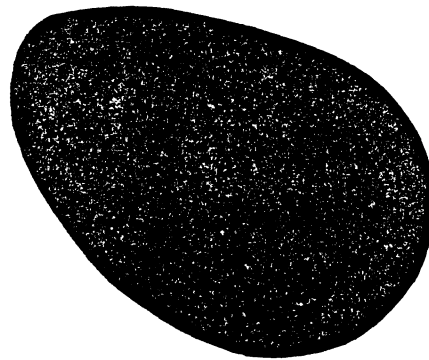


**Activity 1. PICTURE CONSTRUCTION**

On the opposite page is a curved shape. Think of a picture or an object which you can draw with this shape as a part.

Try to think of a picture that no one else will think of. Keep adding new ideas to your first idea to make it tell as interesting and as exciting a story as you can.





When you have completed your picture, think up a name or title for it and write it at the bottom of the page in the space provided. Make your title as clever and unusual as possible. Use it to help tell your story.

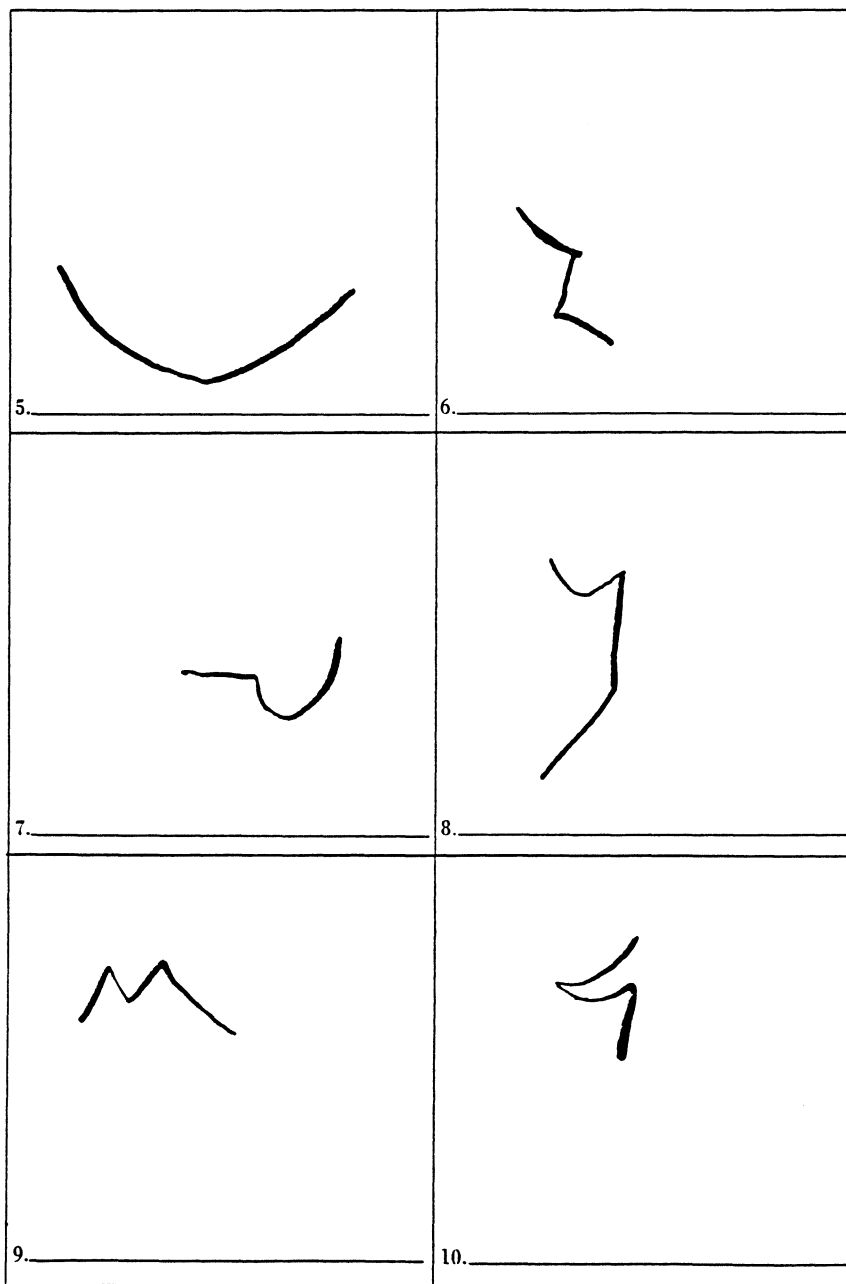


YOUR TITLE: \_\_\_\_\_

## Activity 2. PICTURE COMPLETION

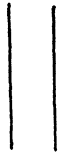
By adding lines to the incomplete figures on this and the next page, you can sketch some interesting objects or pictures. Again, try to think of some picture or object that no one else will think of. Try to make it tell as complete and as interesting a story as you can by adding to and building up your first idea. Make up an interesting title for each of your drawings and write it at the bottom of each block next to the number of the figure.

 1. _____	 2. _____
 3. _____	 4. _____



## Activity 3. LINES

In ten minutes see how many objects or pictures you can make from the pairs of straight lines below and on the next two pages. The pairs of straight lines should be the main part of whatever you make. With pencil or crayon add lines to the pairs of lines to complete your picture. You can place marks between the lines, on the lines, and outside the lines—wherever you want to in order to make your picture. Try to think of things that no one else will think of. Make as many different pictures or objects as you can and put as many ideas as you can in each one. Make them tell as complete and as interesting a story as you can. Add names or titles in the spaces provided.



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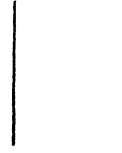
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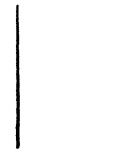
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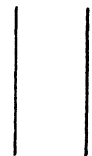
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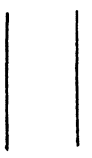
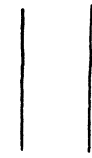

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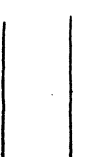
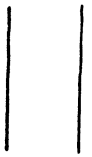
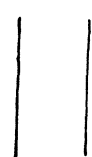
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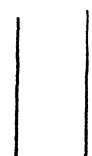
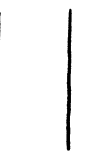

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APPENDIX B

DIRECTIONS MANUAL AND SCORING GUIDE  
FOR THE TORRANCE TESTS OF CREATIVE THINKING



# TORRANCE TESTS OF CREATIVE THINKING

by E. Paul Torrance, Ph.D.

DIRECTIONS MANUAL  
AND  
SCORING GUIDE

**FIGURAL TEST BOOKLET A**

1972 Revision

SCHOLASTIC TESTING SERVICE, INC., 480 Meyer Rd., Bensenville, IL 60106



### STS SCORING SERVICE FOR THE TORRANCE TESTS

1. Send your payment plus 10% for postage and handling, to STS General Offices, 480 Meyer Rd., P.O. Box 1056, Bensenville, IL 60106-8056. Scoring will not begin until payment is received. In lieu of prepayment, a formal purchase order will be accepted, and the organization named on the purchase order will be billed.
2. Mail your test booklets to STS Scoring Service for the Torrance Tests, 62 Weldon Pkwy., Maryland Hts., MO 63043. For prompt service, mark package "PRIORITY MAIL." For less-expensive-but-slower mail, mark package "FOURTH CLASS MAIL — OBJECTIVE TEST MATERIALS."
3. Be sure to include in EACH of your mailings to STS: the name, organization, and address of the person to whom the results and booklets should be returned; and the number of booklets, test form (e.g., 15 TTCT, Fig. A) and type of scoring (regular or streamlined).

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0-663-24452-8

## INTRODUCTION

This manual includes directions for administering and scoring the *Torrance Tests of Creative Thinking*, Figural Form A. The figural test is appropriate for use in kindergarten through graduate school. Other tests in this series include an alternate Figural Test, Form B, and two Verbal Tests, Forms A and B. Verbal tests may be used with groups in fourth grade through graduate school and as an individual test in kindergarten through the third grade. For each test there is a manual designated as the Directions Manual and Scoring Guide, containing all information necessary to administer and score the test. A single Norms-Technical Manual, covering all four tests, includes the theoretical and statistical background material underlying testing of creative thinking. It also includes normative information.

Examiners should note that the test booklets are titled *Thinking Creatively With Pictures, Booklet A*. This is the "working title" for the Figural Test, Form A, and it is employed in an attempt to reduce the examinee's perception of being tested when he is confronted with creative thinking materials. Although the booklets will be referred to as "tests" in the manuals and other material designed for the examiner, use of "tests" and testing terminology with the pupils is discouraged.

Examiners not familiar with Dr. Torrance's concepts of creative thinking and its measurement are urged to inform themselves before using this test. Much of this background material is to be found in the Norms-Technical Manual which also includes an extended bibliography of the author's publications. Five especially helpful references follow.

Torrance, E. P. *Guiding Creative Talent*. Englewood Cliffs, N. J.: Prentice-Hall, 1962, Chaps. 2, 3, Appendix.

Torrance, E. P. *Rewarding Creative Behavior: Experiments in Classroom Creativity*. Englewood Cliffs, N. J.: Prentice-Hall, 1965, Chap. 3 and Appendix A.

Torrance, E. P. "The Minnesota Studies of Creative Behavior: National and International Extensions." *Journal of Creative Behavior*, 1967, 1, 137-154.

Torrance, E. P. "Examples and Rationales of Test Tasks for Assessing Creative Abilities." *Journal of Creative Behavior*, 1968, 2, 165-178.

Torrance, E. P. "Prediction of Adult Creative Achievement among High School Seniors." *Gifted Child Quarterly*, 1969, 13, 223-229.

## PREPARING FOR THE TEST

The figural forms of the *Torrance Tests of Creative Thinking* require responses that are mainly drawing or pictorial in nature. Use of the Figural Test batteries is recommended in kindergarten through graduate school. A small amount of writing is required of the examinees when they are directed to label or name some of the pictures they have drawn. With children who are not yet writing, this part of the test is accomplished by the examiner. It is usually desirable to have one or more assistants available to help with this task when children in kindergarten or the early primary grades are being tested.

Before administering the tests, the examiner should read completely through the directions, familiarizing himself with all aspects of the mechanics of administration. No accessories are required for giving the figural tests.

Examiners should note that the word "test" has not been used on the booklet nor in the printed instructions. If the examinees' materials must be referred to, the use of a word like "booklet" or "exercises" is suggested. However, if examiners follow the procedures in the section "Administering the Figural Tests," the proper language and non-test atmosphere can be developed. It is recommended that, in general, a game-like, thinking, or problem-solving atmosphere be created. Try to avoid the threatening situation frequently associated with testing. Create the expectation that examinees will enjoy the activities and invite them to "have fun." The psychological climate, both preceding and during the use of the tests, should be as comfortable and stimulating as possible. The only exception to this principle would be the condition under which the examiner is conducting some controlled experiment involving stress.

The format of the test booklet was designed deliberately to facilitate the "warm-up" process necessary for any kind of creative behavior. The design on the cover consists of apparently unrelated combinations of elements and usually evokes curiosity, imaginative activity, and interest. Such a format may strike some test experts as unorthodox and untestlike. The author, however, considers this feature an essential part of the testing procedure.

The examiner should also assure that the physical conditions for testing are good. Make certain that an adequate supply of test booklets is at hand, that everyone has a pencil (ordinary pencils will do) or crayon, that room temperature is as comfortable as weather conditions and existing facilities for the control of temperature and atmosphere permit.

Examinees need no equipment other than their booklets and pencils or crayons. (It is recommended that teachers and examiners follow whatever is normal classroom policy or procedure in giving pupils access to boxes of crayons.) Examiners will need a copy of this manual, a copy of the test booklet for reference, and an accurate timing device, preferably a stop watch.

Testing in large groups of combined classes in lunch rooms, auditoriums, and the like should be avoided. In most cases, the usual class size of 15 to 35 is all right. Where practical, however, it is suggested that children in kindergarten through fourth grade be tested in smaller groups. For example, it might be possible to split a class of 30 into two groups of 15 each and test them in different rooms. Or, the testing activity could be alternated with some other activity. It is not necessary to administer the figural form individually to children after they have learned to draw with pencil or crayon.

The actual pupil working time on the figural tests is 30 minutes. To cover preliminary instructions, handing out papers, etc., no less than 45 minutes free of interruptions should be scheduled for the test. Usually, pupil interest in the tests is so high that fatigue is no problem and the entire booklet can be completed in one sitting. Should fatigue become evident, however, the examiner may give the group a short break between any two of the activities in the booklet.

If both the figural and the verbal tests are to be administered, it is recommended that they be accomplished in two different sittings. At the very least, a break should intervene between the two testings.

### **ADMINISTERING THE FIGURAL TESTS**

The following section contains the directions for administering the Figural Tests of the *Torrance Tests of Creative Thinking* battery, including the wording of comments and directions the examiner makes to the pupils. Preliminary comments are enclosed in quotation marks and may be modified somewhat to fit appropriately the special conditions of testing. Specific instructions to pupils for procedures on the three activities of the test booklet are printed in bold face type. These instructions in bold face should be read from this manual, precisely as written, without modification.

It is realized that slight modifications will always have to be made in administration procedures, depending upon the purposes and conditions of the testing. Since this battery may be used from kindergarten through graduate school, slight modifications have to be made on account of differences in writing ability, vocabulary, and the like. This is especially true of the initial orientation or warm-up. Timing and other instructions given by the examiner, however, should be as uniform as possible. Some workers may want to give more liberal time limits for elementary school children who are handicapped in recording their ideas by limited drawing skills. Such workers, however, should recognize that the norms given in this manual will not be applicable. Changes in time limits may also affect the reliability and validity of the measures but a great deal more developmental work needs to be done before the precise nature of these changes can be determined.

#### **Preliminary Instructions to Pupils**

If one of the figural forms is given alone or before the verbal form, an orientation similar to that outlined in the paragraph below should be used. If given after a verbal form, little added explanation or orientation will be needed. The examiner might simply indicate that in the first booklet, pupils had to express their ideas in words. In this booklet, they will express their ideas in other ways.

Before passing out the test booklets, the teacher or administrator should give a brief orientation that will make sense to the particular group, be honest, arouse interest and motivate performance. Some modification of the following might be used:

"I believe you will have a lot of fun doing the activities we have planned for this period. We are going to do some things that will give you a chance to see how good you are at thinking up new ideas and solving problems. They will call for all of the imagination and thinking ability you have. So I hope that you will put on your best thinking cap and that you will enjoy yourself."

If there are to be successive administrations of the test or an alternate form, it is usually a good idea to set up this expectation even in the initial administration. Successive administrations are frequently planned in experimental programs designed to evaluate the relative

effectiveness of methods, materials, organizational innovations, and the like, and can be explained along with the purpose of the entire program. An explanation such as the following might be made:

“One of the things we would like to find out is how much you improve between now and later in your ability to think up new ideas, use your imagination, and solve problems. You know, if we wanted to know how much you grow in weight or height during a particular period, we would weigh you or measure your height now and again at the end of that period of time. This is what we want to do regarding your ability to think of ideas. We are going to take a measurement today and another at the end of the school year (quarter, month, etc.). We want to get as accurate a measurement today as we can. So use your best thinking cap and do your best.”

Within the context of the situation, the activity should be made as non-threatening as possible, unless some stress factor is a deliberate part of the experimental design.

#### **Specific Instructions for Administering Test Activities**

At this point, pass out the booklets. Next, have each individual fill in the blanks at the top of the page quite carefully. Make certain that the year is entered as part of the date so there will be no confusion or needless loss of data in longitudinal studies or studies involving pre-test and post-test designs.

Children in kindergarten and the primary grades will need some help with their writing or spelling. Or, the information on the face of the booklet may be filled in by the teacher or test administrator in advance from the school records and each pupil given his “very own” booklet.

After the identifying information has been provided, read these 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 and to put them together in various ways. In each activity, we want you to think of the most interesting and unusual ideas you can—ideas that no one else in this group will think of. After you think of an idea keep adding to it and build it up so that it will tell the most interesting and exciting story possible.

You will be given a time limit on each activity, so make good use of your time. Work fast but don't rush. Try to keep thinking of ideas, but if you run out of ideas before time is called, sit quietly and wait until you are told to turn to the next page.

If you have any questions after we start, don't speak out loud. Raise your hand and I shall come to your desk and try to answer your questions.



If there are no questions at this point, proceed with the first activity. If there are questions concerning the instructions, attempt to satisfy them by repeating the instructions in words that the person will understand or by elaborating upon the instructions in the printed booklet. Avoid giving examples or illustrations of "model responses." This tends to reduce originality and in some cases it even reduces the number of responses produced. Above all, attempt to maintain a friendly, comfortable, warm relationship with the group.

Ask the class to turn to page 2, Activity 1, PICTURE CONSTRUCTION. Ask those who can to read the instructions with you, continuing as follows:

On the opposite page is a curved shape. Think of a picture or an object which you can draw with this shape as a part.

Try to think of a picture that no one else will think of. Keep adding new ideas to your first idea to make it tell as interesting and exciting story as you can.

When you have completed your picture, think up a name or title for it and write it at the bottom of the page in the space provided. Make your title as clever and unusual as possible. Use it to help you tell your story. (Examiners and teachers will write down the titles for children who need such help.)

Go ahead with your picture, making it different from anyone else's and making it tell as complete and as interesting a story as possible. You will have ten minutes.

Most examinees will be anxious to begin, so answer questions as expeditiously as possible and permit them to begin working. At the end of about nine minutes, pupils who have not yet entered a title for their drawing on the line at the bottom of page 3 may be reminded that they are to do so and encouraged to accomplish it.

Using a stop watch, allow **TEN MINUTES** before calling time. Ask the group to turn to page 4, Activity 2, PICTURE COMPLETION. Again, ask the group to read the instructions as you read them aloud (except of course with younger children who cannot read):

By adding lines to the incomplete figures on this and the next page, you can sketch some interesting objects or pictures. Again, try to think of some picture or object that no one else will think of. Try to make it tell as complete and as interesting a story as you can by adding to and building up your first idea. Make up an interesting title for each of your drawings and write it at the bottom of each block next to the number of the figure.

All right, go ahead! You will have ten minutes.

If some examinees are upset by the fact that they did not finish, reassure them very simply by saying something like the following:

“I notice that you work in different ways. Some of you finished all ten of your drawings very quickly and then went back and added other ideas. Some of you finished only a few of the drawings but you made each of them tell a very complete story. Continue to work in whatever way is natural and comfortable for you.”

Using a stop watch, allow **TEN MINUTES** before calling time. Ask the pupils to turn to page 6, Activity 3, LINES. Again, have the group read the instructions as you read them aloud:

In ten minutes see how many objects or pictures you can make from the pairs of straight lines below and on the next two pages. The pairs of straight lines should be the main part of whatever you make. With pencil or crayon add lines to the pairs of lines to complete your picture. You can place marks between the lines, on the lines, and outside the lines—wherever you want to in order to make your picture. Try to think of things that no one else will think of. Make as many different pictures or objects as you can and put as many ideas as you can in each one. Make them tell as complete and as interesting a story as you can. Add names or titles in the spaces provided.

All right, go ahead. You have ten minutes.

Although instructions have indicated that the activity includes three pages and instructions are given at the bottom of the page 6 to “go on to next page,” some children will not grasp this fact and will ask about it or have to be reminded. This may occur even in testing college students and adults, so be alert to this possibility. Time the Activity very carefully, using a stop watch, if possible.

After **TEN MINUTES**, call time and collect booklets. If the children were unable to write their own titles or labels, be prepared to interview each child briefly to obtain titles or labels. Otherwise reliable scoring will not be possible. It is usually desirable to have one or more assistants available to help with this task, when testing children in the kindergarten and primary grades.

## HOW TO USE THE SCORING GUIDE

### Who Can Score Creative Thinking Tests.

Studies of scorer reliability have shown that individuals specially trained and experienced in the scoring of the *Torrance Tests of Creative Thinking* are capable of scoring them with a very high degree of reliability. To answer the question about the reliability of results derived by *untrained* scorers, an experiment was conducted in which regular classroom teachers and educational secretaries scored tests without benefit of any training other than the study of the scoring manuals. Results available for six teachers and one educational secretary indicate that *when the scoring guide is carefully studied and accepted*, scores of acceptable reliability are obtained. The mean Pearson product-moment coefficients between the scoring of trained scorers and untrained teachers for the figural tests are: fluency, .96; flexibility, .94; originality, .86; and elaboration, .91. The mean reliability coefficients for the verbal tests are: fluency, .99; flexibility, .95; and originality, .91. The results for the one educational secretary are: fluency, .99; flexibility, .98; originality, .76; and elaboration, .87. The lower reliability for originality seems to occur when the scorer rejects the scoring guide and substitutes his own concept of what is original. A more complete analysis of the scorer reliability study will be found in the Norms-Technical Manual.

These findings suggest that it is not necessary to have special training in scoring these tests to assure reliable results. What does appear to be necessary is that the scorer *read and follow the scoring guide as precisely as possible, accepting the standards of the guide as a basis for judgment.*

### Procedures for Scoring.

1. Read the scoring guide, noting its organization. If the examiner does not yet have an understanding of the concepts of fluency, flexibility, originality, and elaboration, he should do some supplementary reading\* of the rationale of the *Torrance Tests of Creative Thinking*. He should also familiarize himself with the rationale for the three figural test tasks contained in this battery.

2. Reread the scoring guide with a completed record, locating the responses on it in the lists of scoring categories and originality weights. First, however, determine whether the response is scoreable, i.e., has relevance to the test task. No entries or tabulations are made on the scoring worksheets for responses that are considered "not scoreable."

3. Now, the examiner should be ready to begin the scoring. A scoring worksheet (see reproduction, page 38) has been designed to

\* Reading the introductory sections of the Norms-Technical Manual is especially recommended. See also publications listed in the Introduction of this manual and in the extended bibliography of the Norms-Technical Manual.

reduce the amount of time required to score a test and to increase the reliability of scoring. After entering the desired identifying information, it is suggested that he proceed as follows:

**Step 1. Scoring Picture Construction Activity.** Determine from the Scoring Guide the originality weight for the response and place this score in the box labeled "Orig." under "Activity 1." Next, determine the elaboration score and place this number under the "Elab." column for "Activity 1."

**Step 2. Scoring Picture Completion.** Using the Guide, determine the originality weight and flexibility category for the first response and enter these numbers in the "Categ." and "Orig." columns under "Activity 2." If the response is a zero or one-credit response, the flexibility category will be found in parentheses at the left of the response as listed in the originality scoring guide. It will be necessary to find the category of the two-credit responses in the list of flexibility categories. Now, determine the elaboration score of the first response and enter it in the "Elab." column under "Activity 2." Continue in this way for each scoreable response in Activity 2. To indicate omissions enter a dash in the appropriate blanks.

**Step 3. Scoring Parallel Lines.** Using the Guide, determine for each scoreable response the flexibility category, the originality weight, and the elaboration score and record in the appropriate boxes of the scoring worksheet. It is suggested that the examiner start with the guide for scoring originality. In this guide, the most frequent responses are listed alphabetically with both their originality weights and flexibility categories. It is then an easy matter to look up the category numbers of the less frequent or three-credit responses.

**Step 4. Summarizing the Results.** The examiner is now ready to summarize his scoring in the "Score Summary" box on the right side of the scoring worksheet. Since there is only one response for Activity 1 and it is not scored for flexibility and fluency, simply transfer the originality and elaboration scores to the score box, entering them in the "Orig." and "Elab." columns for "Act. 1." The fluency score for Activity 2 can be read directly by noting the marginal number adjacent to the last response, if there were no omissions or unscorable responses. Otherwise, it will be necessary to count the number of scoreable responses. To determine the flexibility score, strike out category duplications under the "Categ." column and count the remaining responses. To obtain the originality score, simply add the weights recorded in the "Orig." column under Activity 2. The elaboration score is obtained in the same manner. The scores for Activity 3 are determined in the same manner as for Activity 2. The bonus points for originality awarded for combining two or more figures in Activity 3 should be added in with the other originality credits. The procedures for awarding bonus credits are described on pages 33-34.

The examiner may confront a scoring situation in which an activity has been completely omitted by the examinee. An omission may happen

for a number of psychological reasons (rigidity, test anxiety, etc.) which may inhibit creative performance. In this event the scorer should enter zeros as scores in the score summary box and proceed as directed.

Now the examiner should be ready to compute the totals for each of the four columns of the "Score Summary" box. These are the raw scores for fluency, flexibility, originality, and elaboration for the Figural test. In many cases one will not need to go further. For certain purposes, however, the examiner will want to convert the raw scores to standard scores or T-scores.\* This should be done whenever he finds it necessary to combine scores for some kind of composite or total score, whenever he wants to determine the relative strengths of the four kinds of ability (fluency, flexibility, originality, and elaboration) of a given individual or group, or whenever he wants to compare an individual's performance with some of the comparison groups for which data are given in the technical manual. The data for converting raw scores into standard (T) scores are included in the Norms-Technical Manual.

4. Both immediately and from time to time, the examiner will want to obtain some indication of the reliability of his scoring. If possible, he should have someone else score four or five of the same records he has scored and then discuss any discrepancies. Then, with a sample of 20 to 40 records, he might want to compute reliability coefficients † for each of the four scores. Another useful kind of reliability check is to rescore a set of tests after a lapse of one or more weeks. If the scoring worksheets are used, these kinds of checks will be easy.

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\* See standard statistics or tests-and-measurement text for explanation of these scores.

† This coefficient is found by computing the correlation between the scores found by two scorers on the same set of tests. Most statistics texts explain the computational methods.

## SCORING GUIDE FOR THE FIGURAL TESTS, FORM A

The current edition of the Figural A scoring guide includes the revised originality weights introduced in the January, 1970 edition. Those weights are based on an enlarged sample of 500 individuals and incorporate an upward extension of the sample to include college students. A comparison study has shown that mean originality scores of Figural A booklets scored using the originally published weights are unaffected when scored by the 1970 weights.

Each of the three tasks will be scored for *originality* and *elaboration* and Picture Completion and Parallel Lines will be scored also for *fluency* and *flexibility*. The pages that follow contain the guides for determining these scores.

### Activity 1: PICTURE CONSTRUCTION

#### Originality

The scoring guide for originality on the Picture Construction Test is based on the responses of 500 subjects ranging from kindergarten through college. Scoring is accomplished on a scale ranging from zero to five according to frequency of occurrence in the 500 records analyzed. Responses occurring on five per cent or more of the records receive no credit. Other obvious responses such as "tear drop," "blob," "pear," and the like are also scored zero. Responses occurring in from 4.00 per cent to 4.99 per cent receive one point; responses found in 3.00 to 3.99 per cent of the records are scored two; those occurring in 2.00 to 2.99 per cent of the cases are awarded three credits; those found in from 1.00 to 1.99 of the records receive four credits. All other responses showing imagination and creative strength are credited with five points. The guide given below lists the responses falling in each of the first five categories, but the responses falling in the sixth category are relatively unique and numerous and only some of the more frequent ones are listed.

NOTE: The concept of "creative strength" is an important one and the examiner should attempt to master the idea well. Possibly the best way to accomplish this is to study the originality weights assigned responses in the scoring guide, noting the differences between examples of zero-credit (not original) and responses showing creative strength. It may also prove helpful to think of responses showing no creative strength as requiring little intellectual energy; little energy is necessary to give obvious, common, and learned responses. In contrast, more intellectual energy is required to give responses that go beyond what is learned, practiced, habitual, and away from the obvious and commonplace. Hence, these latter kinds of responses are thought of as "showing creative strength."

Response	Weight	Response	Weight
Abstract design without meaningful title .....	0	Flower .....	4
Airplane .....	5	Flying object (UFO) .....	5
Balloon .....	4	Girl (lady, female) .....	1
Bird(s) .....	3	Golf green .....	5
Bug .....	4	Hat .....	5
Bunny .....	4	Humpty Dumpty .....	4
Car .....	5	Man (all kinds except from outer space) .....	0
Cat .....	4	Man (from outer space) ..	3
Chicken .....	4	Monster .....	5
Circle .....	0	Mouse .....	4
Cloud .....	5	Mouth .....	5
Dinosaur .....	5	Nose .....	3
Duck .....	5	Pond (lake) .....	5
Ear (human) .....	4	Rabbit .....	4
Ear (animal) .....	5	Rock .....	5
Egg (Easter) .....	0	Rocket .....	5
Egg (not Easter) .....	0	Spaceship .....	3
Egg (in basket) .....	0	Swimming pool .....	5
Eggman; egghead, etc. ....	3	Sun .....	4
Eye .....	4	Teardrop .....	0
Face (human) .....	2	Tree .....	5
Fish .....	5	Turtle .....	5

**Title Originality (Optional. May be counted as a part of the Verbal Score.\*)**

The titles are evaluated on a scale ranging from zero to three on originality or cleverness according to the following criteria:

- 0 Obvious class titles, such as "Man," "Egg," "Rabbit," etc.
- 1 Simple descriptive title at a concrete level, involving a modifier plus a class, such as "Man with a Big Ear," "A Speckled Egg," "An Easter Rabbit," etc.
- 2 Imaginative, descriptive title in which the modifier goes beyond concrete, physical description, such as "Uncle John's Frozen Ear," "The Speckled Egg of Mars," "The Rabbit that Tricked Uncle Remus," etc.
- 3 Abstract but appropriate title, going beyond what can be seen and telling a story, such as "Mighty Giovanni of the Frozen Alps," "A Bird in a Cage with a Thousand Eyes," "Princess Mona's Golden Bunny," etc.

**Elaboration**

Two assumptions underlie the scoring of elaboration for the Picture Construction Test. The first is that the minimum and primary response

\* See the Norms-Technical Manual for an explanation of this point.

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 space. However, the basic response itself must be meaningful before elaboration has any worth, or can be scored.

*One point is given for:*

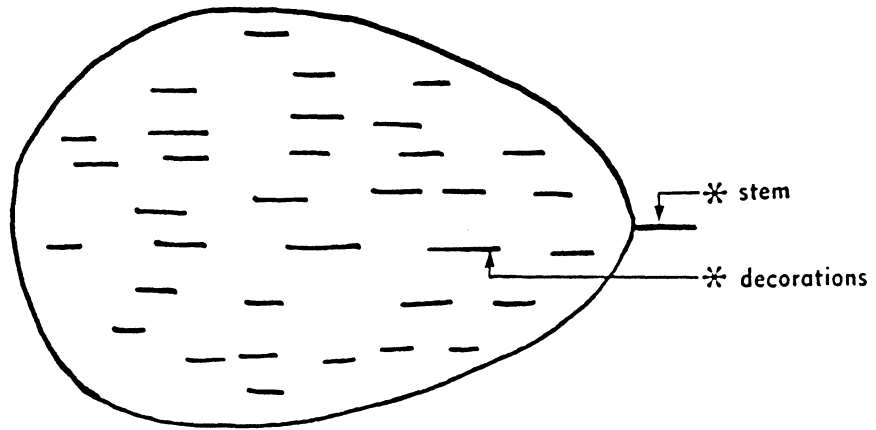
1. Each essential detail of the total response; but once that class of detail is scored, further responses of the same class are not counted. In other words each additional *idea* that contributes to the story the picture tells is given an elaboration point, but further representations of the idea are not. Thus the idea, "holes in cheese" on Example 2, page 16 merits one elaboration point, but *every* hole does not; "bricks" in Example 3, page 37 gets one point for the idea, not one point for *every* brick. On the other hand, each cactus plant in the sample Activity 1, page 39 receives a point because each *adds* an idea—width, dimensionality, depth, size, etc.
2. Color, when it adds an idea to the basic response.
3. Deliberate shading (not just going over the lines again).
4. Decoration, only when meant as such.
5. Each major variation (not of quantity) of design which is meaningful with reference to the total response.
6. Each elaboration in the title beyond the minimum descriptive label.

If a line breaks one part of the picture into two, count the two parts. If the line has meaning (e.g., belt, cuff, seam, neck scarf, window piece, etc.) give an additional point for that item.

The following examples of three levels of elaboration are offered as illustrations:

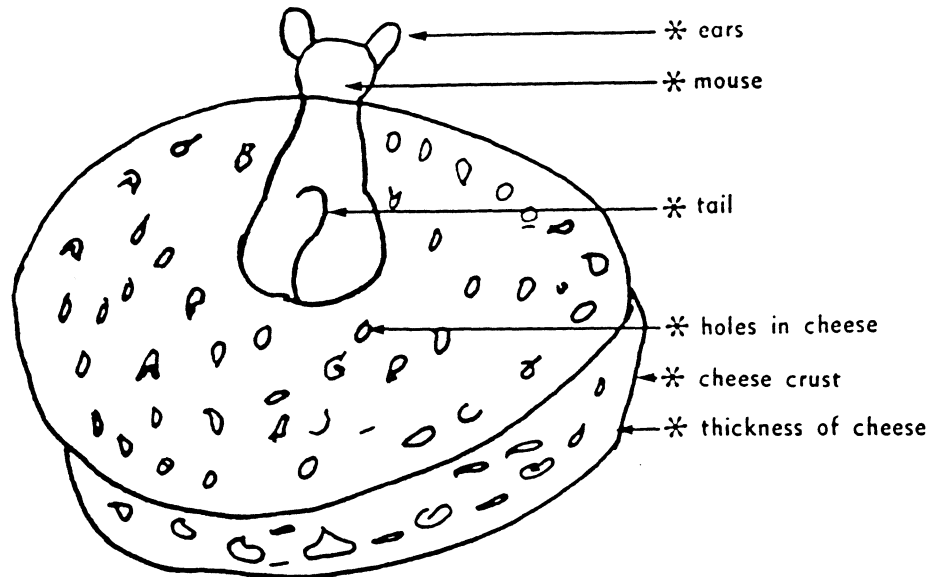


**Example 1**



Title: Pear Points shown by asterisk (\*). Elaboration Score: 2

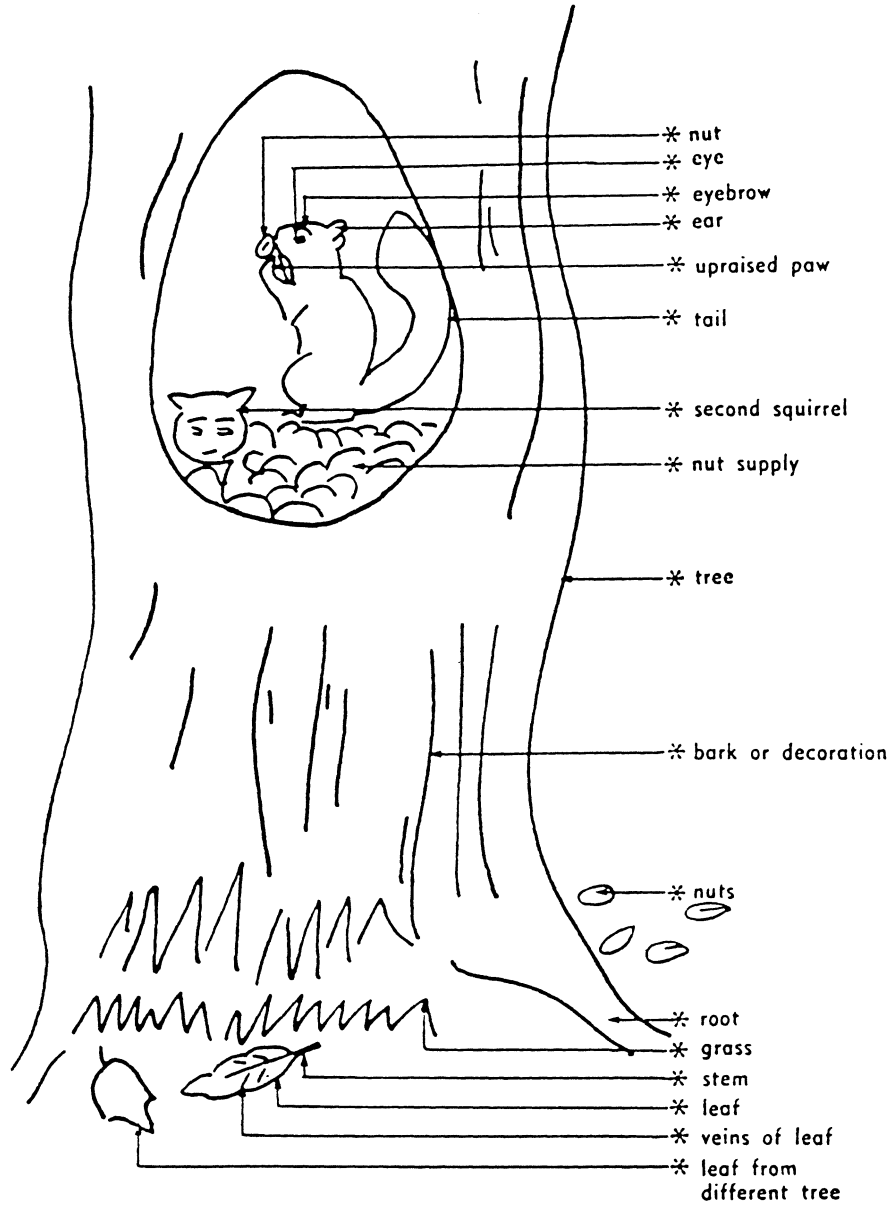
**Example 2**



Title: A Fat Mouse in Cheese Heaven Elaboration Score: 8

Note: The basic object is the block of cheese made from the stimulus. Credit is for ideas added to basic object.

Example 3



Title: Fall Festival in Squirrel Land

Elaboration Score: 19

Note: The basic response here is the Squirrel Hole or Nest.

## Activity 2: PICTURE COMPLETION

### Fluency

The fluency score for Picture Completion is obtained by counting the number of figures completed. The maximum score is 10.

### Flexibility

The flexibility score is obtained by counting the number of different categories into which the responses fall. Both the drawing and the title must be used in determining the category. Below is a list of categories that will best fit approximately 99 per cent of the responses given. New categories should be created for responses which cannot be classified into any of the categories listed here. This may be indicated on the scoring worksheet by "X1" for the first new category created, "X2" for the second new category, etc. Rarely should this be necessary, however. (These category numbers accompanying the zero and one-credit originality responses may be entered on the scoring worksheet at the same time originality weights are determined. The category number of the two-credit responses can then be looked up in the list below.)

1. **ACCESSORIES:** bracelet, crown, glasses, hat, monocle, necklace, purse, etc.
2. **AIRCRAFT:** airplanes, bombers, jets, rockets, space ships, etc.
3. **ANGELS:** other heavenly forms, including angel wings.
4. **ANIMAL:** including animal faces and heads: ape, bear, bull, camel, cat, crocodile, dog (including specific breeds, such as French Poodle, Collie, etc.), deer, elephant, frog, goat, horse, lion, mouse, pig, snail, etc.
5. **ANIMAL TRACKS**
6. **BALLS:** baseball, basketball, beach ball, football, mud ball, snow ball, etc.
7. **BALLOON:** singly or in bunch
8. **BIRD, FOWL:** chicken, crane, duck, flamingo, hen, peacock, penguin, sea gull, swan, turkey, woodpecker, etc.
9. **BOAT:** canoe, house boat, sail boat, ship, etc.
10. **BODY PARTS:** bone, ear, eye, feet, hands, heart, lips, mouth, nose, tongue, etc.
11. **BOOK:** singly or in case, magazines, newspapers, etc.
12. **BOX:** including packages, gifts, presents, etc.
13. **BUILDING:** apartment house, bee house, animal house, church, hotel, house, oriental house, pagoda, temple, etc.
14. **BUILDING MATERIAL:** brick, lumber, pipe, stone, etc.
15. **BUILDING, PARTS OF:** door, floor, walls, roof, window, etc.
16. **CAMPFIRE**

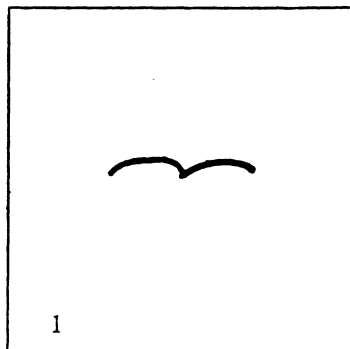
17. **CANE**: candy cane, walking cane, etc.
18. **CAR**: automobile, racer, tractor, truck, etc.
19. **CLOTHING**: bathing suit, blouse, coat, dress, hat, pants, shirt, shorts, skirt, etc.
20. **CLOTHES LINE**: washday and similar uses of clothes lines
21. **CLOUD**: any type of cloud or cloud formation, sky, etc.
22. **CONTAINER**: barrel, box, can, hat box, jug, tank, etc.
23. **CROSS**: Christian Cross, Red Cross, etc.
24. **DESIGN OR DECORATION**: any type of abstract design which cannot be identified as an object, mess, modern art, ribbon bow, etc.
25. **EGG**: including Easter egg, fried eggs, egg characters such as Humpty Dumpty, etc.
26. **ENTERTAINMENT**: circus, dancer, ringmaster, singer, etc.
27. **FISH AND SEA ANIMALS**: gold fish, guppies, whale, etc.
28. **FLOWER**: cactus, daisy, tulip, etc.
29. **FOOD**: bread (loaf), cake, candy, donut, hot dog, hamburger, ice cream, lollipop, marshmallow, nuts, sucker, toast, etc.
30. **FOOTWEAR**: boots, slippers, shoes, etc.
31. **FRUIT**: apple, banana, bowl of fruit, cherries, grapes, lemon, orange, pear, etc.
32. **FURNITURE**: bed, chair, desk, table, TV, etc.
33. **GEOGRAPHY**: beach, cliff, lake, mountain, ocean, river, volcano, waves, etc.
34. **GEOMETRIC FORMS OR DESIGNS**: circle, cone, cube, diamond, square, rectangle, triangle, etc.
35. **HEAVENLY BODY**: Big dipper, constellation, eclipse, moon, star, sun, etc.
36. **HOUSEHOLD ITEMS**: bowl, broom, brush, coffee pot, clock, coat rack, dipper, hanger, tea cup, tooth brush, silverware, etc.
37. **HUMAN BEING, HUMAN FORM**: including human faces, person, specific person such as Mitch Miller, Zsa Zsa Gabor, etc., cowboy, etc.
38. **INSECT**: ants, bee, beetle, bug, butterfly, caterpillar, firefly, flea, fly, praying mantis, spider, tarantula, worm, etc.
39. **KITE**
40. **LADDER**
41. **LETTERS**: of alphabet, singly or on blocks
42. **LIGHT**: candle, flood light, lamp, lantern, electric light, magic lamp, etc.
43. **MACHINE**: coke machine, robot, reducing machine, etc.

44. **MUSIC**: band instruments, bells, cymbal, drum, harp, music stand, musical notes, piano, treble clef, violin, stem of violin, whistle, etc.
45. **NUMERALS**: singly or on blocks
46. **OFFICE AND SCHOOL SUPPLIES**: envelope, paper, paperweight, paper clip, notebook, etc.
47. **PLANT**: grass, shrubbery, etc.
48. **RECREATION**: fishing pole, tennis, Ferris wheel, slide, swing, surf board, roller coaster, swimming pool, ski jump, etc.
49. **ROAD AND ROAD SYSTEM**: bridge, highway, road, road map, turnpike, etc.
50. **ROOM OR PART OF ROOM**: floor, corner of room, wall, etc.
51. **SHELTER (not house)**: farm shed, fox hole, tent, tepee, etc.
52. **SNOWMAN**
53. **SOUND**: radar waves, radio sound waves, tuning fork, etc.
54. **SPACE**: space man, launching pad, rocket man, etc.
55. **SPORTS**: baseball diamond, goal post, race, race track, etc.
56. **STICK MAN** (see HUMAN FORM: do not use a new category)
57. **SUN AND OTHER PLANETS** (See HEAVENLY BODIES, not a new category)
58. **SUPERNATURAL BEINGS**: Aladdin, devil, ghost, Dracula, fairy, Hercules, monster, outerspace creature, witch, etc.
59. **SURFACE TRANSPORTATION** (See CAR: not a new category)
60. **SYMBOL**: badge, flag, question mark, peace symbol, etc.
61. **TIMER**: sand clock, hour glass, sundial, etc.
62. **TOOL**: axe, claw hammer, hammer, rake, etc.
63. **TOY**: jack-in-box, puppet, rocking horse, yo-yo, etc.
64. **TREE**: All kinds of trees, Christmas tree, holly tree, etc.
65. **UMBRELLA**
66. **WEATHER**: lightning, rain, rainbow, rain drops, snow storm, tornado, etc.
67. **WEAPON**: bow and arrow, cannon, gun, rifle, slingshot, etc.
68. **WHEELS**: inner tube, tire, cart wheel, wheel, etc.

#### Originality

The guide for scoring originality is based on a tabulation of the responses submitted by 500 subjects from kindergarten through college. A separate guide has been prepared for each of the ten figures, since each tends to elicit different common responses. Zero and one-point responses are listed below. All other responses showing imagination and creative strength will be awarded *two points*. To facilitate scoring for flexibility, the category number has been placed in parentheses at the left of each response.

FIGURE 1



**Zero points (5% or more of responses)**

- (24) Abstract design without meaningful title
- (8) Bird
- (37) Face or head
- (10) Heart (includes valentine)
- (37) Man (earth), includes boy

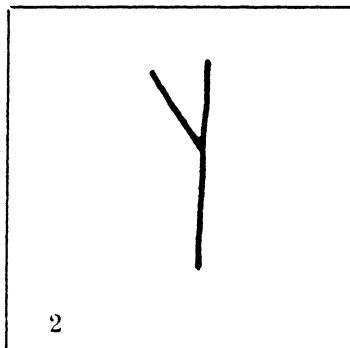
**One point (2% to 4.99%)**

- (31) Apple(s)
- (21) Cloud
- (10) Eyebrows
- (1) Glasses, eye
- (37) Girl or woman
- (10) Lips, mouth
- (58) Man (Mars, etc.)
- (58) Monster

**Two points (less than 2% of responses)**

Other responses showing creative strength. Look up category in list.

FIGURE 2



**Zero points (5% or more of responses)**

- (24) Abstract design without meaningful title
- (67) Slingshot
- (64) Trees

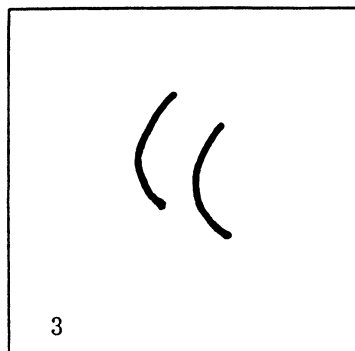
**One point (2% to 4.99%)**

- (37) Face (human)
- (28) Flower
- (37) Girl
- (13) House
- (37) Man (boy)
- (37) Woman (girl)
- (60) Word (symbol, number, letter, etc.)

**Two points (less than 2% of responses)**

Other responses showing creative strength. Determine category from list.

FIGURE 3

**Zero points (5% or more of responses)**

- (24) Abstract design without meaningful title
- (37) Face(s)

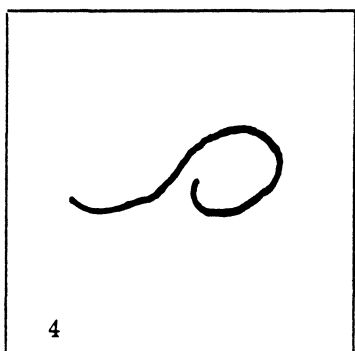
**One point (2% to 4.99%)**

- (4) Animal (face or total)
- (67) Bow and arrow
- (37) Boy (man)
- (37) Girl (woman)
- (37) Man (boy, including stick men)
- (35) Moon
- (48) Sliding board
- (53) Sound waves

**Two points (less than 2% of responses)**

Other responses showing creative strength. Look up categories in list.

FIGURE 4

**Zero points (5% or more of responses)**

- (24) Abstract design without meaningful title
- (4) Animal (unspecified)
- (37) Face
- (37) Man's face
- (4) Snail

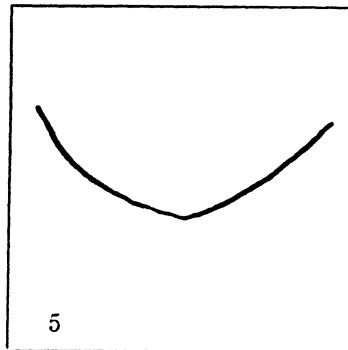
**One point (2% to 4.99%)**

- (37) Body (man)
- (4) Cat
- (8) Duck
- (27) Fish
- (37) Girl (woman)
- (10) Hair
- (37) Man
- (58) Monster (ghost, etc.)
- (10) Nose
- (4) Snake
- (33) Water (waves, pool, etc.)
- (38) Worm

**Two points (less than 2% of responses)**

Other responses requiring creative strength. Check list for categories.

FIGURE 5



**Zero points (5% or more of responses)**

- (24) Abstract design without meaningful title
- (9) Boat (or hull)
- (9) Boat (sail)
- (36) Bowl
- (34) Circle
- (37) Face or head

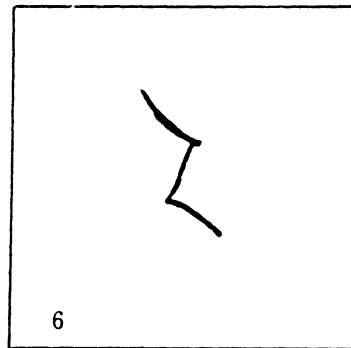
**One point (2% to 4.99%)**

- (25) Egg(s)
- (48) Hammock
- (33) Mountains
- (10) Mouth
- (10) Smile (lips)
- (33) Valley
- (33) Water (stream, pool, lake, wave, etc.)

**Two points (less than 2% of responses)**

Other responses requiring creative strength. Look up categories in list.

FIGURE 6



**Zero points (5% or more of responses)**

- (24) Abstract design without meaningful title
- (37) Face
- (66) Lightning
- (15) Steps (staircase)

**One point (2% to 4.99%)**

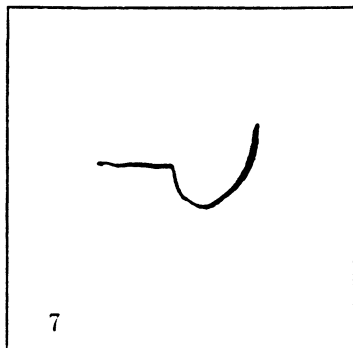
- (32) Chair
- (37) Girl (woman)
- (37) Man (boy)
- (37) Man skating
- (64) Tree

**Two points (less than 2% of responses)**

Other responses requiring creative strength. Determine category from list.



FIGURE 7

**Zero points (5% or more of responses)**

- (24) Abstract design without meaningful title
- (18) Carriage (buggy)
- (60) Question mark(s)
- (4) Snake

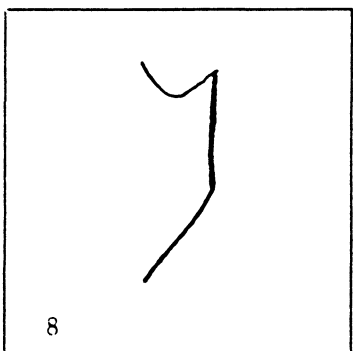
**One point (2% to 4.99%)**

- (18) Auto (car)
- (37) Body (human)
- (36) Dipper
- (37) Face
- (36) Hook
- (36) Key
- (1) Pipe (smoker's)
- (62) Sickle
- (36) Spoon, dipper
- (60) Word (letter, symbol, number)

**Two points (less than 2% of responses)**

Other responses requiring creative strength. Look up categories in list.

FIGURE 8

**Zero points (5% or more of responses)**

- (24) Abstract design without meaningful title
- (37) Man (head and body)
- (37) Man, men (stick)

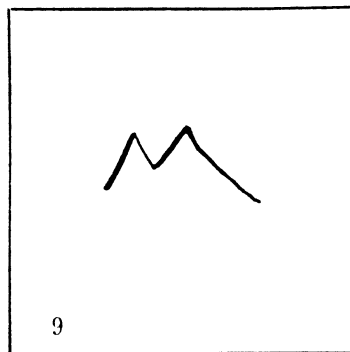
**One point (2% to 4.99%)**

- (19) Dress
- (37) Face
- (37) Girl
- (58) Monster (ghost)
- (67) Shield (medieval, etc.)
- (64) Tree

**Two points (less than 2% of responses)**

Other responses requiring creative strength. Look up categories in list.

FIGURE 9



**Zero points (5% or more of responses)**

- (24) Abstract design without meaningful title
- (33) Mountain(s)
- (37) Nun
- (8) Owl
- (4) Rabbit
- (2) Rocket

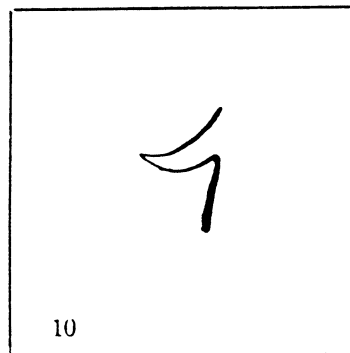
**One point (2% to 4.99%)**

- (4) Cat
- (4) Dog, dog face
- (37) Face
- (37) Man
- (33) Volcano
- (60) Word (number, symbol, letters)

**Two points (less than 2% of responses)**

Other responses requiring creative strength. Check list for categories.

FIGURE 10



**Zero points (5% or more of responses)**

- (24) Abstract design without meaningful title
- (4) Anteater
- (8) Duck
- (37) Face (human)
- (37) Face (mouth and nose only)
- (64) Tree(s)

**One point (2% to 4.99%)**

- (3) Angel
- (8) Bird
- (4) Dog
- (37) Figure (human)
- (37) Girl
- (10) Nose (part of face)
- (8) Woody Woodpecker

**Two points (less than 2% of responses)**

Other responses showing creative strength. Look up categories in list.

**Title Originality (Optional. May be counted as part of Verbal Score  
—See Norms-Technical Manual)**

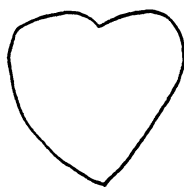
The originality and cleverness of each title is scored according to the criteria outlined for scoring this aspect of performance on the Picture Construction task. The following examples of title for some of the common responses to Figure 1 will illustrate the scoring scheme:

- 0 Obvious class titles, such as "Bird," "Man," "Cloud," "Flower," etc.
- 1 Simple descriptive titles at a concrete level, involving a modifier plus a class, such as "Flying Bird," "Dancing Man," "Pink Cloud," "Tulip." etc.
- 2 Imaginative, descriptive title in which the modifier goes beyond concrete, physical description, such as "Swallows of Capistrano," "Babyless McGraw," "A Cloud Without a Silver Lining," "An Umbrella for a Grasshopper," etc.
- 3 Abstract but appropriate title, going beyond what can be seen and telling a story, such as "The Original Wings Over the World," "King of Hearts in Loveland," "Angel's Launching Pad," "Weeping Flowers of the Valley of Sorrow," etc.

**Elaboration**

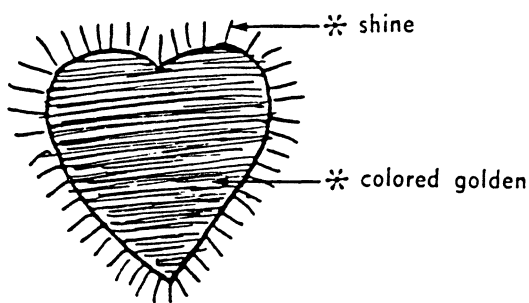
The elaboration score for Incomplete Figures is obtained in the same way as the elaboration score was obtained for Picture Construction. The following three examples of responses to Incomplete Figure 1 will illustrate the rules outlined under Picture Construction, Elaboration:

**Example 1**



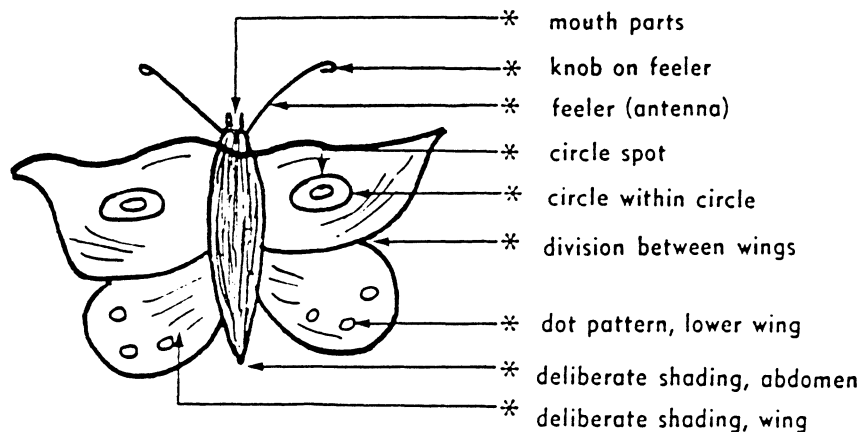
Title: Heart  
Elaboration Score: 0

**Example 2**



Title Heart of Gold<sup>\*</sup>    Elaboration Score: 3

## Example 3



Title: The Two-Eyed Butterfly

Elaboration Score: 10

## Activity 3: PARALLEL LINES

## Fluency

Before beginning the scoring of the Parallel Lines Test, it is important that checks be made for repetitions and relevancy and that these responses be eliminated from consideration in all scoring. A relevant response is defined as one which contains or makes use in some way of the parallel lines (the stimulus element of the task). Responses which duplicate or repeat an earlier credited response are also eliminated.

The fluency score is simply the number of responses minus the number of duplications and irrelevant responses.

## Flexibility

The flexibility score is obtained by counting the number of different categories into which the subject's responses can be classified. The following categories were derived from the responses of 500 subjects from kindergarten through college. In cases where responses cannot be classified into any of the categories listed below, new categories should be created. They may be indicated on the scoring worksheet by "X1" for the first new category, "X2" for the second new category, etc. Rarely should this be necessary since these categories cover over 99 per cent of the responses given by the 500 subjects.

1. **AIR TRAVEL:** airplane, space ship, cone of space craft, airport, helicopter.
2. **AIR WEAPON:** arrows, atom bombs, bombs, rockets, etc.
3. **ALPHABET:** All letters of the alphabet—A, B, C, D, etc. and combinations of letters, such as IT.

4. **ANIMAL OR ANIMAL PART:** antlers, bat, cat, claws, dog, dog's face, donkey, elephant, giraffe, rabbit, horse, lion, monkey, mice, octopus, porcupine, pig's face, turtle, tiger, etc.
5. **APPAREL:** belt, boot, bow tie, coat, dress, button, hat, necktie, pants, shirt, shoe, skirt, shoe lace, socks, shorts, top hat, etc.
6. **ART AND ART MATERIALS:** art set, crayon, drawing board, design, Indian design, abstract design, modern art, paint, picture, etc.
7. **AUTOMOBILE ACCESSORIES:** inner tube, wheels, horn, etc.
8. **BODY OR BODY PART:** arm, ear, eye, face, figure, feet, bone, brain, legs, hair, hand, mouth, head, nose, male figure, female figure, teeth, torso, etc.
9. **BOOKS:** Bible, books, back of book, page of book, dictionary, library, newspaper, etc.
10. **BUILDING:** bank, barn, apartment house, capitol, ancient ruins, church, cabin, bird house, dog house, Empire State Building, Rand Tower, hotel, home, hut, house, skyscraper, fire house, gas station, garage, fort, igloo, lighthouse, London Tower, motel, palace, post office, restaurant, school, temple, train station, Taj Mahal, White House, etc.
11. **BUILDING ATTACHMENTS AND ACCESSORIES:** elevator, fence, gate, key hole, latch, mailbox, outhouse, smoke stack, swinging door, steeple, water hose, windmill, well, etc.
12. **BUILDING MATERIALS OR EQUIPMENT:** bricks, lumber, pole, steam shovel, stones, etc.
13. **BUILDING PART:** ceiling, chimney, door, fireplace, floor, roof, steps, stairs, window, etc.
14. **CLOCKS AND OTHER DEVICES FOR MEASURING TIME:** Big Ben, calendar, calendar clock, hour glass, sand clock, sundial, timer, etc.
15. **CONTAINERS:** bag, barrel, basket, bottle, box, bucket, cage, can, cereal box, cup, flour bag, flower pot, fish bowl, gas tank, garbage can, fruit jar, jar, lunch box, mug, pail, purse, shoe box, tank, trash can, trunk, etc.
16. **DECORATION:** bow, bunting, Indian headdress, ribbon, etc.
17. **DRINK:** beer, coke, milk, water, etc.
18. **FISH AND FISH COLLECTIONS:** aquarium, fish, sardines, tank of fish, etc.
19. **FLOWER:** flower, tulip, etc.
20. **FOOD:** breakfast, brownie, candy, cereal, cake, cheese, carrot, cookie, egg, fudge, groceries, hot dog, ice cream, lollipop, loaf of bread, lunch, mushroom, nuts, pie, popsicle, popcorn (box of), peanut butter, pickle, sizzling bacon, snack, soda, sandwich, suckers, sundae, sugar cane, shish-kabob, etc.

21. **FOWL**: bird, chicken, duck, flamingo, etc.
22. **FRAME**: picture frame, etc.
23. **FRUIT**: banana, raisin, tray of fruit, mango, etc.
24. **FURNITURE**: bed, bureau, chair, chest of drawers, cot, crib, cupboard, desk, desk top, Navy bunks, safe, table, etc.
25. **GAMES**: checkers, crossword puzzle, dominoes, Chinese game, hop scotch, pick up sticks, tag, tick-tack-toe, etc.
26. **GEOGRAPHY**: aerial view, crater, lake, lava, lover's leap, map, mountains, pyramid, river, road map, Bering Strait, seascape, volcano, waterfall, etc.
27. **GEOMETRIC SHAPES**: cube, cylinder, diamond, magic square, rectangle, square, semi-circles, etc.
28. **HEAVENLY BODIES**: comet, solar system, stars, etc.
29. **HOUSEHOLD ITEMS** (excluding furniture): bathroom scales, brush, bowl, broom, cookie jar, coat hanger, coffee pot, fly swatter, fork, heater, kettle, knife, mat, matches, mop, needle, oven, pan, play pen, pepper shaker, pot, refrigerator, rug, saucer, salt shaker, shower curtains, shelf, stove, silverware, sink, soap, spool of thread, sprinkler, table mat, thread, teapot, tub, thermostat, utensils, vase, waste basket, washboard, etc.
30. **HUMAN BEINGS**: boy, clown, Chinese, children, cook, doctor, dancing girls, dunce, fireman, fisherman, girl, giant, Indian, Jew, lady, man, men, human figure, twins, woman, etc.
31. **INSECTS**: bee, bug, butterfly, spider, spider web, vampire, etc.
32. **LADDER**: house ladder, ladder, step ladder, etc.
33. **LEATHER GOODS**: billfold, brief case, luggage, etc.
34. **LIGHT**: candle, candlelight, lamp bulb, light, light switch, lighter, spotlight, street light, etc.
35. **LINEN**: table cloth, sheet, towel, etc.
36. **MACHINES**: camera, coke machine, cash register, computer, crane, dryer, electronic brain, mechanical man, robot, time machine, washing machine, etc.
37. **MEDICINE**: pills, etc.
38. **MONEY**: check, dollar, dollar sign, money, etc.
39. **MUSIC**: baton, bell, bugle, drum, flute, horn, harmonica, music box, musical notes, piano, phonograph, record player, treble clef, violin, cello, whistle, etc.
40. **NUMERALS**: Arabic (11, 77, 76, 99, etc.), Roman (II, IV, etc.)
41. **PACKAGE**: gift, package, parcel, present, etc.
42. **PLANTS**: cactus, grass, giant beans, hops, seeds, etc.
43. **POLE AND LINES**: clothes line, telephone poles and line, etc.

44. **PRISON**: bars, cage, hand cuffs, hideout, jail, etc.
45. **RECREATION AND ENTERTAINMENT**: exercise bars, monkey bars, movie screen, pool table, pool, ride, roller coaster, swimming pool, skin diver, show, slide, stage, strong man, swing, etc.
46. **ROAD OR ROAD SYSTEM**: bridge, crossing, highway, road, etc.
47. **ROYALTY**: king, prince, princess, queen, throne, etc.
48. **SCHOOL**: blackboard, chalkboard, homework, spelling chart, poster, etc.
49. **SCHOOL AND OFFICE SUPPLIES**: eraser, envelope, folder, glue, ink, notebook, paper, pencil, pen, pencil sharpener, ruler, tablet, etc.
50. **SCIENCE**: magnet, microscope, mercury, oscilloscope, test tube, telescope, thermometer, etc.
51. **SHELTER** (not buildings): bomb shelter, cave, fallout shelter, dugout, tepee, etc.
52. **SOUND AND SOUND SYSTEMS**: radar, radio, sonar, switchboard, sound wave, tuning fork, etc.
53. **SPACE**: spaceman, space capsule, space suit, sputnik, etc.
54. **SPORTS**: badminton, ball, bat, boxing match, catcher, diamond (baseball), drag race, field goal, 50-yard dash, goal post, gym set, high dive, high jump, pitcher, pole vault, race track, scoreboard, stadium (football), soccer goal, etc.
55. **STORAGE**: elevator, silo, etc.
56. **STREET AND STREET SYSTEMS**: alley, city block, parking lot, parking meter, sidewalk, street, uptown, Wall Street, etc.
57. **SUPERNATURAL CREATURES**: angel, elf, fairy, ghost, Martian, Moon Man, Moon Woman, Santa Claus, witch, etc.
58. **SURFACE TRAVEL**: boxcar, bicycle, car, cart, covered wagon, convertible, cable car, railroad, railroad tracks, sled, stagecoach, tire tread, trailer, train, truck, van, wagon, etc.
59. **SYMBOLS AND SIGNS**: Army emblem, cross, barber pole, crown, flag, Nazi patch, NE, question mark, sign, signal, stop signal, swastika, symbol, totem pole, etc.
60. **TELEVISION**
61. **TOBACCO**: cigarette, cigar, pipe, etc.
62. **TOOLS**: axe, hammer, pitch fork, rake, shovel, etc.
63. **TOYS**: ball, blocks, firecracker, jack-in-the-box, jig saw puzzle, pea shooter, playhouse, potato head, puppet, Pinocchio, pin wheels, stilts, tin dog, tin man, toy, etc.
64. **TREE**: all kinds including Christmas, cedar, decorative, shade, forest, log, palm tree, pine, etc.

65. **WATER TRAVEL:** boat, canoe, sail, ship, snorkel, submarine, etc.
66. **WEAPONS OR TRAPS** (not air weapons): bear trap, bullet, cannon, dynamite, gun, magazine (ammunition), pistol, shield, TNT, torpedo, etc.
67. **WEATHER AND SEASONS:** rain, snow, snow storm, sun rays, sunset, spring, umbrella, etc.
68. **WINDOWS:** blinds, curtains, draped windows, windows, etc.

### Originality

Scoring for originality is based on tabulations of the responses of 500 subjects from kindergarten through college. Responses found in 20 per cent or more of the records are given no credit. Responses occurring in from 5 to 19 per cent of the records are scored one point; those occurring in 2 to 4 per cent of the records are awarded two points. All other responses showing imagination and creative strength are awarded *three* points. Determine the flexibility category of such three-credit responses by looking them up in the category list above.

Responses scored zero, one, two and three points are listed below as a guide to obtaining the originality score for this activity. Flexibility categories are given in one column and originality weights in the second.

Response	Flex. Categ.	Orig. Wgt.	Response	Flex. Categ.	Orig. Wgt.
Abacus .....	49	3	Bridge .....	46	2
Abstract design .....	6	0	Broom .....	29	3
Airplane .....	1	3	Bucket (paint, water) .....	15	2
Apartment (building) .....	10	2	Bullet, shell .....	66	2
Arrow(s) .....	2	2	Butterfly .....	31	2
Automobile .....	58	2	Cabinet (cupboard) .....	24	3
Balloons .....	63	3	Cage (for animal) .....	15	2
Barn .....	10	2	Cake .....	20	2
Basket .....	15	3	Calendar .....	14	2
Bed(s) .....	24	2	Camera .....	36	3
Bible .....	9	0	Can, metal .....	15	1
Bird(s) .....	21	3	Candle(s) .....	34	1
Birdhouse .....	10	3	Candy, (peppermint) .....	20	2
Blackboard .....	48	2	Candy, bar .....	20	2
Block (toy) .....	63	3	Car, automobile .....	58	2
Board .....	12	1	Cards, playing .....	25	3
Boat (motor, sail, etc.) .....	65	1	Castle .....	10	3
Book .....	9	0	Cat .....	4	3
Bookshelf .....	24	3	Cave .....	51	3
Bottle .....	15	1	Chair(s) .....	24	1
Bow (tie, ribbon) .....	16	2	Chalkboard (black-		
Box(es) .....	15	0	board) .....	48	2
Bread, loaf .....	20	3	Checkerboard .....	25	1



Response	Flex. Categ.	Orig. Wgt.	Response	Categ. Flex.	Wgt. Orig.
Chewing gum, stick ..20		3	Glass (drinking) ....15		1
Chimney(ies) .....13		2	Goalposts, football ...54		1
Church .....10		3	Hammer .....62		3
City skyline, buildings 26		2	Hat ..... 5		1
Clock .....14		1	Hexagon .....27		0
Clothesline .....43		3	Highway .....46		1
Coat ..... 5		3	Horse ..... 4		3
Columns (building) ..13		3	Hourglass .....14		1
Crayon(s) ..... 6		2	House .....10		0
Crayon box .....15		2	House (tree) .....51		3
Cross (religious) ....59		2	Hut (no house or tree house) .....51		2
Crown (king) .....59		3			
Cube (square) .....27		1	Ice cream cone .....20		2
Cup .....15		2			
Cylinder (geometric) .27		3	Jack-in-the-Box .....63		2
			Jail (not window) ...44		2
Desk .....24		2	Jar (container, jelly, face cream, etc.) ..15		3
Diving board .....45		3			
Dog ..... 4		3	Kite (box) .....63		3
Doghouse .....10		3	Knife(ves) .....29		3
Dollar bill .....38		3			
Door .....13		0	Ladder .....32		0
Dress ..... 5		2	Leg(s) (man) ..... 8		2
Drum .....39		2	Letter (to person) ..49		2
Dynamite .....66		2	Letter(s) (alphabet) . 3		0
			Light (lamp) .....34		2
Egg(s) .....20		3	Lighthouse .....10		3
Envelope .....49		3	Light socket (receptacle) .....29		3
Eye(s) ..... 8		3	Light switch .....29		3
Eyeglasses ..... 5		3	Log (tree) .....64		3
			Lollipop .....20		2
Face(s) ..... 8		0			
Fence .....11		1	Mailbox .....11		2
Fireplace .....13		2	Man (figure or stick) .30		0
Firecrackers .....63		3	Map .....26		3
Fish .....18		3	Maze .....25		3
Flag(s) .....59		1	Milk carton .....15		1
Flower (tulip, rose, etc.) .....19		1	Mirror .....29		3
Flowerpot .....15		3	Monster (whole) ....57		2
Football field .....54		3	Mountain peaks .....26		3
Fork (to eat with) ..29		3	Mug (drinking) .....15		3
Frame (picture) ....22		0	Mushroom .....42		3
			Musical note(s) .....39		3
Garbage can .....15		2			
Gate, fence gate ....11		2	Number(s) (Arabic and Roman) .....40		0
Geometric design ....27		0			
Gift .....41		1			
Girl, face ..... 8		0			

Response	Flex. Categ.	Orig. Wgt.	Response	Flex. Categ.	Orig. Wgt.
Outhouse	11	3	String	29	3
Pail	15	2	Suckers (lollipops)	20	2
Pants (man's)	5	1	Swimming pool	45	3
Paper, piece of, sheet, typing	49	1	Swing, swing set (play)	45	1
Pencil(s)	49	1	Table	24	1
Picture	6	1	Tank (container)	15	3
Picture frame	22	0	Telephone poles	43	2
Pocketbook (woman's)	15	2	Television	60	1
Pot (container)	15	3	Tick-tack-toe	25	1
Present	41	1	Tombstone	59	3
Prison building	44	2	Tower (to climb) (watch, water, Pisa, Eiffel)	10	3
Privy	11	3	Train track	58	2
Radio	52	3	Trash can	15	2
Railroad track	58	1	Tree(s)	64	0
Rectangle	27	0	Tree stump; trunk (not a log)	64	3
Road (street)	46	1	Truck	58	2
Robot	36	2	Umbrella(s)	5	3
Rocket	2	1	Vase (for flowers)	15	3
Room (in building)	11	3	Wagon, covered	58	3
Ruler	49	3	Wall(s)	13	3
Sack (bag)	15	2	Washing machine	36	3
School buildings	10	2	Washboard	29	3
Shirt	5	2	Wastebasket	29	2
Shoe (boot)	5	3	Weapon, collection (bow and arrow; bow and gun)	66	2
Sign, advertising	59	2	Window	68	0
Sign, traffic	59	2	Window, jail	68	1
Silo	10	2	Woman (face)	8	1
Skyscraper (building)	10	2			
Spaceship	1	2			
Spool, spindle	29	3			
Stairs, steps	13	1			
Stilts	45	2			
Stove	29	3			

### Bonus Originality Scoring

There has always been a question about scoring responses for Activity 3 on Figural Form A when the pupil combines two or more sets of parallel lines to make a single response. It has always been recognized that such responses indicate a rather high level of originality. First, such responses are relatively rare and this is one reason why no provisions have been previously established for special scoring procedures. Second, such responses definitely represent a departure from the com-

monplace and established. The test instructions and format of the booklet definitely establish a set to make a separate object from each pair of parallel lines. Combining two or more pairs is not forbidden, however, and this strategy has been deliberate. The rationale for this position is that the creative person sees possibilities that others assume have been closed out. As results have come in from pre- and post-testing where there have been intervening experiences to facilitate creative development, this combining kind of behavior has become more frequent in the post-test. A re-evaluation of this problem in the light of evidence from such studies and in light of theoretical rationale makes it quite clear that bonus points for originality should be awarded for such combining responses. The following scheme has been adopted by the author and is recommended for general use:

Combining two sets of parallel lines (as in a picket fence, neighboring houses, etc.), TWO BONUS POINTS

Combining three to five sets of parallel lines, FIVE BONUS POINTS

Combining six to ten parallel lines, TEN BONUS POINTS

Combining eleven to fifteen sets of parallel lines, FIFTEEN BONUS POINTS

Combining more than fifteen sets of parallel lines, TWENTY BONUS POINTS

Bonus points are added to whatever originality score the pupil has already been awarded for Activity 3 on the basis of the described procedures. This grand total then becomes his originality score for the activity.\*

Responses showing truly exceptional originality may be given additional credit but this will be rare. These are the kinds of responses that the scorer recognizes immediately as "original beyond the scope of a scoring guide."

#### Title Originality

Experience has thus far indicated that scoring for Title Originality in this activity is not worthwhile.

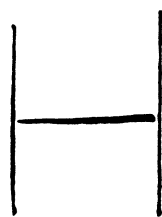
#### Elaboration

The principles for scoring elaboration for the Parallel Lines Activity are the same as those that have been stated for the Picture Construction and Picture Completion Activities. The problem is to determine the number of ideas communicated by each object, IN ADDITION TO THE MINIMUM BASIC IDEA. (A guide to what constitutes the minimum basic idea for a number of the more frequent drawings is found directly below.) How much of a story does the response tell? No score is allowed for titles.

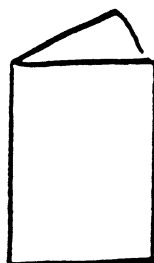
---

\* Researchers using this test in a pre- and post-test design must be consistent in their test-retest originality scoring. If the bonus score was not computed for the pre-test, it should not be used in the post-test score that is used for inter-test comparisons. It is also possible to rescore the pre-test, adding the bonus points, in which case the bonus point scoring should also be used in the post-test.

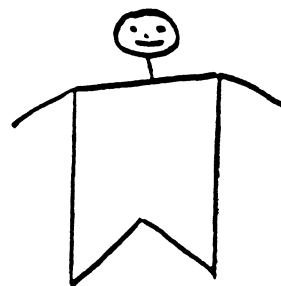
Responses Representing Minimum Basic Ideas



Alphabet



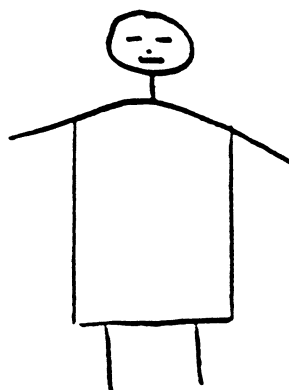
Book



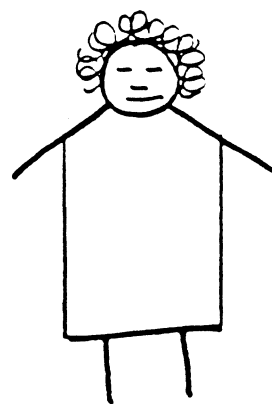
Boy



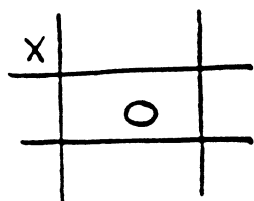
Face, Human



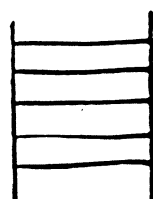
Figure, Human



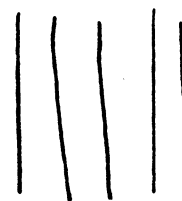
Girl



Game of Tic-tac-toe



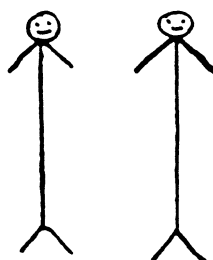
Ladder



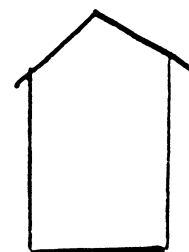
Lines



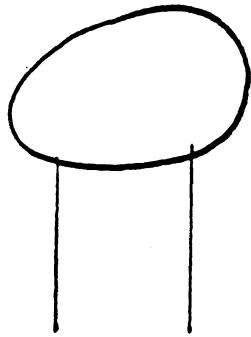
Man



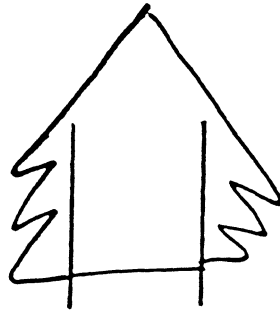
Men, Stick



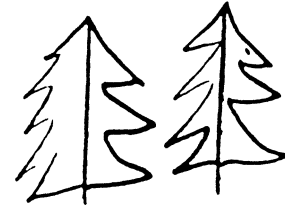
Missile



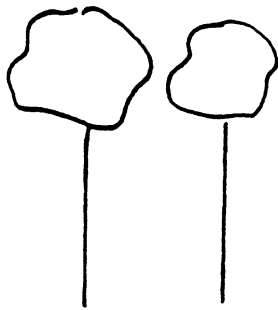
Tree



Tree



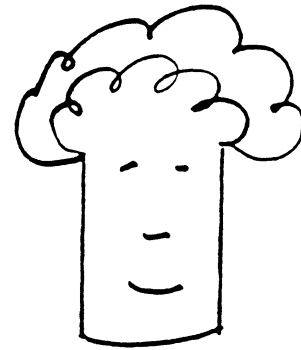
Trees



Trees



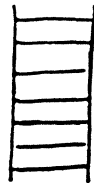
Window



Woman

The following are additional scoring illustrations for the Parallel Lines Activity:

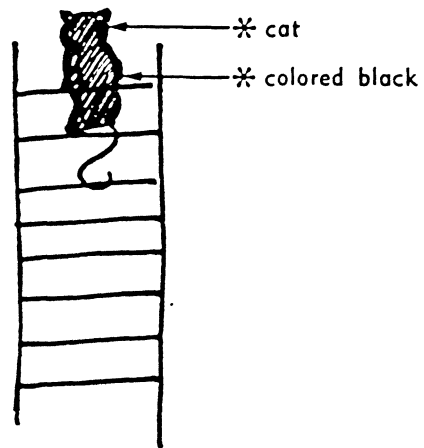
Example 1



Ladder

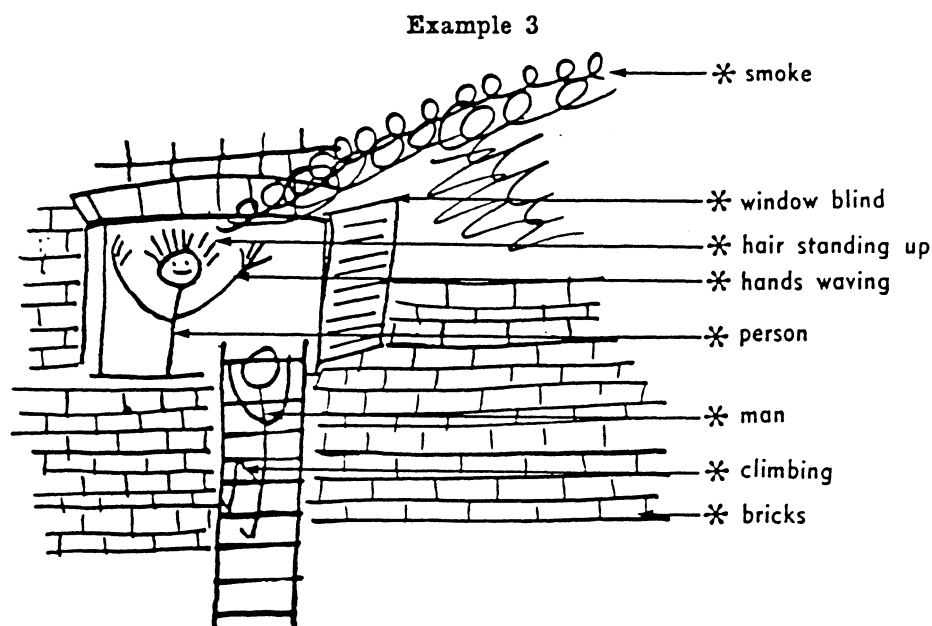
Elaboration Score: 0

Example 2



Cat on Ladder

Elaboration Score: 2



Fireman Rescuing Woman

Elaboration Score: 8

### Example of Complete Scored Test Booklet

On the pages following is reproduced, for the guidance of examiners, a complete Figural A test booklet, as done by a fourth grade girl. Scoring marks and tabulations, as annotated by the examiner, have been left on the booklet "as-is".

On page 38 is reproduced the Scoring Worksheet for this booklet. On it, the examiner has transferred his annotations from the booklet and summarized them. Total raw scores for each scoring category were cumulated in the Score Summary box and transformed into T-Scores, using the norms table for Figural Booklet A from the *Norms-Technical Manual*.

Prior to scoring other tests, the examiner might wish to score this example, first covering the scoring notes.

### Scoring Annotations

On Activity 1, an asterisk has been placed near each point of detail in the drawing which the examiner considered to be an elaboration over the basic drawing, a bird. The elaboration score was then determined by cumulating these points. The originality score was established by reference to the guide on page 14 of this manual.

Following each response in Activities 2 and 3 will be found three numbers separated by dashes. The first number represents the flexibility *category* for the response, the second is the originality *weight*, and the third is the elaboration score. Titles given the drawings were used in elaboration scoring for Activities 1 and 2 but not for any other scoring.

SCORING WORKSHEET

TORRANCE TESTS OF CREATIVE THINKING, FIGURAL FORMS A and B

Pupil's Name Bentwell, Alvina Sex F Test Date 10/13/71  
 School Suder Age 9 Grade 4 Scorer Leo

Form A

Resp. No.	Activity 1		Activity 2			Activity 3		
	Orig.	Elab.	Categ.	Orig.	Elab.	Categ.	Orig.	Elab.
1	3	18	21	1	3	45	3	3
2			64	0	6	39	3	1
3			67	1	5	15	3	1
4			33	1	7	10	0	3
5			36	0	5	45	1	2
6			19	2	3	41	1	2
7			<del>36</del>	1	6	9	0	3
8			37	0	3	68	0	2
9			4	1	5	52	3	3
10						49	1	3
11						58	3	6
12						<del>10</del>	3	5
13						51	3	2
14						<del>10</del>	2	5
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

SCORE SUMMARY

	FLU	FLEX	ORIG	ELAB
Act. 1	<del>X</del>	<del>X</del>	3	18
Act. 2	9	8	7	43
Act. 3	14	11	26	41
TOTAL	23	19	36	102
T SCORE	48	55	63	70

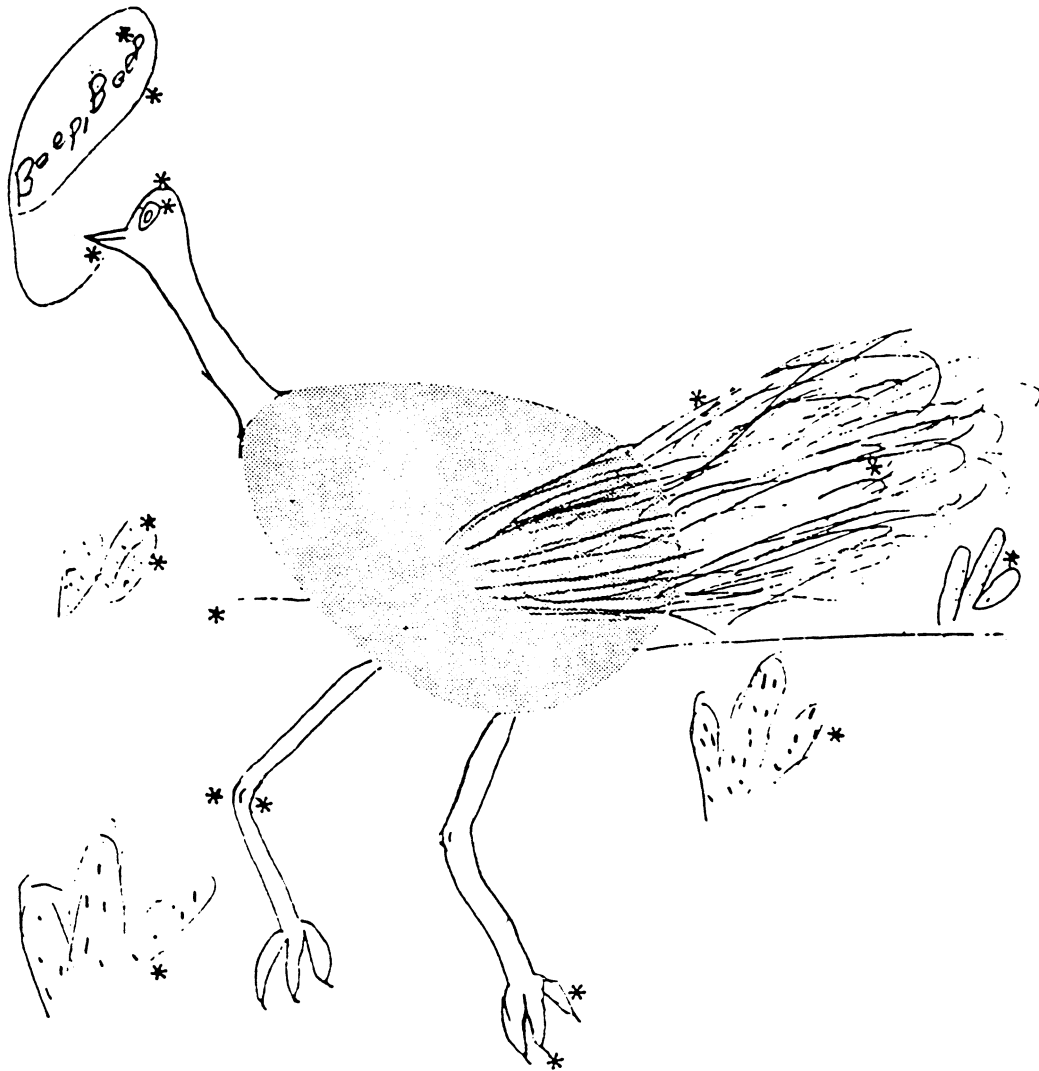
COMMENTS:

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Activity 1. PICTURE CONSTRUCTION

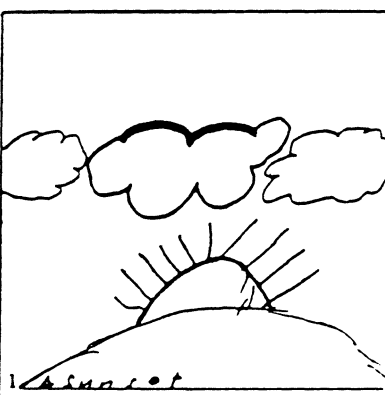
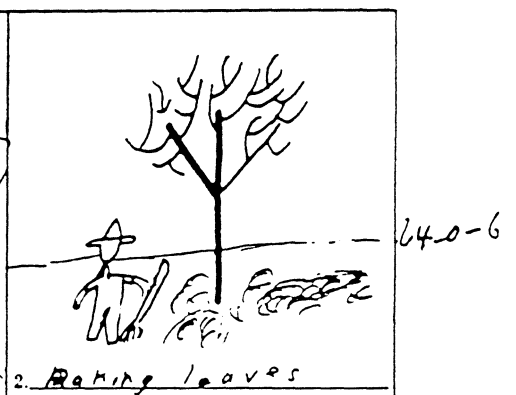
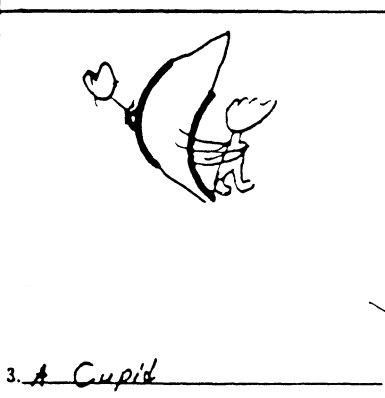
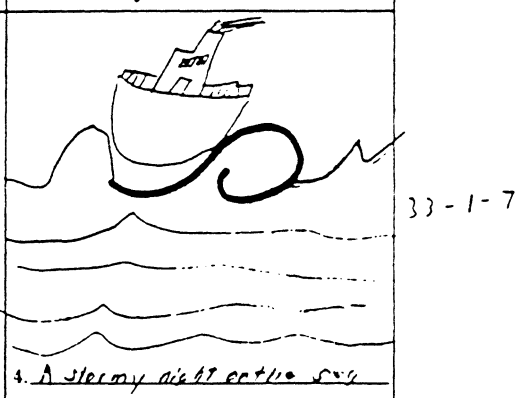


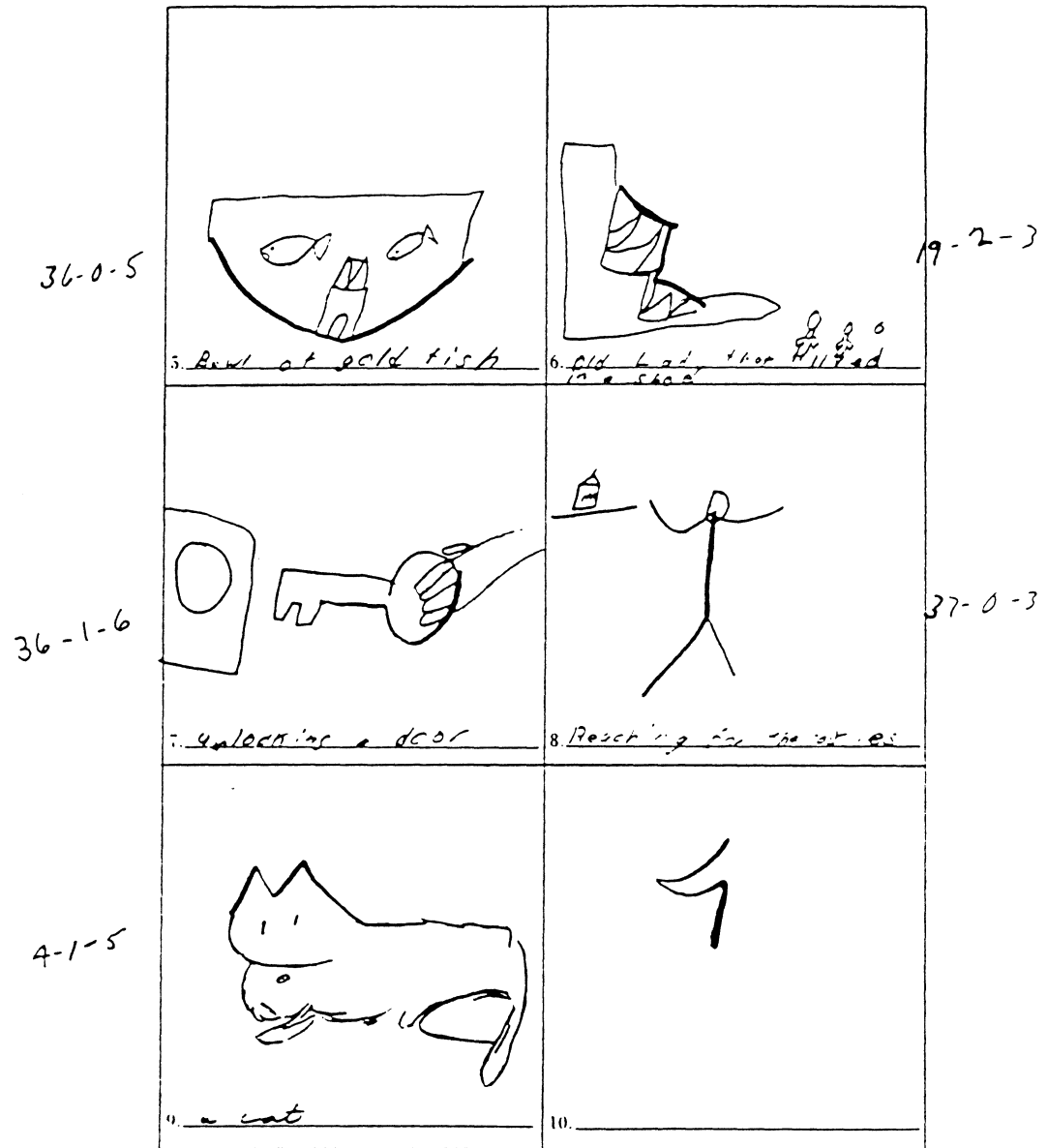
YOUR TITLE The Desert Road Runner



Activity 2. PICTURE COMPLETION

By adding lines to the incomplete figures on this and the next page, you can sketch some interesting objects or pictures. Again, try to think of some picture or object that no one else will think of. Try to make it tell as complete and as interesting a story as you can by adding to and building up your first idea. Make up an interesting title for each of your drawings and write it at the bottom of each block next to the number of the figure.


<p>21-1-3</p>  <p>1. A sunset</p>	 <p>2. Raining leaves</p> <p>64-0-6</p>
<p>67-1-5</p>  <p>3. A Cupid</p>	 <p>4. A stormy night on the sea</p> <p>33-1-7</p>



Activity 3. LINES


In ten minutes see how many objects or pictures you can make from the pairs of straight lines below and on the next two pages. The pairs of straight lines should be the main part of whatever you make. With pencil or crayon add lines to the pairs of lines to complete your picture. You can place marks between the lines, on the lines, and outside the lines—wherever you want to in order to make your picture. Try to think of things that no one else will think of. Make as many different pictures or objects as you can and put as many ideas as you can in each one. Make them tell as complete and as interesting a story as you can. Add names or titles in the spaces provided.

45-3-3




1. diving board

39-3-1

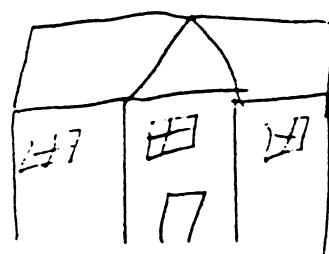


2. a piano


15-1-1




3. a sailboat



4. The white house  
10-0-3



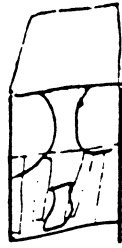
5. a swing set  
45-1-2



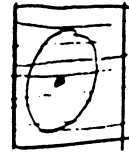
6. a little girl's gift  
41-1-2



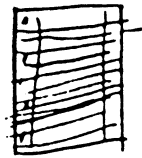
7. a book  
9-0-3



8. a window  
68-0-2



9. a window  
52-3-3



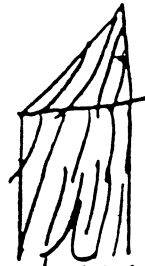
10. a sheet of paper  
49-1-3



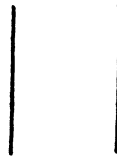
11. a bus  
58-3-6



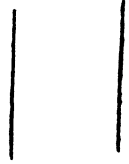
12. a church  
10-3-5



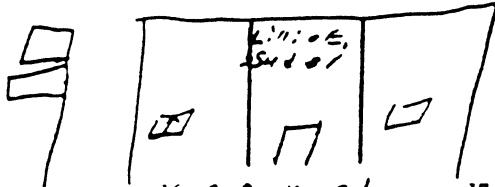
13. a circus  
51-3-2



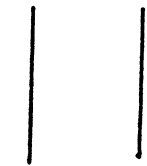
14. \_\_\_\_\_



15. \_\_\_\_\_



16. a school  
10-2-5



17. \_\_\_\_\_



18. \_\_\_\_\_

GO ON TO NEXT PAGE

# TORRANCE TESTS OF CREATIVE THINKING

by E. Paul Torrance, Ph.D.

DIRECTIONS MANUAL  
AND  
SCORING GUIDE

**VERBAL TEST BOOKLET A**

Published by: SCHOLASTIC TESTING SERVICE, INC.  
480 MEYER RD., BENSenville, ILL. 60015

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 Printed in the United States of America.

## INTRODUCTION

This manual includes directions for administering and scoring the *Torrance Tests of Creative Thinking*, Verbal, Form A. The Verbal Test is appropriate for use in fourth grade through graduate school in groups, as an individual test from kindergarten through grade 3. Other tests in this series include an alternate Verbal Test, Form B, and two Figural Tests, Forms A and B. Figural tests may be used from kindergarten through graduate school. For each test there is a manual designated as the Directions Manual and Scoring Guide, containing all information necessary to administer and score the test. A single Norms-Technical Manual, covering all four tests, includes the theoretical and statistical background material underlying testing of creative thinking. It also includes normative information.

Examiners should note that the test booklets are titled *Thinking Creatively With Words, Booklet A*. This is the "working title" for the Verbal Test, Form A, and it is employed in an attempt to reduce the examinee's perception of being tested when he is confronted with creative thinking materials. Although the booklets will be referred to as "tests" in the manuals and other material designed for the examiner, use of "tests" and testing terminology with the pupils is discouraged.

Examiners not familiar with Dr. Torrance's concepts of creative thinking and its measurement are urged to inform themselves before using this test. Much of this background material is to be found in the Norms-Technical Manual which also includes an extended bibliography of the author's publications. Five especially helpful references follow:

- Torrance, E. Paul. *Guiding Creative Talent*. Englewood Cliffs, N.J.: Prentice-Hall, 1962, Chaps. 2, 3, and Appendix.
- Torrance, E. Paul. *Rewarding Creative Behavior: Experiments in Classroom Creativity*. Englewood Cliffs, N. J.: Prentice-Hall, 1965, Chap. 3 and Appendix A.
- Torrance, E. Paul.. "Scientific Views of Creativity and Factors Affecting Its Growth." *Daedalus*, Summer, 1965, 94, 663-681.
- Torrance, E. P. "The Minnesota Studies of Creative Behavior: National and International Extensions." *Journal of Creative Behavior*, 1967, 1, 137-154.
- Torrance, E. P. "Examples and Rationales of Test Tasks for Assessing Creative Abilities." *Journal of Creative Behavior*, 1968, 2, 165-178.
- Torrance, E. P. "Predictive Validity of the Torrance Tests of Creative Thinking." *Journal of Creative Behavior*, 1972, 6, 236-252.

## PREPARING FOR THE TEST

Because the *Torrance Tests of Creative Thinking*, verbal forms, require written responses, administration to groups of pupils is recommended for fourth grade through graduate school. The Verbal Test may be given in individual fashion to younger pupils, as low as kindergarten. Directions for individual administration are given on page 8.

Before administering the tests, the examiner should read completely through the directions, familiarizing himself with all aspects of the mechanics of administration. In Activity 4: Product Improvement, it is necessary to exhibit to the examinees a toy elephant. The elephant used should be the standard model supplied in the Examiner's Kit, available from the publisher. Use of a toy other than this standard model could result in response patterns unanticipated in the norms.

Examiners should note that the word "test" has not been used on the booklet nor in the printed instructions. If the examinees' materials must be referred to, the use of a word like "booklet" or "exercises" is suggested. However, if examiners follow the procedures in the section "Administering the Verbal Tests-Groups," the proper language and non-test atmosphere can be developed. It is recommended that, in general, a game-like, thinking, or problem-solving atmosphere be created. Try to avoid the threatening situation frequently associated with testing. Create the expectation that examinees will enjoy the activities and invite them to "have fun." The psychological climate, both preceding and during the use of the tests, should be as comfortable and stimulating as possible. The only exception to this principle would be the condition under which the examiner is conducting some controlled experiment involving stress.

The examiner should also assure that the physical conditions for testing are good. Make certain that an adequate supply of test booklets is at hand, that everyone has a pencil (ordinary pencils will do), and that room temperature is as comfortable as weather conditions and existing facilities for the control of temperature and atmosphere permit.

Examinees need no equipment other than their booklets and pencils. Examiners will need a copy of this manual, a copy of the test booklet for reference, the toy elephant mentioned above, and an accurate timing device, preferably a stop watch. Examiners will also need, when administering the test individually, a reproduction printed on cardboard of the picture used in Activities 1-3: Ask-and-Guess. This picture is supplied in the Examiner's Kit.

Testing in large groups of combined classes in lunch rooms, auditoriums, and the like should be avoided. In most cases, the usual class size of 15 to 35 is all right. Where practical, however, it is suggested that children in the fourth grade be tested in smaller groups. For example, it might be possible to split a class of 30 into two groups of 15 each and test them in different rooms. Or, the testing activity could be alternated with some other activity. It is necessary, of course, to administer the verbal form individually to children in the third grade and below.

The actual pupil working time on the verbal tests is 45 minutes. To cover preliminary instructions, handing out papers, etc., no less than an hour free of interruptions should be scheduled for the test. Usually, pupil interest in the test



is so high that fatigue is no problem and the entire booklet can be completed in one sitting. Should fatigue become evident, however, the examiner may give the group a short break between any two of the activities in the booklet.

If both the verbal and figural tests are to be administered, it is recommended that they be accomplished in two different sittings. At the very least, a break should intervene between the two testings.

## ADMINISTERING THE VERBAL TESTS — GROUPS

The following section contains the directions for administering the Verbal Tests of the *Torrance Tests of Creative Thinking* battery, including the wording of comments and directions the examiner makes to the pupils. Preliminary comments are enclosed in quotation marks and may be modified somewhat to fit appropriately the special conditions of testing. Specific instructions to pupils for procedures on the seven activities of the test booklet are printed in **bold face** type. These instructions in **bold face** should be read from this manual, precisely as written, without modification.

It is realized that slight modifications will always have to be made in administration procedures depending upon the purposes and conditions of the testing. Since these batteries may be used from fourth grade through graduate school, slight modifications have to be made on account of differences in reading ability, vocabulary, and the like. This is especially true of the initial orientation or warm-up. Timing and other instructions given by the examiner, however, should be as uniform as possible. Some workers may want to give more liberal time limits for elementary school children who are handicapped in recording their ideas by limited writing and spelling skills. Such workers, however, should recognize that the norms given in this manual will not be applicable. Changes in time limits may also affect the reliability and validity of the measures but a great deal more developmental work needs to be done before the precise nature of these changes can be determined.

### Preliminary Instructions to Pupils

If one of the verbal forms is given alone or before the figural form, an orientation similar to that outlined in the paragraph below should be used. If given after a figural form, little added explanation or orientation will be needed. The examiner might simply indicate that in the first booklet, pupils had to express their ideas in pictures. In this booklet, they will express their ideas in other ways.

Before passing out the test booklets, the teacher or administrator should give a brief orientation that will make sense to the particular group, be honest, arouse interest and motivate performance. Some modification of the following might be used:

“I believe you will have a lot of fun doing the activities we have planned for this period. We are going to do some things that will give you a chance to see how good you are at thinking up new ideas and solving problems. They will call for all of the imagination and thinking ability you have. So I hope that you will put on your best thinking cap and that you will enjoy yourself “

If there are to be successive administrations of the test or an alternate form, it is usually a good idea to set up this expectation even in the initial administration. Successive administrations are frequently planned in experimental programs designed to evaluate the relative effectiveness of methods, materials, organizational innovations, and the like, and can be explained along

with the purpose of the entire program. An explanation such as the following might be made:

“One of the things we would like to find out is how much you improve between now and later in your ability to think up new ideas, use your imagination, and solve problems. You know, if we wanted to know how much you grow in weight or height, during a particular period, we would weigh you or measure your height now and again at the end of that period of time. This is what we want to do regarding your ability to think of ideas. We are going to take a measurement today and another at the end of the school year (quarter, month, etc.). We want to get as accurate a measurement today as we can. So use your best thinking cap and do your best.”

Within the context of the situation, the activity should be made as non-threatening as possible, unless some stress factor is a deliberate part of the experimental design.

### **Specific Instructions for Administering Test Activities**

At this point, pass out the booklets. Next, have each individual fill in the blanks at the top of the page quite carefully. Make certain that the year is entered as part of the date so there will be no confusion or needless loss of data in longitudinal studies or studies involving pre-test and post-test designs

When the identifying information has been provided, read these instructions:

The activities in this booklet will give you a chance to use your imagination in thinking up ideas and putting them into words. There are no “right” or “wrong” answers like there are in most things that we do. We want you to see how many ideas you can think of and we think you will find this fun. Try to think of interesting, unusual, and clever ideas—something that no one else will think of.

You will have seven different things to do and you will be timed on each one, so make good use of your time. Work as fast as you can without rushing. If you run out of ideas before time is called, wait until instructions are given before going on to the next activity. Sometimes if you will just sit and think more ideas will come to you and you can add those.

If you have any questions after we start, don’t speak out loud. Raise your hand and I shall come to your desk and try to answer your questions.

If there are no questions at this point, proceed with the first activity. If there are questions concerning the instructions, attempt to satisfy them by repeating the instructions in words that the individual will understand or by elaborating upon the instructions in the printed booklet. Avoid giving examples or illustrations of “model responses.” So doing tends to reduce originality and in some cases it even reduces the number of responses produced. Above all, attempt to maintain a friendly, comfortable, warm relationship with the group.

Ask the class to turn to page 2 and read the instructions with you, continuing as follows:

The first three activities will be based on the drawing below. These activities will give you a chance to show how good you are at asking questions to find out things that you don’t know and in making guesses about possible causes and consequences of happenings. Look at the picture. What is happening? What can you tell for sure? What do you need to know to

understand what is happening, what caused it to happen and what will be the result?

Add: As we go ahead with the first three activities you may look back at this picture. Now, look at the next page, Activity 1: ASKING, and read with me:

On this page, write out all the questions you can think of about the picture on the page opposite this one. Ask all of the questions you would need to ask to know for sure what is happening. Do not ask questions which can be answered just by looking at the drawing. You can continue to look back at the drawing as much as you want to.

Using a stop watch, allow **FIVE MINUTES** before calling time. Ask the class to turn to page 5, Activity 2: GUESSING CAUSES. Again, ask the group to read the instructions with you:

In the spaces below, list as many *possible* causes as you can of the action shown in the picture on page 2. You may use things that might have happened just before the things that are happening in the picture, or something that happened a long time ago that made these things happen. Make as many guesses as you can. Don't be afraid to guess.

Allow **FIVE MINUTES** for Activity 2 and then ask the class to turn to page 7, Activity 3: GUESSING CONSEQUENCES. Again, read the instructions aloud as the group reads them silently:

In the spaces below, list as many possibilities as you can of what might happen as a result of what is taking place in the picture on page 2. You may use things that might happen right afterwards or things that might happen as a result long afterwards in the future. Make as many guesses as you can. Don't be afraid to guess.

Allow **FIVE MINUTES** for Activity 3 and then ask the class to turn to page 8, Activity 4: PRODUCT IMPROVEMENT. In administering this task the examiner should display to the group the small stuffed toy elephant supplied in the Examiner's Kit. Read aloud the instructions, as follows:

In the middle of this page is a sketch of a stuffed toy elephant of the kind you can buy in most dime stores for about one to two dollars. It is about six inches tall and weighs about a half pound. In the spaces on this page and the next one, list the cleverest, most interesting and unusual ways you can think of for changing this toy elephant so that children will have more fun playing with it. Do not worry about how much the change would cost. Think only about what would make it more fun to play with as a toy.

Allow **TEN MINUTES** for the completion of Activity 4. If some individuals stop at the bottom of the first page, indicate to them that they should turn to the next page. Some examinees may stop before the end of ten minutes and want to go ahead to the next activity. Caution them to wait until time is called and ask them to continue thinking and perhaps a new idea will occur to them. (At times this is an important observation for the examiner to note down concerning individual students. Most examinees will continue working right up to the time limit and are then reluctant to stop. It has been observed that potential school dropouts, delinquents, and certain types of non-learners will

finish very quickly and will be unable to add any responses.) At the end of ten minutes, call time and ask the class to turn to page 10, Activity 5: UNUSUAL USES OF CARDBOARD BOXES, and read the instructions as in the preceding tasks:

**Most people throw their empty cardboard boxes away, but they have thousands of interesting and unusual uses. In the spaces below and on the next page, list as many of these interesting and unusual uses as you can think of. Do not limit yourself to any one size of box. You may use as many boxes as you like. Do not limit yourself to the uses you have seen or heard about; think about as many possible new uses as you can.**

Remind the group that two pages are provided for responses. Allow **TEN MINUTES** for the completion of this task and proceed to page 12, Activity 6: UNUSUAL QUESTIONS, reading the instructions as follows:

**In this activity, you are to think of as many questions as you can about cardboard boxes. These questions should lead to a variety of different answers and might arouse interest and curiosity in others concerning boxes. Try to think of questions about aspects of cardboard boxes which people do not usually think about.**

Allow **FIVE MINUTES** for this task and then go ahead to page 14, Activity 7: JUST SUPPOSE. Read the instructions aloud as the class reads them silently:

**You will now be given an improbable situation—one that will probably never happen. You will have to *just suppose* that it has happened. This will give you a chance to use your imagination to think out all of the other exciting things that would happen IF this improbable situation were to come true.**

**In your imagination, *just suppose* that the situation described were to happen. THEN think of all of the other things that would happen because of it. In other words, what would be the consequences? Make as many guesses as you can.**

**The improbable situation — JUST SUPPOSE *clouds had strings attached to them which hang down to earth.* What would happen? List your ideas and guesses on the next page.**

Allow **FIVE MINUTES** for the completion of this activity. With a five minute time limit, it is rare that anyone will need more than one page for responses. If more space is needed, the back cover page should be used. In testing at the college level, or especially able elementary and high school groups, the students' attention should be directed to the fact that the back of the page can be used. At the end of five minutes, call time and collect the booklets, making certain that the proper information has been entered on the booklet covers.

## ADMINISTERING THE VERBAL TESTS — INDIVIDUALS

The verbal activities *must* be administered individually to children in kindergarten through the third grade and may be administered individually at any age or educational level. Some individuals, even at advanced educational levels, will perform comparatively better on individual administrations while others will perform less effectively. This appears to be an individual difference which manifests itself at an early age and exists even at the graduate level.

In individual administration, the same time limits as used in the group administration should be adhered to. Some modifications in the instructions may be necessary for young children and the examiner should be alert to adapt his language to the vocabulary and comprehension level of the child. In general, however, the language level of the printed instructions seems to be appropriate for a wide range of educational levels.

The examiner should, if possible, provide a quiet room away from others, so that attention will not be distracted by extraneous stimuli. He should seek to make the child feel at ease while he ascertains and records the essential identifying information. He then proceeds with the brief orientation on page 4 of this manual, explaining the general nature and purpose of the test in terms which will be meaningful to the child. In testing total school or classroom populations, it is suggested that at the outset the teacher or chief examiner give the entire class a general orientation and ask them to keep their answers "secret" until all have completed the activity. If it is practicable to do so, it is desirable to keep those not engaged in testing busy with some activity, keeping separate those who have been tested and those who have not been tested.

When administering Activities 1-3: Ask-and-Guess, the examiner should place the picture from the Examiner's Kit in the hands of the child so he can look at it throughout the testing process. Having something to handle or look at also makes some children feel more comfortable than they otherwise would. In the case of Activity 4: Product Improvement, the stuffed toy elephant provided in the Examiner's Kit should be handed the child at the beginning of the activity. He should be permitted to handle the toy but not specifically encouraged to do so.

The following arbitrary rules have been devised for the guidance of the examiner:

1. To the extent practical, pace the pupil according to his own speed. At the end of the time limit for each activity, conclude it promptly and give no responses, go ahead to the next item.
2. With exceptionally shy and inarticulate children who are unable to give any responses, say, "All right, let's leave this for a while and maybe you'll think of something later." After this, go ahead with the next item and at the end of the battery return, asking the subject if he can think of something now. Or, the examiner may say, "Come ahead and give me some ideas just for fun. It doesn't count against you."
3. Try to obtain maximum performance but stay within the instructions contained in the test booklet to the extent possible. Where appropriate, the

examiner may add, "Can you think of another way?" or "What else would improve it?" and the like. Just being ready to record further responses is usually adequate; however, when the pupil gives a large number of irrelevant responses, try to guide him to more relevant responses by reminding him of the task. In general, avoid approval or disapproval of responses. **Accept and record all responses.** This is usually sufficient motivation.

4. In the Product Improvement Test if the child does not grasp the idea of "changing or improving the toy so that it will be more fun to play with," one or two alternatives may be used. One of the more successful is, "If you had a magic wand and could make this toy be any way you wanted it to be, how would you make it different?" Another reasonably successful question is, "If you could tell Santa just how to make this toy so that boys and girls would have the most fun with it, how would you tell him to change it?"

5. In the Ask-and-Guess Test, it is difficult to communicate to some children the meaning of asking a question. It is also to be expected that on the Causes and Consequences sections that young children will give sequences of events, having no causal relationship. The instructions, however, should emphasize cause. Such substitutes for "cause" as "make it happen" and "what will happen because of this?" can be used.

6. With some children, there is a problem of reducing test anxiety, in spite of all efforts to prevent the arousal of such anxiety. With many children, it is helpful to say, "Come on and tell me what you think just for fun! I'd just like to know what you think about it." Thus reassured, some children will respond immediately with a rapid flow of ideas after being completely silent for some time.

7. Write down all of the responses given by the child no matter how irrelevant or fantastic they may seem. This material is essential in assessing irrelevance or fantasy. It is also rewarding to the child, making him feel that what he is saying is being valued. Unless some approval is necessary to reduce test anxiety, even remarks of approval may be inhibiting.

8. To the extent possible record at the end of each task in the test booklet any unusual behavior observed, the extent of manipulation of the toy and the picture, and the like. Record other observations and impressions upon completion of the battery.

9. When it is necessary to test individually a large number of children, it may be necessary to reduce the number of activities administered. If this is the case, the following priority is suggested: (1st) Product Improvement, (2nd) Just Suppose, (3rd, 4th, and 5th) Ask-and-Guess, (6th) Unusual Uses, and (7th) Unusual Questions.

# SCORING GUIDE FOR THE VERBAL TESTS, FORM A

This scoring guide has been designed to help users of Verbal Form A obtain as objective and as meaningful measures as possible and to recognize the manifestations of potentialities that might otherwise be missed. In devising a scoring procedure or in carrying it out, the major goal should be to give the most accurate and insightful picture possible of the student's mental functioning in the activities presented. It seems rather clear that the kinds of abilities brought into play by the activities contained in this battery are not unidimensional. In fact, the particular tasks selected were chosen because it was thought that each might call forth some potentiality or manifestation of creative thinking not tapped by the other tasks. In other words, no effort was made to select tasks that would be highly correlated with one another. Thus, all tasks will be scored for *fluency* and *originality*; six of them will be scored for *flexibility*; and those who like may score them for *elaboration*. (Until more data are obtained concerning the Verbal Elaboration score, most users may prefer not to use this score. Some difficulties have been experienced in obtaining interscorer reliability of a high order with beginning scorers.)

## Who Can Score Creative Thinking Tests

Studies of scorer reliability have shown that individuals specially trained and experienced in scoring the *Torrance Tests of Creative Thinking* are capable of scoring them with a very high degree of reliability. To answer the question about the reliability of results derived by *untrained* scorers, an experiment was conducted in which regular classroom teachers and educational secretaries scored tests without benefit of any training other than the study of the scoring manuals. Results available for six teachers and one educational secretary indicate that *when the scoring guide is carefully studied and accepted*, scores of acceptable reliability are obtained. The mean Pearson product-moment coefficients between the scoring of trained scorers and untrained teachers for the figural tests are: fluency, .96; flexibility, .94; originality, .86; and elaboration, .91. The mean reliability coefficients for the verbal tests are: fluency, .99; flexibility, .95; and originality, .91. The results for one educational secretary are: fluency, .99; flexibility, .98; originality, .76; and elaboration, .87. The lower reliability for originality seems to occur when the scorer rejects the scoring guide and substitutes his own concept of what is original. A more complete analysis of the scorer reliability studies will be found in the Norms-Technical Manual.

The findings suggest that it is not necessary to have special training in scoring these tests to assure reliable results. What does appear to be necessary is that the scorer *read and follow the scoring guide as precisely as possible, accepting the standards of the guide as a basis for judgment*.

## Procedures for Scoring

1. Read the scoring guide, noting its organization. If the examiner does not yet have an understanding of the concepts of fluency, flexibility, and originality,



he should do some supplementary reading\* of the rationale of the *Torrance Tests of Creative Thinking*. He should also familiarize himself with the rationale for the seven verbal test tasks or activities contained in this battery.

2. Reread the scoring guide with a completed record, locating the responses on it in the lists of categories and *originality* weights. First, however, determine whether the response is scoreable, i.e., has relevance to the test activity. No entries or tabulations are made on the scoring worksheets for responses that are considered "not scoreable."

3. In all activities or test tasks, compound sentences containing two or more distinct ideas should be treated as two or more responses. Sometimes two or more ideas are presented in series and these should also be treated as two or more responses, depending upon the number of different ideas. These should not be confused, however, with elaborate responses in which additional information only elaborates a single idea.

4. Now, the examiner should be ready to begin the scoring. A Scoring Worksheet (see reproduction, page 47) has been designed to reduce the amount of time required to score a test and to increase the reliability of scoring. After entering the desired identifying information, it is suggested that he proceed as follows:

#### Step 1 – Scoring Activity 1: ASKING

Under the section on Originality, determine the originality weight and flexibility category number and record them in the "Orig." and "Cat." boxes under "Activity 1" for each response. If the response does not appear in this list, it is a rather infrequent one and if it involves creative strength and gets away from the obvious, it should be given an originality weight of 2. The category number of such responses can be looked up in the list of categories under the Flexibility section.

NOTE: The concept of "creative strength" is an important one and the examiner should attempt to master the idea well. Possibly the best way to accomplish this is to study the originality weights assigned responses for the various activities in the scoring guide, noting the differences between examples of zero-credit responses (not original) and one-credit responses which are the ones showing some creative strength. It may also prove helpful to think of responses showing no creative strength as being characterized by requiring little intellectual energy; that is, little intellectual energy is necessary to give obvious, common, and learned responses. In contrast, more intellectual energy is required to give responses characterized as being beyond what is learned, practiced, habitual, and away from the obvious and commonplace. Hence, these latter kinds of responses are thought of as "showing creative strength." Most responses not listed in the manual are of this type and earn two points each.

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\*Reading the introductory sections of the Norms-Technical Manual is especially recommended. See also publications listed in the introduction of this manual and in the extended bibliography found in the Norms-Technical Manual.

### Fluency

In all seven activities (or tasks), *fluency* is defined as the total number of relevant responses, relevancy being defined in terms of the requirements of the tasks as set forth in the instructions. In other words, the *fluency score* for the Ask activity is the number of relevant questions the subject asked. Questions that can be answered merely by looking at the picture, however, are not counted. The following are examples of questions that can be answered by looking at the drawing:

- Does the boy have on a hat?
- Are his ears long?
- Is he standing up?

### Flexibility

One point will be awarded for each of the categories used in asking questions. No credit is given if the category is repeated. For example, all of a subject's questions might be concerned with the physical description of the figure, the boy. In this case, the total flexibility score would be "1." A few typical examples will be given for each category but no attempt will be made to be exhaustive. In rare cases where responses cannot be classified into any of the categories listed below, new categories should be created. They may be indicated on the scoring worksheet by "X1" for the first new category, "X2" for the second new category, etc.

#### General Flexibility Categories

1. **CHARACTER IN PICTURE**, includes queries to determine the physical description of the figure both externally and internally, NOT emotional, NOT clothing (see separate categories).
  - Why are his ears so large?
  - Why are his ears pointed?
  - How big is he?
  - Is it a he or a she?
  - Does he own a boat?
2. **CHARACTERS OUTSIDE PICTURE**, physically and temporally (does NOT include family)
  - Who forced him to look into the water?
  - Has he told anyone where he is?
  - Do people make fun of him?
  - Did someone send him?
3. **COSTUME, CLOTHES IN GENERAL**
  - Why does he dress this way?
  - What color are his clothes?
  - Is he dressed like others in his country?
4. **COSTUME, SPECIFIC ITEMS OF APPAREL**
  - What is that thing on his hat?
  - Does he have striped pants?
  - What color is his shirt?
  - Why are his shoes pointed?

5. **EMOTIONS, includes actions and reactions, thinking, personality, etc.**
  - Is he happy?
  - What is he thinking about?
  - Does he like what he sees?
6. **ETHNIC FACTORS, includes race, religion, language, etc.**
  - Is he real? (Is he a human being?)
  - Is he from another planet?
  - What language does he speak?
7. **FAMILY, includes relatives, immediate and distant; friends; questions about home.**
  - Does he have a family?
  - Where does he live?
8. **LOCATION, includes setting of the figure and the situation.**
  - In what country is this taking place?
  - Why is he here?
  - Is this on another planet?
9. **MAGIC, includes magical, mystic powers of figure and/or his surroundings.**
  - Does he perform magic?
10. **OCCUPATION, includes job, people or organizations for which he works.**
  - What does he do for a living?
  - Is he a clown?
  - Is he doing this as a part of an act?
11. **PHYSICAL ACTION IN PICTURE**
  - Is he looking for something in the water?
  - Why is he kneeling on the ground?
  - Is he going to fall in?
12. **PHYSICAL ACTION OUTSIDE PICTURE**
  - Did he steal something and come here to find it?
  - Will he be punished for getting wet?
13. **PHYSICAL CHARACTERISTICS OF OBJECTS OR SITUATION**
  - Is there a boat nearby?
  - Is something making sounds go through the water?
14. **PHYSICAL CHARACTERISTICS OF THE SETTING, includes descriptions of landscape, reflective surface, under water, etc.**
  - Is it a lake?
  - Is that grass under him?
  - Is it muddy?
15. **TIME**
  - When did this take place?
  - How long has he been here?
  - What time of day is it?

## 16. WEATHER, NATURAL DISASTER

Did an earthquake make him fall down?  
Is it about to rain?

## 17. WHOLE PICTURE, includes questions about the artist, the picture as a whole, etc.

Who painted the picture?  
What kind of story was the artist trying to tell?  
Where did the artist live?  
How many years ago was the picture painted?

### Originality

The most frequent responses found in a sample of 500 records are listed alphabetically with their flexibility categories and originality weights for convenience in scoring. A score of zero is assigned to all responses given by five percent or more of the respondents. A weight of one is awarded for responses given by two to 4.99 percent of the respondents. *Responses not included in the following list are given weights of "2" if they show creative strength (that is, require intellectual energy beyond what is learned, practiced, and habitual and result in responses that are away from the obvious and commonplace).*

Responses	Orig. Weight	Flex. Categ.
Alone, why is he? . . . . .	2	1
Body, why does the man (reflection) not have a body?	2	14
Brother/sister, does he have a? . . . . .	2	7
Brownie, is he a? . . . . .	1	6
Clothes, what color are his? . . . . .	1	3
Clothes, why does he wear his this way? . . . . .	1	3
Color, what color is he? . . . . .	0	6
Deep, is the water? . . . . .	1	14
Do, what does he? . . . . .	1	10
Doing, what is he? . . . . .	0	11
Doing that, why is he? . . . . .	1	5
Dressed, how is he? . . . . .	0	3
Drink water, will he/does he want to, etc? . . . . .	0	11
Drop rocks/something, did he in the water? . . . . .	1	11
Ears, why are his so big? . . . . .	1	1
Ears, why does he have pointed? . . . . .	0	1
Elf, is he an? . . . . .	0	6
Eyes, what color are his? . . . . .	1	1
Face, why does the water reflect the? . . . . .	1	14
Falling down, is he/has he fallen down? . . . . .	0	11
Falls in, what will happen if he? . . . . .	2	11
Fall in, will he/is he falling in? . . . . .	0	11
Father/mother, does he have? . . . . .	1	7
Friend, does he have a? . . . . .	1	7
Funny hat, why does he have on a? . . . . .	0	4

Responses	Orig. Weight	Flex. Categ.
Get there, how did he? .....	1	11
Go, where will he? .....	1	12
Gold, is he looking for? .....	0	11
Grass, is the dark part? .....	2	14
Happening, what is? .....	0	11
Happy, is he? .....	1	5
Happy, why is he so? .....	0	5
Hat, is that a? .....	0	4
Hat, what color is his? .....	1	4
Hat, what is on his? .....	1	4
Hat, why does he have on a? .....	0	4
Hat, why does he have on a funny? .....	0	4
Head, is he sticking his head in the water? .....	1	11
Himself, can the boy see? .....	0	11
Home, where is his? .....	0	7
How does he see himself? .....	1	11
Human being, is he a? .....	1	6
Kind of boy/person, what is he? .....	1	1
Kind of clothes, what is he wearing? .....	0	3
Kind of hat, what is he wearing? .....	0	4
Lake/pond/pool/river/sea/stream, is this a? .....	0	14
Liquid/water, is the muddy or clean? .....	1	14
Live, where does he? .....	1	8
Look like, what does he? .....	0	1
Looking at the reflection, why is he? .....	0	5
Looking for, is he for fish/gold/something under the water? .....	0	11
Looking for something, is he? .....	0	11
Looking for, is someone looking for him? .....	2	12
Looking for, what is he? .....	0	11
Looking in the water, is he? .....	0	11
Looking in the water, why is he? .....	0	5
Lost, has he something? .....	1	11
Lying down, is the boy near the water? .....	0	11
Making faces, why isn't he? .....	2	11
Mirror, does he use it for a? .....	2	14
Mouth, why is his like that? .....	2	1
Name, what is his? .....	0	1
Old/age, how old is he/what is his age? .....	0	1
Pants, what kind is he wearing? .....	1	4
Parents, does he have? .....	1	7
Pointed ears, why does he have? .....	0	1
Pointed hat, why is he wearing a? .....	1	4
Prove, what is he trying to? .....	2	11
Punished, will he be? .....	1	12

Responses	Orig. Weight	Flex. Categ.
Real, is he? . . . . .	1	6
Really exist, does he? . . . . .	1	6
Reflection, is he looking at his? . . . . .	0	11
Rocks, did he drop into the water? . . . . .	1	11
Sad, why is he so? . . . . .	0	5
Season, what is it? . . . . .	1	15
See himself, can he? . . . . .	0	11
See himself, how does he? . . . . .	1	11
See himself, why does he want to? . . . . .	1	5
Sex, what sex is it? . . . . .	1	1
Shirt, does he have on a? . . . . .	1	4
Shirt, what color is he wearing? . . . . .	1	4
Shirt, what kind is he wearing? . . . . .	1	4
Shoes, why are his bent/pointed/curled? . . . . .	0	4
Shoes, why are his like an elf's? . . . . .	0	4
Shoes, is he wearing? . . . . .	0	4
Shoes, why does he wear such odd? . . . . .	0	4
Sick, is he? . . . . .	0	1
Sister/brother, does he have? . . . . .	2	7
Size, what size are his shoes? . . . . .	1	4
Someone, is someone with him? . . . . .	2	2
State/town/city, in what does he live? . . . . .	1	8
Stream, is it a? . . . . .	0	14
String on his hat, why is there a? . . . . .	1	4
Surface, what type of is he kneeling on? . . . . .	1	14
Teeth, does he have? . . . . .	2	1
Think, what does he? . . . . .	1	5
Thirsty, is he? . . . . .	1	1
Time of day, what is the? . . . . .	2	15
Water, is the deep/muddy? . . . . .	1	14
Water, what color is the? . . . . .	1	14
Water, where is the? . . . . .	0	8
Water, will he slip and fall into the? . . . . .	0	11
Wearing, what is he? . . . . .	0	4
What is he looking at/for? . . . . .	0	11
When is this? . . . . .	1	15
Where did he come from? . . . . .	1	6
Where is he? . . . . .	0	8
Who/what is he? . . . . .	0	1

#### Elaboration (Optional)

The problem in determining the elaboration score is to count the number of additional details used to spell out or elaborate the question over and above what is necessary to communicate the basic idea. It is not intended to reward wordiness. The additional details should lend power and provocativeness to the questions.

The scoring of the record that follows is offered as an illustration. Points scored for elaboration are indicated by an asterisk (\*).

	Score
1. Is he hiding from his evil* stepmother* here at the secret* pond? .....	3
2. What is the unusual* thing on his hat? .....	1
3. Is he dressed for an outer space* masquerade? .....	1
4. How old is he? .....	0
5. Why is he making a funny* face at what he sees in the water? .....	3
Total .....	8

### Step 2 – Scoring Activity 2: GUESSING CAUSES

Proceed as in Step 1. Record the originality weight and the flexibility category number for each response in the "Orig." and "Cat." boxes under "Activity 2" on the Scoring Worksheet.

#### Fluency

The fluency score for the Guessing Causes activity is determined by counting the number of relevant causes. Responses that show no causal relationship are considered inadequate and are not counted. Examples of such responses are as follows:

The boy got up and washed his face.  
Then he ate breakfast and started to school.  
He went to school and said his lesson.

#### Flexibility

One point will be awarded for each of the following categories used. In other words, a category used more than once does not earn an additional flexibility score.

#### General Flexibility Categories

##### 1. CHARACTERS IN PICTURE, ideas about causality brought about by figure's physical qualities.

He is hot.  
He sprained his ankle.  
He is trying to shrink his ears.

##### 2. CHARACTERS OUTSIDE OF THE PICTURE, including people and animals, except family.

He is supposed to meet someone there.  
Someone had told him that he had changed and he's checking to see if he has.  
He is meeting some friends (girl, mermaid, etc.)

##### 3. COSTUME, CLOTHES IN GENERAL, not specific items of clothing.

He wanted to see his new costume.  
He is washing his clothes.  
He is checking on his costume for a play.

**4. COSTUME, SPECIFIC ITEM OF APPAREL**

He wanted to see if his hat is on straight.  
 He got his pants dirty and is going to wash them.  
 He is trying to bend the toes of his shoes.

**5. EMOTIONAL, psychological, mental causes.**

He has always been vain and likes to admire himself.  
 He is happy.  
 He is dreaming about his wife.

**6. ETHNIC, includes questions about race, religion, language.**

The waters are sacred.  
 He is worshipping a god.  
 He is performing a ritual.

**7. FAMILIAL CAUSES**

He is bringing water home.  
 He was thrown out of his home.  
 He has pushed his little brother in.

**8. LOCATION, includes causation related to where he is, was, or will be.**

He is lost in the woods.  
 It is a famous place to visit.  
 He just arrived from Mars and is inspecting.

**9. MAGIC**

He is trying to break a spell.  
 He turned into an elf from a boy.  
 The water will keep him young.

**10. OCCUPATION, causation attributed to job he was in.**

He is an actor rehearsing for a play.  
 He is doing a special job for his teacher.  
 He escaped from a circus.

**11. PHYSICAL ACTION IN PICTURE**

He slipped and fell.  
 He is counting the ripples  
 He is looking for fish.

**12. PHYSICAL ACTION OUTSIDE PICTURE**

Someone is sending him a message through the water.  
 The police are pursuing him.  
 His mother punished him.

**13. PHYSICAL CHARACTERISTICS OF OBJECTS OR SITUATION**

The sun was very hot.  
 There were strange sounds.  
 His toy submarine in the water won't work.



**14. SETTING, factors associated with the natural landscape.**

He was attracted here by the flowers.  
 The muddy bank made him slip.  
 The water looks strange.

**15. TIME**

It was a long time ago and people looked like this then.  
 It was the first day of spring and he felt lazy.

**16. WEATHER, NATURAL DISASTER**

He is trying to get away from a tornado.  
 It is a hot day and he is trying to cool off.

**Originality**

Below is a list of the more frequently given responses with the originality weights and flexibility categories. *Responses not included in the following list are given weights of "2" if they show creative strength.*

Responses	Orig. Weight	Flex. Categ.
Actor, he was thinking of being an .....	2	10
Age, he wondered how old the lake was .....	2	16
Boat, he is watching a .....	1	11/13
Boat, he is watching a boat sail/race .....	1	11/13
Clothes, he is washing .....	2	3
Clothes, he put on his .....	0	3
Crazy, he must be .....	2	5
Crying, the boy is .....	1	5
Curious about the ripples, he is .....	1	5
Curious, he wanted to see how the water looked .....	1	5
Drink of water, he came for a .....	0	1
Dropped/threw coins/rocks/money/something into the water .....	0	11
Elf, he was an .....	1	6
Face, he likes to see his .....	1	5
Face/hair/hands, he wants to wash .....	0	1
Face, his friend said it was like seeing your own face ...	2	2
Face was dirty, he wanted to see if his .....	1	1
Fatigued, he was .....	1	1
Fell down, he on the ground .....	0	11
Fell in the water, he .....	1	11
Fish, he was catching .....	1	11/13
Fish, his teacher told him to look for .....	2	12
Forest, he is at the edge of .....	0	8
Friend told him about it .....	2	12
Frog, he is calling/chasing a .....	1	11
Grass is green .....	0	14
Grass is/was wet .....	2	14

Responses	Orig. Weight	Flex. Categ.
Happy, he is always . . . . .	1	5
Hat, he got a new and wanted to see himself . . . . .	2	4/5
Hat, his fell off . . . . .	1	4
Hat was on, he wanted to see if . . . . .	2	4
Hiding, he is . . . . .	1	11
Himself, he is looking at . . . . .	0	11
Home, he might have just run away from . . . . .	1	7
Hungry, he is . . . . .	1	1
Hurt himself, he . . . . .	1	1
Image, he is interested in seeing his . . . . .	0	5
Image, the water reflected his . . . . .	0	14
Jump in, he is getting ready to . . . . .	1	11
Long time, he watched the water for a . . . . .	2	16
Look at himself, he likes to . . . . .	0	6
Looking at/for his reflection . . . . .	0	11
Looking for/at fish/frog/life/rocks/shells/something/treasure/turtle in/under the water, he is . . . . .	0	11
Lost, he is . . . . .	1	8
Magic, he is . . . . .	1	9
Magic spell, he is thinking of . . . . .	2	9
Mars, he came from . . . . .	2	8
Mirror, he wanted to see the . . . . .	2	13
Mud, he fell in the . . . . .	0	14
Pants dirty, he could be getting his . . . . .	2	4
Party, he just came back from a . . . . .	2	12
Playing, he is/was . . . . .	0	11
Pointed shoes, he has on . . . . .	1	4
Pond, he is looking in a magic . . . . .	2	9
Pushed him down, someone . . . . .	2	12
Rainbow, he is looking for a . . . . .	2	11/14
Reflection, he had never seen his before . . . . .	1	11
Resting, he is . . . . .	0	1
Ripples, he is watching the . . . . .	1	11
Seeing how deep the water is, he is . . . . .	1	11
Shirt, he put on the . . . . .	0	4
Shirt, his was white . . . . .	0	4
Shoes, the boy put on his . . . . .	0	4
Smiling, he is at himself . . . . .	2	5
Swimming, he wanted to go . . . . .	0	11/14
Thirsty, he is/was . . . . .	0	1
Tired, he is/was . . . . .	1	1
Ugly, someone told him that he was . . . . .	2	12
Waiting for someone, he is . . . . .	2	2

Responses	Orig. Weight	Flex. Categ.
Walk, he is taking a .....	1	11
Walking, he was until he saw the water .....	1	11
Watching for fish/frog/life/rocks/shell/something/trea- sure/turtle in/under the water .....	0	11
Water, he is looking into the .....	0	11
Water, he wanted some .....	0	1

#### Elaboration (Optional)

The following examples will illustrate the application of the elaboration scoring rationale to this activity.

	Score
1. He is collecting rocks and shells* and plants* .....	2
2. He is being chased by a sea monster* .....	1
3. He is going to get a cool*, refreshing* drink .....	2
4. He wants to wash his face .....	0
5. He sees something sparkling* in the water .....	1
Total .....	6

#### Step 3 – Scoring Activity 3: GUESSING CONSEQUENCES

Proceed as in Step 1. Record the originality weight and the flexibility category number for each response in the "Orig." and "Cat." boxes under "Activity 3" on the Scoring Worksheet.

#### Fluency

The fluency score for the Guessing Consequences activity is the number of relevant or cause-effect responses produced. Responses that do not indicate a cause and effect relationship are not scored. The following are examples of such irrelevant responses:

The boy went home and played with his baby sister.  
Then he had his supper.  
His mother made him do his home work.  
Then he went to bed.

#### Flexibility

As in the other activities, the flexibility score is determined by counting the number of different categories into which the responses fall. The categories to be used in classifying the responses are as follows:

#### General Flexibility Categories

##### 1. CHARACTERS IN PICTURE

He'll get wet.  
He'll catch a cold.  
He exploded from drinking too much.

**2. CHARACTERS OUTSIDE PICTURE**

Somebody will slip up behind him and push him in.  
 He will meet his friends.  
 A bee might sting him.

**3. COSTUME, CLOTHES IN GENERAL**

He might get his new clothes soiled.  
 He has to wash his clothes.  
 He may get ants in his clothes.

**4. COSTUME, SPECIFIC ITEMS OF APPAREL**

His hat will fall off.  
 He will get grass stains on his pants.  
 He might lose his shirt.  
 His shoes got dirty.

**5. EMOTIONS**

He breaks out crying because he is so ugly.  
 He screamed when he saw his reflection.  
 He went home happy because he wasn't dirty.

**6. ETHNIC FACTORS**

He loses his faith.  
 He could turn into another race.  
 He jumps in after his god.

**7. FAMILY**

He'll go home late.  
 His family will die of poisoned fish.  
 His brother will push him in.

**8. LOCATION**

He will become lost.  
 He will return to his home planet.  
 He likes the pond so well, he'll build a house nearby.

**9. MAGIC**

He finds it's not a magic well.  
 He is going to have bad luck for looking at his reflection.

**10. OCCUPATION**

He became a fisherman.  
 He will become a great poet and write about the water.  
 He will become rich from treasure he finds in the water.

**11. PHYSICAL ACTION IN THE PICTURE**

He'll go swimming.  
 He will catch a frog.  
 He'll lie on the bank and rest.

**12. PHYSICAL ACTION OUTSIDE PICTURE**

He will be punished for leaving his group.  
 He will build a boat and sail away.  
 He will show his classmates the things he found in the water.

**13. PHYSICAL CHARACTERISTICS OF OBJECTS**

He will destroy the toy boat he found there.  
 He will put up a sign advertising the lake.  
 A poison in the lake will kill the fish.

**14. SETTING**

He will make a better path to the lake.  
 The beauty of the flowers will inspire him to write a poem or paint.

**15. TIME**

He didn't notice the time and missed his dinner.  
 It's the end of his trip.  
 He stayed by the pond for three days.

**16. WEATHER, NATURAL DISASTER**

It will start to rain.  
 He will get hit by lightning.

**Originality**

Below in alphabetical order is a list of the more frequently given responses with originality weights and flexibility categories. *Responses not listed here and showing creative strength should be awarded weights of "2."*

Responses	Orig. Weight	Flex. Categ.
Afraid, he is/will be . . . . .	1	5
Animal might eat him . . . . .	1	2
Arm, he might/will break . . . . .	2	11
Asleep, he might fall . . . . .	1	1
Away, he might swim (after becoming a merman) . . . . .	2	11
Back may get hurt when he gets up . . . . .	2	1
Bad luck, he will have because he looked at himself . . . . .	2	9
Bank (of river, lake, etc.) may cave in . . . . .	2	14
Bird, he will turn into a . . . . .	1	9
Boy, another came and they played together . . . . .	1	2
Catch, he will/is going to catch frog/fish/turtle, etc. . . . .	0	11
Circus, he will get hurt in a . . . . .	1	12
Circus, he will get a job in a . . . . .	1	10
Clothes dirty, he will get his . . . . .	0	3
Clothes, his will get wet . . . . .	0	3
Clouds may form . . . . .	0	16
Clown, he will act like a . . . . .	1	10
Cold, he will catch a . . . . .	0	1
Cry, he may . . . . .	1	5
Cut his hand, he will . . . . .	2	11

Responses	Orig. Weight	Flex. Categ.
Die, he will/may	1	1
Dirty, he will get his clothes	0	3
Disease from the dirty water, he will get/catch a	1	1
Dive in, he will	1	11
Drink of water, he will/might get a	0	11
Drinks water and it ages him/makes him sick	1	9/1
Drop something, he might/will	0	11
Eat frog/fish/turtle, he will/is going to	0	11
Elf, a witch will change him into an	1	9
Fall in the mud, he might	1	11
Fall into the water, he will/is going to	0	11
Family, he will get married and have a	0	7
Find out something different, he will	2	5
Fire, he might use the water to put out a	2	12
Fish, he might be eaten by a	1	13
Flood, there will be a	1	16
Flower, he will turn into a white	2	9
Flowers, he will pick the	2	13
Freeze up, the water will	0	14
Girl, he might have a date with a	2	2
Go home, he will	0	7
Go home, he will not	1	7
Grass stain on his clothes, he will get	0	3
Happy, he will be	0	5
Hat, he will lose his	2	4
Hat, his will fall/drop into the water	1	4
Hates people, he	2	5
Himself, he will see in the water	0	14
Home, he will go	0	7
Home, he will not go	1	7
Hurt, he might/will get	1	1
Images, he knows water reflects	2	14
Job in a circus, he will get	1	10
Jump in, he might/will	1	11
Kidnapped him, a man	2	2
Kill himself, he may/will	1	11
Life in the water, he will examine	1	13
Likes looking at his reflection, he	1	5
Looks like, he will see what he	1	11
Look for fish/frog/gold/turtle/watch, he will	0	11
Lost, he will get	1	8
Lunch, he will go home for	1	7

Responses	Orig. Weight	Flex. Categ.
Married, he will get . . . . .	0	7
Marry a very ugly frog, he will . . . . .	2	9
Merman, he might turn into a . . . . .	2	9
Mother might/will call him . . . . .	0	7
Mud, he might/will fall into . . . . .	1	11
Muddy, he might/will get his hands . . . . .	2	11
Nose, a fish might bite his . . . . .	0	13
Old age, he will die of . . . . .	0	11
Pants, his will get dirty . . . . .	1	4
Pants, he will rip the back/seat of his . . . . .	1	4
Parents, he might/will make up with his . . . . .	1	7
Plan, he will . . . . .	2	5
Poison water, he might die because of . . . . .	2	14
Proud of the way he looks, he is . . . . .	1	5
Punished, he might be afraid of being . . . . .	1	5
Punishment for getting dirty, he might/will be . . . . .	1	2
Rain/snow, it will start to . . . . .	1	16
Reflection will disappear when he gets up . . . . .	1	13
Return often, he will/is going to . . . . .	1	11
Run away from home, he will . . . . .	1	7
Ripples in the water will disappear/leave . . . . .	0	14
Sad, he will be . . . . .	1	5
Sailor, he will become a . . . . .	2	10
Scared, he might/will get . . . . .	1	5
Scream, he may/will . . . . .	1	5
See himself in the water, he will . . . . .	0	14
See what he looks like, he will . . . . .	1	11
Shirt, his might get wet . . . . .	1	4
Shoes, he will find his . . . . .	1	4
Shoes, he might/will take off his . . . . .	1	4
Shoes, his will come off . . . . .	1	4
Sick, he will get from drinking the water . . . . .	1	14
Skate on ice, he will . . . . .	2	11
Snake might/will bite him . . . . .	1	13
Someone may/will push him in . . . . .	0	2
Something, he may/will catch . . . . .	0	11
Swim, he will come back to . . . . .	1	11
Swimming, he will go in . . . . .	0	11
Teacher, his mother called his . . . . .	2	2
Tell his family what he saw, he might/will . . . . .	1	7
Thief, he will be a . . . . .	1	10
Treasure, he might/will find a . . . . .	0	13
Trouble, he will get into . . . . .	0	10
Water, he might/will rush around the . . . . .	1	14
Water will dry up . . . . .	1	14

Responses	Orig. Weight	Flex. Categ.
Wave might hit his face .....	2	14
Wet, he will get .....	0	1
Wish, his will come true .....	1	5

#### Elaboration (Optional)

The following examples will illustrate the application of the elaboration scoring rationale to this activity:

	Score
1. He will get his new* clothes dirty .....	1
2. A beautiful* mermaid will come up and kiss him on the nose* .....	2
3. He'll wish that his funny,* pointed* ears would shrink to normal* size .....	3
4. He'll fall in the water .....	0
5. He saved his dying* father's life with the magical powers* from the water* .....	3
Total .....	9

#### Step 4 – Scoring Activity 4: PRODUCT IMPROVEMENT

Proceed as in Step 1. Record the originality weight and the flexibility category number for each response in the "Orig." and "Cat." boxes under "Activity 4" on the Scoring Worksheet.

#### Fluency

The fluency score is the number of ideas for improving the stuffed toy elephant as a plaything, something that will make it more fun to play with. Responses that involve non-play uses, making the elephant alive, and the like are considered as irrelevant to the task and are not counted. The following responses are examples of irrelevant or unscorable ideas:

1. Make the elephant come alive.
2. Make it do homework.
3. Use it as a decoration.
4. Use it as a pincushion.

#### Flexibility

About twenty-three general approaches may be used in thinking of new ideas for improving almost any product, process, organization, plan, etc. The flexibility score for the Product Improvement activity is the number of different approaches used in responding to the task. The following approaches and examples should be used as a guide in classifying responses.

#### General Flexibility Categories

1. **ADAPTATION:** Make it easy to ride, make it do tricks, make it a doll, use it to play games or sports, make it pick things up, change it to some other animal, etc.



2. **ADDITION:** Give it a saddle, give it an ornament, put doll on his back, attach strings to pull it, give it a dress or robe, give it a rhinestone collar, etc.
3. **CHANGE COLOR:** Make it different colors, polka dotted, bright colors, make it pink, make it change from one color to another according to the light or humidity, paint stripes on his trunk, etc.
4. **CHANGE SHAPE:** Make his ears big and floppy, give it a funny shaped tail, make him inflatable so size and shape can be changed, make his trunk straight up, make his back flat, etc.
5. **COMBINATION:** Put jungle around him, put it with other elephants, provide several jungle animals with it, give it a house, give it a cage, pretend he is in the zoo, etc.
6. **DIVISION:** Cut him into parts and make a puzzle of him, make him so he can be disassembled, etc.
7. **HUMANIZATION:** Give it a mechanical brain, feed it, etc. Most of the humanization responses are considered as irrelevant because they do not fit the requirements of the task, i.e., making it a toy which will be fun. Examples of irrelevant responses: make him human, make him say prayers, give it manners, make it do your homework, have it write poems, etc. If it is clear that he is equipped with a computer that will enable him to perform some human-like act then such responses are counted and assigned an appropriate classification.
8. **MAGNIFICATION:** Make him bigger, make him stronger, make him heavier, enlarge him to elephant size, make it chubbier and fatter, etc.
9. **MINIFICATION:** Make it lighter, make it leaner, make it smaller, make it into baby elephants, etc.
10. **MOTION:** Make it electrical or mechanical, make it a winding-up toy, make it run by a battery, make it walk, give it an electric trunk so that it will move or wiggle, make it squirt water, make it able to suck up peanuts, make it dance, make him pull objects, make it rear up, etc.
11. **MULTIPLICATION:** Make it have baby elephants, give it a male/female friend, give it a family, make it come with a set/herd, etc.
12. **POSITION:** Make it sit down, make it stand on hind legs, make it stand on left legs, make it stand straight, make it lay down, make it sleep, make it kneeling, etc.
13. **QUALITY OF MATERIAL:** Make it of rubber, make it of fine velvet, make it out of candy, make it with elephant hide, make it of material that will not break, make it of washable material, make his eyes of rhinestone, make his tusks of ivory, make his trunk of telephone cord, etc.
14. **REARRANGEMENT:** Make it changeable, make it so it can be taken apart and reassembled to make different elephants, make it shed its skin, etc.
15. **REVERSAL:** Make it so it can be turned inside out, etc.
16. **SENSORY APPEAL: AESTHETIC AND EMOTIONAL:** Make him look good, cuter, happy, sad, etc.
17. **SENSORY APPEAL: EAR:** Make him talk, make him make elephant sounds, let him sing, put laughing powder in him, make him make a noise when you pull his tail, etc.

18. **SENSORY APPEAL: EYE:** Let him see, make his eyes flash, make him transparent, etc.
19. **SENSORY APPEAL: SMELL:** Let him smell, make it chocolate smell, put catnip in him for cat toy, etc.
20. **SENSORY APPEAL: TOUCH:** Make his skin rough and cracked, make him soft and fuzzy, make him cuddly, make his tusks hard, make him have a hairy body, etc.
21. **SIZES:** Several different sizes, different sizes of ears/tail/trunk, etc.
22. **SUBSTITUTION:** Put straw in place of trunk, sticks for legs, change his toe nails to buttons, etc.
23. **SUBTRACTION:** Detach tusks, take off ears, take off one leg, etc.

#### Originality

The zero and one credit responses are listed alphabetically with both the originality weights and the flexibility categories. A few examples of two credit responses have also been included. *Other responses showing creative strength and getting away from the obvious and commonplace receive a weight of "2."*

Responses	Orig. Weight	Flex. Categ.
Animal, change it into another . . . . .	1	1
Animal/someone to ride on its back, add . . . . .	1	2
Babies, give it/make it have . . . . .	1	11
Balloon, make it into a . . . . .	2	1
Bank, make it into a . . . . .	1	1
Bell on neck, add . . . . .	1	2
Bigger, make it . . . . .	0	8
Bite, make it . . . . .	2	10
Blanket on its back, add . . . . .	1	2
Bow, add . . . . .	0	2
Bright color, make it a . . . . .	0	3
Cage, put it in a . . . . .	2	5
Candy dispenser, make it a . . . . .	2	1
Car/cart/wagon, put it in a . . . . .	1	5
Circus animals, put it with other . . . . .	1	5
Clothes, add . . . . .	0	2
Collar/chain/leash, add . . . . .	0	2
Color, change its . . . . .	0	3
Color, make it a different . . . . .	0	3
Computer, make it into/put a in it . . . . .	1	1
Cry, make it . . . . .	1	16
Cuddly and soft, make it . . . . .	0	20
Dance, make it . . . . .	0	10
Detachable, make its parts . . . . .	1	6
Drink, have/make it able to . . . . .	0	10
Durable, make it more . . . . .	1	13
Ears, make bigger . . . . .	0	8
Ears fluffy, make . . . . .	0	20
Ears, make wiggle . . . . .	0	10

Responses	Orig. Weight	Flex. Categ.
Ears, remove	1	22
Ears stand up, make its	2	12
Eat, make it	0	10
Eyes, change color of	0	3
Eyes, make bigger	0	8
Eye glasses, give it	1	2
Eye lashes, give it	1	2
Eyes light up	0	18
Eyes open and close	0	10
Face cuter, make its	1	16
Fall over, make it	1	10
Family, give it a	1	11
Feet bigger, make	1	8
Flexible, make it	1	13
Float in water, make it	2	13
Fly, make it	1	10
Friends, give it	1	5
Funny, make it look	1	16
Fur, give it real	1	13
Fuzzy/fluffy, make it more	0	20
Hair longer, make	1	8
Happy, make it look	2	16
Hat, give it a	0	2
Head bigger, make	1	8
Head, make it move its	0	10
Hold things with its trunk, make it	2	12
House, put it in/with a	1	5
Ivory, make its tusks out of real	2	13
Jewelry, give it	1	2
Jump, make it	0	10
Jungle, put it in a	2	5
Laugh, make it	1	17
Leash, add	0	2
Leather, make it out of	2	13
Legs longer, make	1	8
Legs move, make	0	10
Legs, remove	1	22
Lie down, make it	1	12
Life size, make it	1	8
Motor in it, put a	0	10
Mouth move, make	0	10
Move, make it	0	10
Music box in it, put	0	17
Name, give it a	1	7
Noise, make it make a	0	17

Responses	Orig. Weight	Flex. Categ.
Person, change it into a . . . . .	0	1
Pick up things with his trunk, make it . . . . .	1	10
Pillow, make it into a . . . . .	2	1
Plastic, make it out of . . . . .	2	13
Polka dots, make it . . . . .	0	3
Puppet, change it into a . . . . .	2	1
Radio in it, put a . . . . .	0	17
Real elephant, make it like a . . . . .	0	16
Real elephant skin, make it out of . . . . .	2	13
Ribbon, add a . . . . .	0	2
Ride, make it easy to . . . . .	0	1
Roll over, make it . . . . .	2	10
Roller skates, add . . . . .	2	2
Rubber, make it out of . . . . .	1	13
Saddle, add a . . . . .	0	2
Shape, change its . . . . .	1	4
Sing, make it . . . . .	0	17
Sit down, make it . . . . .	0	12
Smaller, make it . . . . .	0	9
Soft and cuddly, make it . . . . .	0	20
Stand on one leg, make it . . . . .	2	12
Stand on two hind legs, make it . . . . .	0	12
Suck up peanuts, make it . . . . .	1	10
Tail longer, make its . . . . .	0	8
Tail move, make its . . . . .	0	10
Tail, remove/cut off its . . . . .	1	2
Tail shorter, make its . . . . .	1	9
Talk, make it . . . . .	0	17
Teeth, add . . . . .	2	2
Teeth bigger, make its . . . . .	2	8
Toe nails, add . . . . .	1	2
Toe nails, paint . . . . .	2	3
Tricks, make it do . . . . .	0	10
Trumpet, make it a . . . . .	2	17
Trunk, change shape of the . . . . .	1	4
Trunk longer, make its . . . . .	0	8
Trunk move, make its . . . . .	0	10
Trunk, remove/cut off . . . . .	1	22
Tusks longer, make its . . . . .	0	8
Tusks move, make its . . . . .	1	10
Tusks smaller, make its . . . . .	1	9
Tusks, remove its . . . . .	1	22
Wagon, put it in a . . . . .	1	5
Walk, make it . . . . .	0	10
Washable/waterproof, make it . . . . .	0	13
Wet, make it able to . . . . .	2	10

Responses	Orig. Weight	Flex. Categ.
Wheels to move, add .....	0	2
Wig, add a .....	2	2
Write, make it .....	2	10
Zoo, put it in a .....	1	5

#### Elaboration (Optional)

The rationale for scoring elaboration for the Product Improvement activity is the same as for the preceding ones. The problem is to count the number of details used to spell out or elaborate the main idea over and above what is necessary to communicate the basic idea. The scoring of the record that follows is offered as an illustration. Elaboration is indicated with an asterisk.

	Score
1. Make it life-sized.* (Note: Just making it larger would merit no score, but specifying <i>life-size</i> adds a new idea.) . . .	1
2. Give him an elephant* voice .....	1
3. Give him a water tank* instead of a stomach and he could use his trunk as a hose* to squirt water .....	2
4. Make the cover zip on and off* so it can be washed and ironed* .....	2
5. It could open up* and hold money,* then when you needed money, you could turn the left ear* and pull the right tusk* and your money would come out .....	4
Total .....	10

#### Step 5 – Scoring Activity 5: UNUSUAL USES OF CARDBOARD BOXES

Proceed as in Step 1. Record the originality weight and the flexibility category number for each response in the "Orig." and "Cat." boxes under "Activity 5" on the Scoring Worksheet.

#### Fluency

For the Unusual Uses activity, the fluency score is the number of different unusual uses produced. Fantastic or impossible uses beyond all possible reality are not counted. Examples of fantastic and unreasonable uses not counted are:

1. Make human beings.
2. Make a real race car. (Toy cars are counted.)
3. Make a live dog. (Toy animals are counted.)

#### Flexibility

The flexibility score is determined by counting the number of different categories into which responses may be classified. As in the previous activities, for those rare responses which cannot be classified into one of the following categories, new categories (X1, X2, etc.) may be created.

### General Flexibility Categories

1. **ANIMAL SHELTER:** cat, dog, chicken house; cage, pen, or stall for an animal; to put pets in; reptile box, etc.
2. **ANIMAL USES OTHER THAN SHELTER:** animal bed, animal feeder, bury pets in, wash dogs in, animal trap, etc.
3. **ART USES:** put art (drawing, painting, etc.) on; paste things on; cutouts; scenery (play set, theater, etc.); totem pole; decoration, ornament; masks; cutout flowers or trees; etc.
4. **BUILDINGS** (for children to play in or with): playhouse, tree house, club house, bird house, pop stand, tent, fire house, school model, doll house, church, etc.
5. **CARRIER:** "to carry stuff in," bike basket, carry books and papers, lunch or picnic basket, suitcase, tool case, supply carrier, take out trash, carry worms in, etc.
6. **CONSTRUCTION USES** (includes materials, parts, etc., e.g. walls, floors, etc.): bricks, fencing, patching, walls, ceiling, insulation, doors, windows, roof, etc.
7. **CONTAINER, GENERAL:** Any response that makes use of the unaltered cardboard box as a container, to hold something; breadbox, garbage container, junk container, vase, gift box, waste basket, brick box, jewelry box, wood container, ballot box, etc.
8. **CONTAINER, ADAPTED:** any response that indicates that the use becomes something in addition to a container once it has been filled. (For example, when a box is filled with sand the result may be a "weight" or a "door stop."). Bank, mail box, mold, paper weight, exercising weights, etc.
9. **COOKING AND EATING UTENSILS:** bowl, bake cake in, bail or dip water, cup, serving tray, measuring cup, etc.
10. **COSTUME:** hat, clothing, Indian headdress, shoes, raincoat, hair band, robot costume, etc.
11. **COVER** (for plants, lawn, etc.): a cover, umbrella, furniture cover, book cover, etc.
12. **DESTRUCTION:** burn, cut up, crush, throw away, etc.
13. **ECOLOGICAL USES:** recycle, collect for reuse, paper sale, etc.
14. **EDUCATION** (visual aid, demonstration, teaching device, etc.): booklets, cut out letters, map, measuring device, signs or posters, scrapbook, etc.
15. **FURNITURE:** dresser, shelf, clothes closet, file cabinet, bed, chair, desk, table, bench, etc.
16. **GAMES** (including equipment for games, e.g., base for baseball game): hide in, throw at, ring toss, ball war, dance on, hide Easter eggs in, kick it, basketball hoop, box fights, etc.
17. **GROWING** (flowers or pot plants): window box, planter, start plants in, etc.

18. **HOUSEHOLD APPLIANCES AND OTHER ITEMS:** eating utensils (plates, dishes, etc.), spoon, dish rack, ash tray, fly swatter, mat, venetian blinds, tablecloth, fan, etc.
19. **MUSIC AND NOISE MAKERS:** drums or other musical instruments, bang together to make noise, etc.
20. **PATTERN:** stencil or pattern for tracing design or form, drawing square, cookie cutter, etc.
21. **PROTECTION:** armor, shield, helmet, put on head when someone yells, etc.
22. **SCIENTIFIC USES AND EQUIPMENT,** including optical equipment, telescopes, etc.
23. **STORAGE:** to keep/store stuff in, treasure chest, toy box or chest, etc.
24. **SUPPORT:** book ends; hold up table, window or other objects, etc.
25. **TOOLS:** gun pivot, boat paddle, grass seeder, scoop, shovel, etc.
26. **TOYS:** cut out dolls, kite, train, telephone, building blocks, flying saucers, baby pull toys, etc.
27. **TRANSPORTATION:** sled, wagon, car, doll buggy, etc.
28. **WEAPONS:** to throw at people or animals, cannon or other weapon of attack, etc.

#### Originality

Following is an alphabetical list of common responses together with originality weights and flexibility categories. *Unlisted responses with creative strength are awarded originality weights of "2."*

Responses	Orig. Weight	Flex. Categ.
Airplane, helicopter	1	27
Alphabet, cut out	1	14
Animals, toy	0	26
Animal cage/shelter/house	0	1
Apparel	0	10
Ash tray	2	18
Baby crib	1	15
Bank	1	8
Bed	1	15
Bed, animal	1	2
Bed or crib, toy	1	26
Black board, bulletin board	1	14
Blocks	2	26
Boat	1	27
Boat, toy	1	26
Books/booklets	1	14
Book cover	2	11
Building blocks, bricks	1	6
Buildings, including playhouse, club house, school, church, etc	0	4

Responses	Orig. Weight	Flex. Categ.
Burn, throw away, etc .....	0	12
Cabinet .....	1	15
Car, toy .....	0	26
Cards .....	2	<del>16</del>
Carrier, "carry stuff in" .....	0	5
Chair .....	0	15
Chair, toy .....	1	26
City, town, play or model .....	1	4
Clock .....	1	18
Closet, clothes .....	2	15
Clothing, unspecified .....	0	10
Coffin for dead pet .....	2	2
Container for junk, jewelry, etc .....	0	7
Costume .....	0	10
Cover for plants, lawn, etc .....	1	11
Crayon holder .....	0	10
Cupboard .....	2	15
Decoration .....	1	3
Desk .....	1	15
Desk, toy .....	1	26
Divider, for drawer/room .....	1	15
Doll .....	1	26
Doll clothes .....	2	10
Doll furniture .....	1	15
Doll house .....	0	4
Door .....	1	6
Drawing paper/board .....	1	3
Eating utensils .....	1	9
Feeder/waterer, animal/bird .....	2	2
Fence/fencing .....	2	6
File/filing cabinet .....	2	15
Fire starter .....	1	13
Flower grower/starter .....	1	17
Flowers, make .....	1	3
Footstool .....	2	15
Fort, play .....	0	4
Furniture, unspecified .....	0	15
Games, unspecified .....	0	16
Garbage can .....	1	7
Grocery container/carrier .....	0	7
Hat .....	0	10
Hide in .....	1	16
Insulating material .....	0	6



Responses	Orig. Weight	Flex. Categ.
Kick the box game .....	0	16
Kite .....	2	26
Lamp shade .....	2	18
Lunch box .....	2	7
Mail box .....	1	8
Mask .....	1	3
Mobile .....	1	3
Musical instrument .....	2	19
Numerals, cutout .....	1	14
Paint on them .....	1	3
Pencil holder .....	0	<del>10</del>
People, toy/cutout .....	0	26
Pictures .....	1	3
Picture frame .....	1	3
Planter/plant grower/starter .....	1	17
Play house, play in .....	1	4
Poster, maps .....	1	14
Puppet .....	1	3
Purse .....	2	5
Robot .....	1	26
Rocket weapon, toy .....	1	28
Room divider .....	1	15
Shelf .....	1	15
Shield .....	2	21
Shoes .....	1	10
Signs, all kinds .....	1	14
Sled .....	1	27
Slide, slide down hill .....	0	16
Space ship .....	1	27
Stage, make .....	1	6
Steps or ladder .....	1	18
Storage .....	0	23
Stove, toy .....	2	26
Suitcase .....	1	5
Table .....	1	15
Target .....	1	16
Television, toy .....	1	26
Tent .....	2	4
Toy, unspecified .....	0	26
Toy box .....	0	23
Toy car .....	0	26
Toy desk .....	1	26
Train, toy/play .....	0	26
Tree, cutout .....	1	3
Tree house .....	2	4

Responses	Orig. Weight	Flex. Categ.
Truck, toy . . . . .	1	27
Tunnel . . . . .	1	16
Vase . . . . .	0	7
Wagon . . . . .	1	27
Walls, patch wall, etc . . . . .	1	6
Writing material . . . . .	0	14

#### Elaboration (Optional)

The rationale for scoring elaboration on Unusual Uses of Cardboard Boxes is the same as for the Product Improvement Activity. The following scored responses may be used as a guide:

	Score
1. Store food in them . . . . .	0
2. Make club house out of some high ones* for small children.	1
3. Paint* them and use them for trash cans in the garage* . . .	2
4. Make a Halloween robot* costume out of them . . . . .	1
5. Make a boat with a giant* plastic lined* box . . . . .	2
6. Grind them up* and make new ones . . . . .	1
7. Large cereal boxes can be covered* with plain white paper* and made so that it looks like a ship . . . . .	2
Total . . . . .	9

#### Step 6 – Scoring Activity 6: UNUSUAL QUESTIONS ABOUT CARDBOARD BOXES

Determine the “divergent power” score of each response as described below. Record this score in the “Orig.” column under “Act.6” on the Scoring Worksheet.

##### Fluency

Fluency will be scored for Activity 6 as in all other activities, but no score will be determined for flexibility, at least for the present time. Experimentation with a variety of scoring methods is underway, but for the present scoring will be accomplished according to the procedure developed by Robert Burkhart\* who devised and developed the Object Question Test from which this activity was developed and used by permission.

##### Originality

The “divergent power” score, according to the Burkhart criteria, will be included as a part of the originality score. Experience, factor analyses, and the like, however, may indicate that this procedure is not justified. The kind of originality involved here may be somewhat different from the kind of originality involved in the other activities, since it is not based on the statistical infrequency of responses. Experience has shown, however, that there is a high positive correlation between statistical infrequency and the scores assigned using the criteria listed below, adapted from Burkhart’s work.

\*Burkhart, R. C. and Gloria Berheim. *Object Questions Test Manual*. University Park, Pa: Department of Art Education Research, Pennsylvania State University, 1963.

## ORIGINALITY WEIGHTS FOR ACTIVITY 6: UNUSUAL QUESTIONS

Type of Question	Personal (Self-Involving)	Factual Established Knowledge
<b>SIMPLE ANSWER QUESTIONS</b> 1. Yes-No answers 2. One word answers 3. Quantity or amount 4. Prepositional phrase 5. Either-Or	1 point	0 points
<b>COMPLEX ANSWER QUESTIONS</b> 1. Two or more words 2. Sentences 3. Why-Because	2 points	0 points
<b>DIVERGENT QUESTIONS</b> 1. Basic alteration of cardboard boxes 2. Projection of self into "new world" 3. Projection of self into object	4 points	4 points

**Definitions**

1. **Personal (Self-Involving):** Questions are considered personal when they involve the use of *you* and rely upon a personal experience, perception, opinion, attitude, thought, or projection for an answer. This includes questions of "beauty" and other questions that ask for value judgments such as "is it exciting, inspiring, good, etc."

2. **Factual Questions (Established Knowledge):** Questions are considered factual when they rely upon facts for an answer: that is, the response would be based upon reference to an established body of knowledge, encyclopedias, dictionaries, or completed research. There is no reliance upon personal opinion, guesses, or unknown facts.

3. **Basic Alteration of the Object:** Questions involving a basic alteration of cardboard boxes are those that change the basic characteristics of cardboard boxes and their relationship to the world by isolating or denying some aspect or creating some new aspect or function. These questions ask the subject to deduce what the result would be. (These questions sometimes take the form of asking for new uses of cardboard boxes.)

4. **Projection of Self into "New World":** Questions involving projection of self into a "new world" are those that ask the subject to project himself into a "new world" or relationship (hypothetical or imaginary), which in reality could not ordinarily be experienced. They then ask that the subject relate the facts that would exist in this world (factual) or his perception of this world (personal).

**5. Projection of Self into an Object:** Questions involving projection of self into an object are those that ask one to project himself into the role of an animate or inanimate object (cardboard box). They then ask him to relate what the facts would be from this new perspective (factual) or relate his perceptions of the world from this new perspective (personal).

**Examples:**

**1. Factual, Simple Answer Questions (0 points):**

- Are cardboard boxes more expensive than wooden ones?
- What are cardboard boxes made of?
- Can animals live in cardboard boxes?
- What shapes are they?
- Will cardboard boxes protect you from the rain? (Note: When "you" is used impersonally, the question is not scored in the "personal" categories.)

**2. Factual, Complex Answer Questions (0 points):**

- How are cardboard boxes made?
- Why don't they hold water?
- Why do they make more cardboard boxes than wooden boxes?
- Will cardboard melt or freeze?
- Why didn't they just stick to paper bags?
- What are the main uses of cardboard boxes?

**3. Factual, Divergent Questions (4 points):**

- What will make cardboard boxes obsolete or out of date?
- Is there such a thing as a girl or boy box?
- Why don't they call it hard paper instead of cardboard?
- If there were no cardboard boxes available, what would be the public's reaction?
- What would grocers do if there were no more cardboard boxes?
- What would happen if everything were made of cardboard?

**4. Personal, Simple Answer Questions (1 point):**

- Have you ever slept outdoors in a cardboard box?
- What do cardboard boxes remind you of?
- What other name would fit cardboard boxes?
- How many cardboard boxes do you usually keep?
- How many shapes of cardboard boxes have you seen?
- How many colors of cardboard boxes have you seen?
- Where do you keep your extra cardboard boxes?
- What size of cardboard boxes do you find most useful?

**5. Personal, Complex Answer Questions (2 points):**

- What are some of the sensations you feel when you get inside of a cardboard box?
- What do you think made anyone think of inventing cardboard boxes?
- What things can you make from cardboard boxes?
- What do you think makes cats like to play in cardboard boxes?
- Why do you think cardboard boxes were invented?

**6. Personal, Divergent Questions (4 points):**

- If cardboard boxes were transparent, how do you think you would react to them?
- How do you think you would like it, if all of your furniture were made of cardboard boxes?
- What would you do, if you had no cardboard boxes?
- How do you think you would move if you were a cardboard box?
- If you were a cardboard box, how would you like to be painted?
- If you were a cardboard box, would you like to be used as a playhouse for kittens?

**Elaboration (Optional)**

The following scoring examples will illustrate the application of the elaboration concept to this activity. Generally, this activity produces few elaborations.

	Score
1. How long will it be before something else replaces* cardboard boxes and they become obsolete? . . . . .	1
2. Would you like to make cardboard boxes? . . . . .	0
3. Why aren't cardboard boxes made in different colors? . . . .	0
4. What would happen if it were illegal in the United States* to destroy cardboard boxes for ten years*? . . . . .	2
5. What state made the most cardboard boxes in 1965*? . . . .	1
6. If you were a cardboard box, what kind of toy* for a child* would you like to be made into? . . . . .	2
Total . . . . .	6

**Step 7 – Scoring Activity 7: JUST SUPPOSE**

First, determine from the list that follows the originality weight for each scorable response. Enter this weight under "Orig.," "Activity 7," on the Scoring Worksheet. Then score this activity for flexibility, following the directions below.

**Fluency**

The fluency score is determined by counting the number of different consequences listed. No credit is given for inappropriate responses. One type of inappropriate response is one which merely restates the condition, such as:

- There would be strings hanging all about.
- There would be a string attached to every cloud.
- There would be a string hanging from every cloud.

Another type of inappropriate response is one which has no special relevance to the improbable situation or describes conditions which already exist and would not be caused by the improbable condition.

Occasionally, subjects may list within one sentence a number of different consequences or ideas. In such cases, give credit for each such consequence or idea. It is felt that such multiple scoring is justified because each consequence could have been written as a separate, simple statement.

### Flexibility

Instead of using static categories as in the other tasks, flexibility is defined in the Just Suppose Test as a *change* or shift in attitude or focus. Each shift or change in attitude or focus receives a point for flexibility. For example, the following set of responses would receive no credit because there is no change in the approach of the subject. There is no change in the focus, no mental leap from one approach to another:

Tornadoes would stay in one place.  
Hurricanes would stay in one place.  
Thunder storms would stay in one place.  
Rains would always be in the same places.

The following set of responses would receive a score of five on flexibility (each asterisk represents a shift and is given a one-point score):

1. People would swing on them.
2. People would climb them.
3. People would hang packages on them.\*
4. They would block drivers' views on highways.\*
5. More road accidents would occur.
6. Rain would trickle down the strings.\*
7. People would have clouds for sale just like balloons.\*
8. People would ask the President if they could cut the strings in their yard.\*
9. They might ask the President to do something about it.

Questions about the size of the shift necessary for the scoring of a "shift" can be answered by comparing with responses in the above sequence. No shift occurred (or is scored) between the first and second responses because both involved people themselves doing something on the strings. The shift between the second and third responses seems small but is scored as a "shift" because now, instead of people themselves performing on the strings, they are hanging packages from strings. In the fourth response, the focus is still on strings but there is a "shift" to something that the strings do. No shift is scored for the fifth response because it only cites a consequence of the preceding response. Then a shift occurs when the respondent thinks of clouds as balloons. Finally, a larger shift occurs when he thinks of asking the President for permission to cut the strings. The last response parallels the eighth too closely to be considered a shift.

On the Scoring Worksheet, indicate a shift by placing a check mark in the box that corresponds to the number of the response under the "Shf." column of Activity 7. The first response is not scored. Once a shift is checked, duplications of this attitude or focus do not receive additional credit. If the attitude or focus is similar in all responses, the flexibility score is zero.

### Originality

Originality is judged primarily by the rarity of the response. Obvious responses, responses requiring little or no mental leap from the stimulus, however, are not considered original, in spite of rarity. The following alphabetical list contains the common, unoriginal responses indicated by "0", responses showing some degree of originality indicated by "1", and responses

that are relatively rare and showing a leap from the obvious indicated by "2."  
*Responses not included in this list which show evidence of creative strength are awarded originality weights of "2."*

Responses	Orig. Weight
Accidents, there would be many . . . . .	0
Airplanes would get strung/tangled up . . . . .	0
Balloons, clouds will be used as . . . . .	2
Birds would get tangled in the strings . . . . .	1
Break/cut the strings, someone would/might . . . . .	0
Bump into strings, people would . . . . .	1
Caught on them, people/things/etc. would get . . . . .	0
Climb mountain, string would help people . . . . .	1
Climb up the strings, children/people would . . . . .	0
Control climate/precipitation, people could . . . . .	2
Dark, clouds would make it . . . . .	1
Deteriorate, strings would . . . . .	1
Die, people/plants/animals would . . . . .	0
Dirty, strings would get . . . . .	1
Driving would stop . . . . .	1
Fall, strings would . . . . .	1
Fall, the clouds/sky would . . . . .	1
Fire, strings would catch . . . . .	2
Float by hanging onto strings, people would . . . . .	1
Floods from raining too much, there would be . . . . .	1
Get in the way, strings would . . . . .	0
Go anywhere, people could not . . . . .	0
Go to the clouds/sky, people could . . . . .	1
God, people would be able to see . . . . .	2
Hang themselves (commit suicide), people could . . . . .	2
Hang things on the strings, people could . . . . .	0
Hurt, people would get . . . . .	1
Jump rope, children/people could . . . . .	1
Killed, people would be . . . . .	0
Kite flying would be replaced by cloud flying . . . . .	2
Kites would be caught in strings/clouds . . . . .	1
Lightning and thunder when clouds are pulled into one another, there would be . . . . .	1
Manufacturers of string would go out of business . . . . .	2
Move clouds to anywhere desired, people could . . . . .	2
Play with the strings, children/people would . . . . .	0
Pull clouds down, people would/might . . . . .	0
Rain when you pulled a string, it would . . . . .	0
Rain, there would be more . . . . .	0

	Orig. Weight
Rain, there would be no . . . . .	0
Ride on the clouds, people could/would . . . . .	1
Scientists would pull down clouds to study them . . . . .	2
See people/anything, people could not . . . . .	0
Shade could be produced by tying clouds in yard/where desired . . . . .	2
Shortage of string, there would never be a . . . . .	2
Sleep on clouds, people could/would . . . . .	2
Slide down strings, children/people could . . . . .	1
Slimey, rains would make strings . . . . .	2
Sunshine, we could never get/see . . . . .	1
Swing from one cloud to another, people could . . . . .	0
Swing on the strings, people could . . . . .	0
Tangled after wind/rain, strings would be . . . . .	1
Tangled on the strings, people/things would get . . . . .	0
Tied permanently to one spot, clouds could be . . . . .	2
Tied, things could be on the strings . . . . .	0
Travel on strings, people could . . . . .	2
Traffic would jam . . . . .	2
Wet from rain, strings would get . . . . .	0

#### Elaboration (Optional)

The following scoring examples will illustrate the application of the elaboration concept to the Just Suppose activity:

	Score
1. We would have fog so thick we couldn't get through* . . . . .	1
2. People would cut them off and make a tunnel* for cars to go through* . . . . .	2
3. Airplanes would get snagged . . . . .	0
4. The string would break and the people would fall* . . . . .	1
5. People rescued by helicopter could slide down the strings wherever they wanted to get off* and the helicopter wouldn't have to land* . . . . .	2
6. It would give us a new form of transportation . . . . .	0
Total . . . . .	6

#### Step 8 – SUMMARIZING THE RESULTS

The examiner is now ready to summarize his scoring in the "Score Summary" box on the right side of the scoring worksheet. The fluency score for each activity can be read directly by noting the marginal number adjacent to the last response. To determine the flexibility score in Activities 1–5, strike out category duplications under the "Cat." column, count the remaining responses, and enter these in the FLEX column of the Score Summary. The flexibility score for Activity 7 is the total of check marks under the "Shf." column for that activity. Enter this value under FLEX and add the six values (there is no



flexibility score for Activity 6) for the total flexibility score. To obtain the originality score, simply add the weights recorded in the "Orig." column under each activity.

Now the examiner should be ready to compute the totals for each of the three columns of the "Score Summary" box. These are the raw scores for fluency, flexibility, and originality for the Verbal Test. In many cases one will not need to go further. For certain purposes, however, the examiner will want to convert the raw scores to standard scores or T-scores.\* This should be done whenever he finds it necessary to combine scores for some kind of composite or total score, whenever he wants to determine the relative strengths of the three kinds of ability (fluency, flexibility, and originality) of a given individual or group, or whenever he wants to compare an individual's performance with some of the comparison groups for which data are given in the technical manual. The data for converting raw scores into standard (T) scores are included in the *Norms-Technical Manual*.

Note that no provision has been made on the scoring worksheet for a verbal elaboration score. This is because the author does not now encourage the use of such a score. Examiners who wish to experiment with the verbal elaboration score may want to devise a separate scoring sheet for this purpose.

Both immediately and from time to time, the examiner will want to obtain some indication of the reliability of his scoring. If possible, he should have someone else score four or five of the same records he has scored and then discuss any discrepancies. Then, with a sample of 20 to 40 records, he might want to compute reliability coefficients† for each of the three scores. Another useful kind of reliability check is to rescore a set of tests after a lapse of one or more weeks. If the scoring worksheets are used, these kinds of checks will be easy.

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\*See standard statistics or tests-and-measurement text for explanation of these scores.

†This coefficient is found by computing the correlation between the scores found by the two scorers on the same set of tests. Most statistics texts explain the computational methods.

## EXAMPLE OF COMPLETE SCORED TEST RECORD

On the pages following is listed, for the guidance of examiners, a complete set of responses to the activities of a Verbal A test booklet, as given by a sixth grade girl. The flexibility categories and originality weights, as determined by the scorer, are listed after each response.

The Scoring Worksheet used with this test is reproduced on page 47. On it, the examiner has transferred his annotations from the booklet and summarized them. Total raw scores for each scoring category were cumulated in the Score Summary box and transformed into T-Scores, using the norms table for the Verbal A booklet from the *Norms-Technical Manual*.

Prior to scoring other tests, the examiner might wish to score this example, first covering the scoring notes.

### Scoring Annotations

The figure preceding each response in all seven activities is the response number. It is the same as the number under the column labeled "Resp. No." on the Scoring Worksheet. The fluency score for each activity is the same as the number for the last response in the activity, minus irrelevant or unscorable responses.

Two figures, separated by a hyphen, follow each response for Activities 1–5. The first represents the originality weight of the response and the second, its flexibility category. The single digits following the responses for Activities 6 and 7 are originality weights. No flexibility score is determined for Activity 6. For Activity 7, the flexibility score is found by counting shifts of focus rather than by use of categories. Each of these shifts is designated on the sample test record by a check mark in front of the response that represents a shift in focus.

A few responses have no figures after them. These responses were considered irrelevant, therefore were not scored.

### Responses to Verbal Booklet, Form A

#### Activity 1: Asking

- |  |      |
|--|------|
| 1. How did he happen to come here? . . . . .   | 2-8  |
| 2. How did he happen to see himself? . . . . . | 2-11 |
| 3. Has he been at a party? . . . . .           | 2-12 |
| 4. Is he from years before us? . . . . .       | 2-15 |
| 5. How old is he? . . . . .                    | 0-1  |
| 6. Where does he live? . . . . .               | 0-7  |
| 7. Does he live by the stream? . . . . .       | 0-7  |
| 8. Does he come here often? . . . . .          | 2-11 |
| 9. Is it a lake or a river? . . . . .          | 0-14 |
| 10. Will he fall in? . . . . .                 | 0-11 |

**Activity 2: Guessing Causes**

- |   |      |
|---|------|
| 1. He feels lonely . . . . .                              | 2-5  |
| 2. He wants to be alone . . . . .                         | 2-5  |
| 3. He was exploring and found the stream . . . . .        | 2-11 |
| 4. He was playing and saw his face . . . . .              | 0-11 |
| 5. He came to get water from the stream . . . . .         | 0-11 |
| 6. He was on a picnic and waded into the stream . . . . . | 2-11 |
| 7. He went swimming there . . . . .                       | 0-11 |
| 8. He thinks it's a wishing well . . . . .                | 2-9  |
| 9. He played there when he was smaller . . . . .          | 2-15 |

**Activity 3: Guessing Consequences**

- |  |      |
|--|------|
| 1. The stream will dry up (probably not causally related to<br>pictured event) . . . . . | - -  |
| 2. He will fall in . . . . .   | 0-11 |
| 3. The stream will become bigger (not causally related) . . . . .                        | - -  |
| 4. He might drown . . . . .  | 0-11 |
| 5. His wish will come true . . . . .   | 1-5  |
| 6. His sister will discover the stream . . . . .   | 2-7  |
| 7. Then he won't come as often . . . . .   | 2-11 |
| 8. He will move away (probably not causally related) . . . . .                           | - -  |

**Activity 4: Product Improvement**

- |  |      |
|--|------|
| 1. His tail wider . . . . .                        | 0-8  |
| 2. His trunk longer . . . . .                      | 0-8  |
| 3. His tail longer . . . . .                       | 0-8  |
| 4. His ears bigger . . . . .                       | 0-8  |
| 5. Much taller . . . . .                           | 0-8  |
| 6. Make it into a bank . . . . .                   | 1-1  |
| 7. Stick the penny in his trunk . . . . .          | 2-1  |
| 8. Make him easy to ride on . . . . .              | 0-1  |
| 9. Put wheels on his feet . . . . .                | 0-10 |
| 10. Have a saddle so kids may sit on him . . . . . | 0-2  |
| 11. Have it so you can take it swimming . . . . .  | 2-13 |
| 12. Have it so you can take it apart . . . . .     | 1-16 |

**Activity 5: Unusual Uses of Cardboard Boxes**

- |                                |      |
|--------------------------------|------|
| 1. To slide in . . . . .       | 0-16 |
| 2. Make faces on . . . . .     | 1-3  |
| 3. Make totem poles . . . . .  | 2-3  |
| 4. Animals . . . . .           | 0-26 |
| 5. To hold groceries . . . . . | 0-8  |
| 6. To hold plants . . . . .    | 1-17 |
| 7. To put toys in . . . . .    | 0-23 |
| 8. To put jars in . . . . .    | 0-8  |
| 9. Make pictures . . . . .     | 1-3  |
| 10. Dress up in . . . . .      | 0-10 |
| 11. Put soap in . . . . .      | 0-8  |

**Activity 6: Unusual Questions**

- |   |   |
|---|---|
| 1. What is it made of? .....                              | 0 |
| 2. How is it made? .....                                  | 0 |
| 3. When was it invented? .....                            | 0 |
| 4. How might they be improved? .....                      | 4 |
| 5. Who thought of the idea? .....                         | 0 |
| 6. How do you suppose they happened to think of it? ..... | 4 |

**Activity 7: Just Suppose**

- |  |   |
|--|---|
| 1. More people will be killed .....            | 0 |
| ✓ 2. Kids will climb in the clouds .....       | 0 |
| ✓ 3. People will float off in the clouds ..... | 0 |
| ✓ 4. New form of transportation .....          | 1 |
| ✓ 5. New radar system .....                    | 2 |

SCORING WORKSHEET

TORRANCE TESTS OF CREATIVE THINKING, VERBAL FORMS A and B

Pupil's Name NEWTON ROBERT School MIDDLE SCHOOL Test Date 2-23-74  
 Age 12 Grade 7 Sex F Scores A.L.H. Form A

Resp No	Activity 1		Activity 2		Activity 3		Activity 4		Activity 5		Act. 6	Activity 7	
	Orig	Cat	Orig	Cat	Orig	Cat	Orig	Cat	Orig	Cat	Orig	Shl	Orig
1	2	8	2	5	-	-	0	8	0	16	0		0
2	2	11	2	8	0	11	0	8	1	3	0	✓	0
3	2	12	2	11	-	-	0	8	2	8	0	✓	0
4	2	15	0	H	0	H	0	8	0	26	4	✓	1
5	0	1	0	H	1	5	0	8	0	8	0	✓	2
6	0	7	2	H	2	7	1	1	1	17	4		
7	0	7	0	H	2	H	2	1	0	23			
8	2	H	2	9	-	-	0	1	0	8			
9	0	14	2	15			0	10	1	8			
10	0	H					0	2	0	10			
11							2	13	0	8			
12							1	16					
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													

SCORE SUMMARY

	FLU	FLEX	ORIG
Act. 1	10	7	10
Act. 2	9	4	12
Act. 3	5	3	5
Act. 4	12	6	6
Act. 5	11	7	5
Act. 6	6	8	8
Act. 7	5	4	3
TOTAL	58	31	49
SCORE	43	50	50

COMMENTS:

PRINTED IN THE UNITED STATES OF AMERICA  
 47  
 FGHIJKL-74

APPENDIX C

NEW SCORING GUIDE FOR ORIGINALITY

## New Scoring Guide for Originality

## VERBAL ACTIVITY 3

119 students  
1300 responses

	number used	originality points
A, make an	2	2
acne, see if he has	1	2
adventure, river takes him to	1	2
adventurous, be	1	2
advise, will receive	1	2
alone, can be	1	2
amazed at reflection	1	2
animals won't return anymore	1	2
animals will favor pond	1	2
animal, run into	1	2
animal, turns into	1	2
arrogant, becomes	1	2
arrested, will be	2	2
asleep, fall/dream	6	2
avoid society	1	2
bath, take a	16	2
bath, give dog a	1	2
bed, go to	1	2
becomes a better person	1	2
bell will drop off of hat	1	2
big & strong, becomes	1	2
bit by shark/turtle/snake bee/etc.	12	2
boat ride, go on a	3	2
boats, sail	1	2
boat splashes him	1	2
boat, swim to	1	2
boat, gets a new	2	2
boat blown away/lost	2	2
builds dam	1	2
builds boat	1	2
build city underwater	1	2
bury dead fish	1	2
break his neck	1	2
bridge, builds a	3	2
bring family	1	2
bubbles, make	1	2

building confidence	2	2
builds a home here	1	2
burn face	1	2
cannery, operates a	1	2
caught/captured gets	4	2
caught, doesn't get	1	2
cereal, eat some	1	2
come back daily/often	23	2
come back, not allowed to	1	2
children supervised near water	1	2
children, show his	1	2
children, has	1	2
called away	1	2
campground, turn it into a	1	2
camps there	1	2
canoe, builds a	1	2
catch something	1	2
chokes	1	2
circus, joined	1	2
clean, gets	4	2
cleans up mess	1	2
clothes shrink	2	2
clothes fad	1	2
clown, acts like a	1	2
color the water	1	2
cold, get	2	2
collects \$ to take to good fairy	1	2
confused	2	2
costume party, goes to	1	2
creativity, no	1	2
crosses to other side	4	2
cry	4	2
crying over spilt milk	1	2
curious, becomes	2	2
cut himself	2	2
dance, will	1	2
dead, contacts	1	2
decides water is wonderful	1	2
decide it wasn't worth \$ to get ears fixed	1	2
decide it is too deep	1	2
develops complex	1	2
develops mind	1	2
dinosaur chased him	1	2
dirty/muddy, get	13	2
discover new	1	2
die	8	2
different, look	1	2
disappear, will	2	2
dislike taste of water	1	2
doctor will give shot	1	2
dog dies	1	2



dog will come to him	1	2
dreams come true	1	2
dreamed it a long time ago	1	2
drinks	37	1
drink and be sick	9	2
drink and die/poisoned	10	2
drown, he will	24	2
drown enemy	1	2
dry off in sun	1	2
dry, will be	1	2
ducks, sees	1	2
dull/bored	4	2
eat	4	2
ears, wishes weren't pointed	1	2
ears, decides they're ok	1	2
elf hunter sneaks up on	1	2
elves engrossed in water	1	2
embarrassed from tripping	1	2
evil, becomes	1	2
exercising, stops	1	2
experience, use the	1	2
everyone is beautiful in own way	2	2
face transplant, want a	1	2
faces, makes	2	2
fall - fall in	64	0
famous, becomes	2	2
fat, becomes	1	2
father will be mad	2	2
favorite place	1	2
ferry operator, becomes a	1	2
finds out he shouldn't be afraid of water	1	2
fish, catch/cook/eat	41	1
fish, miss/not catch	1	2
fish farm, start a	1	2
fish, eat poisoned	1	2
fish, reaches for	1	2
fish, study	2	2
fish, turns into	1	2
fish talks/laughs	3	2
fish jumps	1	2
fish, decide not to	1	2
fishing, start	6	2
fisherman pulls him out	1	2
flaw in character found	1	2
float to Texas	1	2
float something/self	2	2
flowers, gathers	1	2
flying fish jumps	1	2
friend, go play with	2	2
friends, bring/come	12	2
friends don't believe	1	2
frog, becomes a	1	2

finds playmate	3	2
find tadpole/fish/frog/food	21	2
find something/rock/toy	35	1
thing dropped		
find gold/treasure/coin	26	1
find gold, doesn't	1	2
finds answers	1	2
find clue	3	2
find what he lost, doesn't	2	2
find people, tries to	1	2
fired, gets	1	2
first time to see himself	6	2
found by family	1	2
fountain of youth, drank from	4	2
fraternity, joins	1	2
frog jumps on head	1	2
fun, have	2	2
fun hearing noise of wet shoes	1	2
future, sees the	3	2
girlfriend, takes	1	2
girl comes along	1	2
god, its will be angry	1	2
god, its will forgive	1	2
go on, leave, get up	18	2
go do something mean	1	2
gold is at the end of rainbow	2	2
grab something	1	2
grinding method, discover	1	2
grounded, be	1	2
grow up shy & disturbed	1	2
hair, grow to cover ears	1	2
handsome, told everyone he was	1	2
happy, be	2	2
hard time getting up/out	2	2
hat, likes	1	2
hat, dislike	1	2
hat, drop/lose	11	2
hat, bird lands on	1	2
hat, needs/buys new	2	2
hat, removes	5	2
hat, remove string	1	2
hat, destroys	4	2
hat, new style of	1	2
hat gets flat	1	2
hat, adjust	3	2
haunted by past	1	2
head becomes like hat	1	2
heart attack, has a	1	2
hero, becomes	3	2
heavy duty detergent used on		
clothes	1	2
hid treasure	2	2
hit bull	1	2
has home with access to water	1	2

home, go	9	2
home to get water, go	1	2
honeymoon, spends it here	1	2
hours, looks for	1	2
hydroelectric power, discover	2	2
identity, finds	2	2
ice, crawls on	1	2
ice, checking thickness of	1	2
ice melts	1	2
ice skating, go	5	2
ill, get	12	2
image is gone	1	2
insane, goes	2	2
invent something	1	2
invent scuba gear	1	2
invent submarines	1	2
jello, make	1	2
journey, goes on	1	2
jump in/get in/dives in	18	2
jump across	1	2
kicked out of school	1	2
killed thing thrown in	1	2
king, becomes a	4	2
know what to do with wet clothes, won't	1	2
kool aid, mix with water	1	2
Lawyer, become a	1	2
leader,, becomes a	1	2
late, get home/school	3	2
laugh at himself	3	2
lay down	1	2
learn something	9	2
learn to ski	1	2
legends about place	1	2
Leprechaun, became a	1	2
lies to mother	1	2
lying, quits	1	2
like water	2	2
lives underwater	2	2
live by the water	1	2
live in fear	1	2
living, kept on	2	2
lonely, is	2	2
look away	1	2
look for him, others will	1	2
looks are disappointing	6	2
looks for mermaids	1	2
lost, get	4	2
lost family	1	2
lose dogs chasing	1	2
lose shoes and ears	2	2
lose something/boat/etc	5	2
lose weight	1	2
loses golf game	1	2

love/likes himself/ vain	17	2
love, fall in	2	2
man of the sea, becomes	1	2
magic powers/magical gets/find	8	2
magic spell, casts a	3	2
make up, its mate will	1	2
married, get	7	2
Marines, joins the	1	2
melts, he	2	2
mirrors will be invented	7	2
mirror company, gets job with	1	2
missed, he won't be	1	2
model, becomes a	1	2
modify action	1	2
money, won't have any	1	2
monster/dragon pulls inn	2	2
monster ate him	1	2
monster walks out	1	2
mother call him	3	2
mother get mad	5	2
mother told about reflection	2	2
move to the woods	1	2
movie star, becomes a	1	2
murder suspect, becomes a	2	2
Naturalist, become a	1	2
necklace, make from shells	1	2
nothing will happen	1	2
no one else like him	1	2
older, becomes	1	2
others, force to do	1	2
others gather	1	2
Oz, swim to	1	2
paint a picture	7	2
paralyzed by snake	1	2
parents will look for	1	2
party, go to a	1	2
psychologically handicapped	2	2
pipe, builds/plumber	2	2
pick some flowers	1	2
pick up what he dropped	1	2
planet, zapped back to	1	2
play	3	2
poison the water	2	2
poor, becomes	1	2
powerful, get	1	2
prayed by water	1	2
pregnant, will have a king	1	2
pretty, sees how	1	2
preserve area	1	2
prince, turn into a	1	2
princess appears	1	2
prison, set to	1	2
put hand/head in water	10	2
put/drop something in water	1	2

pushed in, get	9	2
push things with water	1	2
questions, ask	1	2
rained on, get	1	2
rains and floods	1	2
rainbow, there is a	1	2
realizes he's elf not human	1	2
realized reflection is him	1	2
relieved at looks	1	2
reindeer tracks lead to Santa	1	2
reindeer knocked down	1	2
reflection thought to be someone else	1	2
reflection, make change	1	2
reflection, grab/touch	7	2
reflection will talk to him	3	2
reflection creates 2nd elf	1	2
reflections are friends	1	2
reflections, studies	1	2
remains elf forever	1	2
remember what he looks like, wants to	1	2
returns to spaceship	1	2
returns, never	2	2
revenge, seek	1	2
ritual of seeing reflection	1	2
remember place/occurrence	5	2
rich, get	12	2
rich, land gets	1	2
ruin clothes	1	2
run away	1	2
sad, becomes	1	2
salamander, realize he's not a	1	2
Santa, be mad at	1	2
Santa Clause, talk to	2	2
saves world with magic wand	1	2
save someone from drowning	4	2
save village from thirst	1	2
saved by girl	2	2
saved by unicorn	1	2
scared/afraid, get	19	2
school, missed	2	2
school, attend	2	2
scientist, become	3	2
scrape elbow	1	2
scream	2	2
scuba diving, goes	1	2
secret place, becomes	1	2
see/look at himself/images	14	2
see two images	1	2
see underwater kingdom	1	2
self concept changed	1	2
self confidence, no	2	2
send message in bottle	1	2

shadow, see	1	2
shark, see	1	2
share secret with friend	1	2
shells, collect	2	2
shoes, get bigger	1	2
shoes ruined/dirty	2	2
shoes, take off	4	2
shoes straighten	1	2
shoe, tie	1	2
shoots a frog	1	2
shopping, will go	1	2
shot by Indians	1	2
show gold in land	1	2
sight received	1	2
skinny dipping, goes	1	2
skip stones, learns to	1	2
skating, stop	1	2
slides on ice	2	2
smell, hates the	1	2
smile at himself	1	2
snake will pull him in	1	2
spirits, call from water	1	2
spits out bad water	1	2
splash water	7	2
someone throws pebble in to		
attract attention	1	2
sorry, be	1	2
sore, gets	1	2
Star Trek sub rescues	1	2
stays	4	2
star fish, turns into	1	2
starve	1	2
steals money from well	1	2
stepped on	1	2
stumps toe	1	2
straighten hat & clothes	1	2
stream good for fishing	1	2
stuck there forever	1	2
style, realizes he's out of	1	2
suicide, commit	4	2
sunburned	2	2
surprised by fish	1	2
surprised at looks	3	2
swears off parties	1	2
swimming, go	27	1
swimming party, have a	1	2
swim, learn to	6	2
swing legs	1	2
talk to himself/reflection	3	2
tell anyone, does not	3	2
tells about it	16	2
test the water	1	2
thinks about brother	1	2
think images talk	1	2

think images look like him	1	2
thinks	4	2
thinks he killed elf in water	1	2
thought he was imagining	1	2
throw something in	6	2
tired, is too	1	2
trap, sets a	1	2
trampled by elephants	1	2
trance, goes into a	1	2
treats people better	1	2
tree, turns into	1	2
troll chased	1	2
troll, will meet a	1	2
trouble, get in	13	2
tunnel, find secret	1	2
understand, didn't	1	2
upset, is	4	2
ugly, see he isn't	1	2
wade in water	1	2
walk, not crawl thru stream	1	2
walk for hours	1	2
wash face/hands/clothes	18	2
watch the fish/learn about	2	2
wet, get self/clothes	16	2
wig, gets a	1	2
wish he wasn't a pixie	1	2
wish, is granted	8	2
wish, makes a	4	2
wish isn't granted	2	2
wishes, someone will want	2	2
wiser, get	1	2
woke up	1	2
world, enter another/dimension	4	2
wakes up in the hospital	1	2
water, discovers	1	2
water skiing, goes	1	2
water is dangerous, realize	1	2
water, preserve & bottle	1	2
water, it is not	1	2
water, takes it with him	11	2
water pollution, invents end to	2	2
water, grab/pull something from	3	2
water too cold/freezing	2	2
water warm enough to swim	1	2
water sample tested	1	2
water turn to glass	1	2
water & real world switch	1	2
water becomes creature & swallows elf	1	2
water looks mucky	1	2
water supply, only	1	2
weatherman	1	2
wife, will being	1	2
wizard will make handsome	1	2

Willie Wonka's chocolate  
factory, led to

1

2



## VERBAL ACTIVITY 4

119 students  
2104 responses

	number used	originality points
A		
abstract, make more	1	2
adoptable	5	2
advertise it	3	2
accessories, jewelry give	5	2
airplane, make into	2	2
alive, real, make it	8	2
alphabet, say	1	2
amusement park, make into a large	1	2
attack elephant	2	2
attach to other elephant's by tail & trunk	3	2
Australia, give trip to see elephants	1	2
bathtub, make into a	1	2
balloon	2	2
bed	3	2
bomb, make it a	1	2
bow	5	2
bell	9	2
bank	16	2
bag/backpack	7	2
babies with it	15	2
bathroom, use	5	2
birth certificate	3	2
basket, carriage, saddle	7	2
battery operated	10	2
bounce	4	2
ball	7	2
band, put in a	1	2
ball, fold into a	2	2
boomerang, make into	1	2
boat, make into	1	2
blanket, add	2	2
blow bubbles out trunk	2	2
bottle, add	2	2
books, put inside	1	2
barbie doll, add	1	2
baby basket, put in	1	2
brass. make it out of	1	2
carry/hold things	7	2
camera, make into	2	2
cage, put in a	3	2
carried, able to be	4	2

converse, able to	1	2
colors, different	102	1
clothes	62	1
cloth, made of	1	2
colors, change	13	2
car, give or make into a	4	2
cost a lot	2	2
cuter	3	2
nail clippers	1	2
chain on neck, feet	4	2
make into clown	3	2
circus, part of set	17	2
cartoon show about	8	2
change shape	2	2
cassette player/tape	11	2
climb, able to	2	2
camouflaged	1	2
clock, watch, make into	3	2
cheerlead, able to	1	2
computer, add to inside	7	2
chair, make into a	8	2
cry	3	2
change into something		
else	7	2
clamp onto things	1	2
crusher, use as	2	2
costume, make into a	3	2
can color, paint, draw on	6	2
clothes made of pipe cleaners	1	2
chase children	1	2
catch things with trunk	1	2
"Cabbage Patch" eleph.	1	2
candy, make it into	1	2
crystal, make him	1	2
chewable, make it	1	2
child's "buddy", make it	1	2
ceramic, make it	1	2
dance, able to	12	2
drums, play	2	2
Dumbo, like	5	2
dolls inside	1	2
drink, able to	5	2
dogs, chase	1	2
dispense candy, peanuts	7	2
door stop, use as	1	2
drunk, play	1	2
different looking ones	1	2
durable, sturdy	4	2
Disney World, put at	1	2
earrings, add	1	2
ears floppy	15	2
ears move	31	2
ears bigger	19	2
eyes sewn on	1	2

eyes/eyelids move	34	2
eyes bigger	3	2
eyes light up	7	2
eyelashes	5	2
eyes lifelike	6	2
eyes, let kids play with	1	2
give an environment	1	2
ears different colors	4	2
button eyes	1	2
ears, remove	1	2
ears, grow	2	2
eyes & nails glow in dark	1	2
eat, able to	12	2
ears, pull back	1	2
eyes change color	3	2
elf, give as friend	1	2
emotions, give	5	2
edible, make it	2	2
eggs, lay with \$ inside	1	2
fabric different	6	2
fur longer	2	2
feet pink	2	2
feet, black plastic	1	2
feet as ink stamp	2	2
feet, give big, floppy	2	2
fly (with ears)	20	2
family, give it a	12	2
fluffy, fuzzy, furry	15	2
friends, give it	16	2
feathers, stuff with	1	2
fountain, make into a	1	2
follow people around	3	2
flowers, paint on it	1	2
float, able to	2	2
feel warm	4	2
furniture, provide	1	2
fur, use real	2	2
feet, made of soft velvet	1	2
food, comes with own	1	2
game, add a	4	2
grooming kit	3	2
grow, able to	5	2
give it away	2	2
gun, add a	3	2
ghost, make it a	1	2
gender, give it	2	2
give it something to do	1	2
glow in dark	5	2
go cart, make into a	1	2
glasses, add	2	2
gold, made of	2	2
harness	1	2
hair, long, curly, thick	9	2

head bigger	3	2
head move	8	2
hat, add	8	2
hat, make into a	1	2
huggable	1	2
house to live in	4	2
hair on tail, add real	1	2
hair grow	3	2
hollow to play in	2	2
hearing/response ability	14	2
hollow, with smaller elephants inside	1	2
house slippers, make into	2	2
horn, make into	1	2
hair, roll, curl	2	2
hanger, add to it	1	2
ice cream truck, make into	1	2
ice cream, serve w/ trunk	1	2
jungle animals, set of	12	2
key chain, put on	1	2
kite, make into	1	2
"kidnip", fill with (like catnip)	1	2
kill mice	1	2
lighter, make it	2	2
larger, life size, fatter	68	1
leather skin	3	2
legs shorter	1	2
legs moveable	14	2
laugh	4	2
legs, remove	1	2
lights, add	2	2
lie down, flat	2	2
light, make into a	2	2
list of elephant facts	2	2
log & chain, add	1	2
leash, add	1	2
marble eyes	1	2
motor, mechanical	8	2
music, play or box	28	2
mean	1	2
microphone	3	2
material, shapeable	1	2
mouth, give a	6	2
monkey on back	1	2
my little pony, as friend	1	2
mouth, make into pouch	1	2
mouse friend	3	2
mammoth, look like	2	2
mascot, make a	1	2
magnet, make it a	1	2
mother, give it a	1	2
muffler, use as	1	2
march, able to	2	2

magic	2	2
monster, change into	1	2
match a child's room,	1	2
mouth moves	3	2
multiply when wet	1	2
noises, make	67	1
name, give	28	2
nutcracker	3	2
nails grow	1	2
toenails, add	1	2
no changes	2	2
necklace with his name	1	2
organs for feeding	1	2
operated by levers, big	1	2
parts stretch/flexible	12	2
parts moveable	45	1
personality, give	2	2
purse, make into a	4	2
"punk"	1	2
polishable toe nails	16	2
parts detachable, inter- changeable	26	2
puppet, make into a	7	2
polo, put on it	1	2
parts make other animals	6	2
playground equipment, make into	4	2
peanuts, eat	17	2
play, dead, games, football	5	2
pillow	4	2
positions, available in different	1	2
pen, make into	1	2
pin the tail game, make	1	2
pinata, make into	1	2
pedestals, circus	3	2
playdough, made of	2	2
"pub", make an elephant	1	2
priced reasonably	3	2
pregnant, make	1	2
powder dispenser	1	2
presentations, able to give	1	2
pop up, make it a	1	2
playground, give him a	1	2
rattle	5	2
repeat things said	2	2
radio	16	2
remote control	21	2
ring in nose	1	2
rider	9	2
realistic, make it look	14	2
ribbon	5	2

robot	7	2
rubber cement, made of	1	2
raft, make into a	1	2
rideable	15	2
reverses to make another toy	2	2
rubber, made of	3	2
records with stories	1	2
record player, make it a	1	2
ride at fair, make into	1	2
racetrack, put on	1	2
ride a bicycle	1	2
skate, add or able to	6	2
stiff	1	2
skunk markings, give	1	2
story about it	11	2
shape defined more	4	2
soft, cuddly	51	1
stand on two legs	13	2
shoes	11	2
squeak when squeezed	17	2
shoot balls from trunk	1	2
smiling	3	2
sunglasses	2	2
springs under feet	1	2
size, available in different	3	2
skin, real, feel real	13	2
smaller	12	2
slimy stuff, made of	1	2
skin smoother	1	2
swim, able to	5	2
sequins, made of	1	2
stuffed with beans	2	2
strong to hold things	1	2
stilts	1	2
sizes, able to change	10	2
safe	1	2
soap, make into	3	2
sponge, made of	1	2
soap dispenser, make it a	1	2
storage/secret compartment	15	2
surprise inside	2	2
suction cups on feet	2	2
stereo, make into	1	2
school, go with children	1	2
string to pull toy, add	4	2
stool, make into a	1	2
skate board, add	1	2
sit down, able to	3	2
squirt gun, make into	2	2
"super" elephant with phone booth	1	2
scarf, add	1	2

smell like things	3	2
stand, not squat	1	2
swing from bar w/ trunk	1	2
shake hands w/ trunk	1	2
stuffed with different things	1	2
steel pipe, make out of	1	2
silver, make it of	1	2
stand, make it unable to	1	2
talk, voice box, sing	98	1
tail longer	5	2
tail move	35	2
tail elastic	1	2
tail, give a	1	2
tail grow	1	2
tail, ribbon on	2	2
tail, remove	1	2
tail, make different	1	2
tail, use as slide	1	2
tail made of yarn	1	2
teeth	1	2
tongue in mouth	2	2
tongue move	1	2
toy chest, make into	1	2
trunk blow out, curl up	7	2
trunk longer	5	2
trunk floppy	3	2
trunk squirt goo	1	2
trunk moveable	41	2
trunk stretch	2	2
trunk hang down	1	2
trunk pouch	1	2
trunk, stand on	2	2
trunk used as slide	2	2
trunk, make into swing	1	2
trunk suck up water	2	2
trunk light up	1	2
tusks, add	1	2
tusks, move	1	2
tusks, make grow	1	2
tusks, remove	5	2
tusks, longer	6	2
tusks, removable	4	2
tusks, add lights on	1	2
tusks, make soft	1	2
tusks, jump & swing on	1	2
tusks, make real	1	2
Tarzan, sell with	1	2
T.V., put on	1	2
tricks, able to do	24	2
telephone, make into a	4	2
tie dye	1	2
throw up, able to	1	2
toothbrush, make it a	1	2

television, make into a	1	2
t.v. remote control, be a	1	2
trunk, make into pencil sharpener	1	2
temperature, able to change	1	2
tail, make stripped and bushy	1	2
town, make an elephant	2	2
tentacles, put on	1	2
truck, change into	1	2
training equipment, add	1	2
tank to fill trunk with water	1	2
velcro, made with stick to things	3	2
video cassette, story on	3	2
versatile, make more	1	2
water, blow out trunk	46	1
walk, run	68	1
waterproof, for bathtub	21	2
wheels, add	15	2
wind-up toy	4	2
windbreaker, be a	1	2
wings, give	2	2
wrinkles, give	1	2
walkie - talkie	1	2
watering hole, give a	1	2
zoo animals, one of line of, part of set	5	2
zebra, paint like	1	2
zoo ticket, give with elephant	1	2



## VERBAL ACTIVITY 5

119 students  
2499 responses

	number used	originality points
acoustic control	1	2
air ducts	1	2
airplane/glider	9	2
alphabet, put on	1	2
animal uses	47	2
animals, make	10	2
armor	2	2
art tools, make	1	2
artwork, sculpture, decoration	81	1
ashtray	1	2
assignments, use for	1	2
bank	2	2
backdrop, props	17	2
backpack	2	2
balloon	1	2
ballot/suggestion box	5	2
bar	1	2
barrier	4	2
baseball base	3	2
basketball goal	2	2
baskets (picnic)	6	2
bathtub	2	2
beads	2	2
bed	22	2
bed, animal	21	2
bed spread	1	2
belt	1	2
blocks	15	2
board game	5	2
boat	16	2
book	2	2
book ends	1	2
booth	4	2
boxes, make new	1	2
bracelet	2	2
bread box	1	2
brick	2	2
bridge	3	2
bubble for health	1	2
buildings	11	2
bulletin board	7	2
burn	16	2
bury things in	2	2
bus	1	2
cabinet	10	2

caddy	1	2
cake	3	2
camera	2	2
candle holder	1	2
candy box	1	2
canister	1	2
car	42	2
carpet/floor covering	10	2
carpet pad	1	2
carriage, baby	1	2
carry/move things in	60	1
car seat	1	2
cart	3	2
castle	4	2
ceiling tiles/covering	4	2
cement, fill with	1	2
chair	40	2
chalkboard	4	2
circus	1	2
clock	3	2
clothes	21	2
clubhouse	7	2
confetti	7	2
coffin	6	2
collect	1	2
columns	2	2
cooling rack	1	2
cornice board	1	2
costume	36	2
counter	1	2
cover/protect things	41	2
cradle/crib	8	2
cup	1	2
cutting board	3	2
cut up	1	2
cylinder, make a	1	2
desk	16	2
diary	1	2
dice	3	2
dishes	20	2
display stand/case	7	2
divider, drawer	6	2
divider, partition	19	2
dolls, paper	7	2
door	1	2
drawers	5	2
draw it	1	2
dresser	10	2
drop off buildings	1	2
drums	2	2
dust pan	1	2
earrings	4	2
entertainment unit	1	2
experiments, use for	1	2

fan	1	2
fence	7	2
fertilizer/mulch	2	2
file cabinet	13	2
fill up space	2	2
fire, start or make	25	2
firewood, hold	5	2
fishing net	1	2
float in water	4	2
floats	1	2
folders	2	2
food	9	2
fort	7	2
frame/matting	8	2
frame backing/project	15	2
frisbee	2	2
frogs to jump on	1	2
furniture, doll	12	2
furniture	33	2
garage	3	2
garage sales, use in	1	2
give as gift	6	2
glass cooler	1	2
glasses	1	2
go cart	4	2
gymnasium for dolls	1	2
hamper/laundry	10	2
hanger	1	2
hat	23	2
hat rack	2	2
head, wear over	5	2
headboard	5	2
helicopter	1	2
helmet	1	2
hide in	14	2
hide things in	11	2
hole, cover	6	2
house	26	2
house, animal	59	1
house, doll	36	2
ice cube	1	2
ice chest	1	2
insulation	15	2
ironing board	1	2
jack in the box	2	2
jail	1	2
jet ski	1	2
jewelry	4	2
jewelry box	15	2
jump over	2	2
kick them	1	2
kitchen, play	2	2
kite	1	2
kitty litter	1	2

Kleenex cover	1	2
lamp	12	2
lamp shade	10	2
lap desk	2	2
letters of alphabet	3	2
light diffuser	1	2
litter box	11	2
live in	5	2
look at eclipse	1	2
lunch box	4	2
lockers, school	1	2
mail it	1	2
mailing	16	2
mail box	2	2
make things	1	2
masks	3	2
mat, floor	7	2
maze	8	2
microwave, play	1	2
mobile	7	2
models	25	2
molds	1	2
money	2	2
motorcycle	1	2
movie screen	3	2
musical instrument	2	2
necklace	1	2
outhouse	3	2
ornaments, Xmas	11	2
padding/stuffing	3	2
paper/write on	15	2
pages in book	1	2
parachute	1	2
party for boxes	2	2
patterns	3	2
pedestal/platform/stage	4	2
pencil	2	2
person	4	2
phone	1	2
piano	1	2
picture, paint, draw on	41	2
pillow	2	2
place mat	1	2
planter	21	2
plant stand	2	2
play house	57	1
play in/with	6	2
playground equipment	3	2
play pen	7	2
pool	3	2
popcorn box	1	2
presents/gift boxes	39	2
press things	1	2
puppet	4	2

puppet theater/stage	8	2
put people in	10	2
put things in	91	1
purse	4	2
puzzles	2	2
pyramid	4	2
questions, ask about	1	2
raft	1	2
radio	2	2
refrigerator	4	2
recycle	7	2
reinforce/support things	3	2
research	1	2
reuse	2	2
ring	1	2
rocks	1	2
robot	5	2
roller coaster	1	2
roll in	4	2
ruler	3	2
sail	1	2
sandbox	8	2
satellite	1	2
sell	5	2
sewing box	2	2
shade, provide	1	2
shadow box	3	2
shelves/bookcase	55	1
shelter	5	2
shield	3	2
shingles	1	2
shoelaces	2	2
shoe rack/box	11	2
shoes	15	2
sign	17	2
silverware holder	2	2
sink	3	2
skateboard	1	2
skates	1	2
skies	1	2
slide	2	2
sled	31	2
snowshoes	2	2
sofa	7	2
soil, add to	1	2
spaceship, toy	3	2
space station	1	2
sports protection cup	1	2
stack/topple/pile	5	2
stadium, toy	1	2
stairs, ride down	1	2
stand, T. V.	4	2
stand, food, news	6	2
steps/stairs/ladder	8	2

stool/ottoman	19	2
storage	205	0
store, play	1	2
stove	5	2
submarine	1	2
suitcase/luggage	11	2
table	72	1
tank	2	2
target	5	2
teaching aids	7	2
template	2	2
tennis racket	1	2
tent	5	2
throw/catch	3	2
tires	1	2
toilet	3	2
toys	16	2
toy box	21	2
towel	2	2
train	12	2
transportation, means of	2	2
trap	4	2
trash can	51	1
tray	1	2
tree	5	2
treehouse	6	2
tricks	1	2
trivet	2	2
trunk	5	2
tunnel	11	2
T. V.	11	2
umbrella	16	2
utensils	2	2
valentine box	1	2
vase	3	2
violin/fiddle	1	2
visor	1	2
wagon	9	2
walkway	1	2
wall	4	2
wallcovering	4	2
wardrobe/closet	9	2
watch band	1	2
water, hold	1	2
weapons	5	2
wheel	1	2
wheel barrow	1	2
wig	2	2
window/frame	2	2
window treatments (curtains, blinds, shutters)	13	2
wood, make	1	2
yard marker	1	2

## FIGURAL ACTIVITY 2

		<u>originality</u>
		<u>score</u>
1.		
not used	4	
alarm clock	1	2
airplane	1	2
birds	25	0
bird body	1	2
balloons	1	2
banana split	1	2
book	1	2
breasts	1	2
cake	1	2
camel's humps	1	2
cat	2	2
caterpillar	1	2
cliff	1	2
clouds	4	1
coins	1	2
dog	1	2
dress	3	1
elephant	1	2
E.T.	1	2
eyebrow	9	0
eye glasses	4	1
eyes	1	2
flower	2	2
feet	1	2
grapes	1	2
hair	4	1
hat	1	2
heart	9	0
head	1	2
human rear	7	0
human body	2	2
letter	1	2
martian antennae	2	2
Michelin Tire man	1	2
motorcycle	1	2
mouse ears	1	2
mustache	6	0
pig	1	2
shells	1	2
sofa	1	2
strawberry	1	2
tooth	2	2
tree	1	2
umbrella	3	1
waves	2	2
weeds	1	2

2.		
not used	11	
abstract design	1	2
antennae	1	2
arrow	1	2
barn/silo	1	2
beanie hat	1	2
bird's feet & legs	2	2
bird footprint	1	2
bird	1	2
broom	1	2
butterfly	2	2
cactus	1	2
cheese	1	2
clothes	1	2
coat rack	2	2
column, porch	1	2
cooking pot	1	2
curtains	1	2
dress	1	2
eye	1	2
fishing pole support	1	2
flower	1	2
fried chicken/wishbone	1	2
gallows	2	2
gun	1	2
hourglass	1	2
house	3	1
human figure	3	1
ice cream cone	1	2
ladybug	1	2
letters	4	1
kite	3	1
map	1	2
pac man	1	2
pants	1	2
peace symbol	2	2
person	2	2
potted plant	1	2
roasting spit	3	1
road	2	2
sailboat mast	2	2
slingshot	7	0
star	1	2
sweater	3	1
tree	35	0
umbrella	2	2
witching stick	1	2
worms	1	2
3.		
not used	18	
airplane doors	1	2
alien	1	2



alien antennas	1	2
antennas, insect	1	2
arms	4	1
balloons	2	2
bananas	1	2
bread	1	2
breasts	7	0
bridge	1	2
box	1	2
butterfly	1	2
can	1	2
candle flames	2	2
caterpillar	1	2
chair	1	2
cherries	1	2
ear	1	2
eyes	7	0
eyelashes	1	2
eye glasses	2	2
fish	2	2
flower	3	1
french fry	1	2
footballs	1	2
human heads	4	1
human body	1	2
human rear	2	2
jack-o-lantern	2	2
kite	1	2
ladybugs	1	2
letter	1	2
lifesaver candies	1	2
light bulb	1	2
lollipops	1	2
luggage handles	1	2
motion waves	2	2
palm trees	1	2
pieces of paper	1	2
pinwheel	1	2
rings	3	1
rocks	5	1
robot	1	2
shadow	1	2
shingles	1	2
shovel	1	2
siren/light	1	2
sled	2	2
slide	1	2
slingshot	1	2
ski poles	1	2
snow skies	1	2
sound waves	4	1
spider	1	2
sun rays	2	2
telescope	1	2

tombstones	1	2
tunnel	1	2
umbrella	1	2
waves	2	2
wheels	2	2
wind	1	2

4.		
not used	15	
airplane	1	2
balloons	1	2
bird	1	2
cabinet	1	2
can	1	2
candle holder	3	1
candy	1	2
carpet	1	2
cat's tail	6	0
eye glasses	1	2
eyes	4	1
fish/whale	8	0
flower	1	2
frog	1	2
frog's tongue	1	2
hair	7	0
hat	1	2
horn	1	2
human head	1	2
fence	1	2
logs	1	2
maze	1	2
mouse tail	1	2
musical note	1	2
mustache	9	0
nest	1	2
nose	8	0
plant	1	2
rocking chair	2	2
sled	3	1
snail	11	0
snake	3	1
smile	1	2
swan	1	2
toilet paper	1	2
turtle	1	2
vehicle	1	2
violin	1	2
waves	12	0
worm	2	2

5.		
not used	44	
airplane	1	2
anchor	1	2

badge	1	2
ball cap	1	2
banana	1	2
boat	13	0
body	1	2
boomerang	1	2
bowl	10	0
box	1	2
breast	1	2
car	1	2
cat	1	2
contact	1	2
cup	1	2
ditch	1	2
eye	1	2
face	1	2
fly head	1	2
football	1	2
fortune cookie	1	2
frog's mouth	1	2
grapefruit	1	2
golf club	1	2
hammock	4	0
heart	1	2
head	1	2
house	1	2
jump rope	2	1
jack-o-lantern	2	1
plate	1	2
pond	1	2
rocking horse	1	2
smile	8	0
umbrella	3	1
valley	5	0
watermelon	1	2

6.

not used	65	
animal head	1	2
arm	1	2
balloon	1	2
big dipper	1	2
bike	1	2
bird	1	2
book	1	2
bottle	1	2
brain stem	1	2
branch	1	2
cane	1	2
catapult	1	2
chair	2	1
chick	1	2
eagle	1	2
face	1	2

fish	1	2
flower	1	2
flower pot	1	2
hair dryer	1	2
head	3	0
human body	3	0
jack-o-lantern	1	2
kangaroo	1	2
kite	1	2
leaf	2	1
leg	2	1
letters	2	1
lightening bolt	3	0
lips	1	2
lines/abstract design	1	2
mouth	1	2
post	1	2
pig's nose	1	2
rubics cube	1	2
shoes	1	2
ski slope	1	2
space shuttle	1	2
sparkler	1	2
stairs	3	0
sun	1	2
swing	1	2
vase	1	2
wine glass	1	2

7.

not used	67	
arm	2	1
alien	1	2
ball cap	1	2
baseball bat	1	2
basket/eggs	1	2
cheese	1	2
cow	1	2
dental tool	1	2
door knob	1	2
eye glasses	1	2
faucet	1	2
golf clubs	1	2
gutter	1	2
head	3	0
hook	5	0
ice cream scoop	2	1
key	2	1
ladle	2	1
little dipper	1	2
person	1	2
pull toy	1	2
question mark	1	2
rabbit	1	2

shorthand symbol	1	2
sickle	4	0
ski slope	1	2
tongs	1	2
valley	1	2
wheel/car	11	0
wrecked bike	1	2

8.		
not used	63	
balloons	1	2
body	27	0
book	1	2
bomb	1	2
broken window	1	2
chair	1	2
coat rack	1	2
cookie/angel	1	2
corner of room	1	2
door	1	2
dress	2	1
face/neck	8	0
flowers	1	2
horse	1	2
mouth	1	2
musical note	2	1
newspaper	1	2
park bench	1	2
oil can	1	2
shield	1	2
tree	2	1

9.		
not used	57	
bird beak	2	1
bow	3	1
bowl	1	2
candy "kiss"	1	2
cat's ears	2	1
choir gown	1	2
dinosaur mouth	1	2
dog	1	2
EKG printout	1	2
factory smokestack	1	2
fish	1	2
foot	1	2
ghost	1	2
hat	1	2
letter	1	2
mountains	38	0
mouth/lips	4	0
snake	1	2
tree	1	2

10.		
not used	46	
alien	1	2
angel	3	1
arrow	1	2
arm/body	1	2
bird	8	0
chicken claw	1	2
dog's tail	5	0
duck	14	0
boat mast	1	2
hand	3	1
house	1	2
human figure	1	2
lips/mouth	2	1
nose	12	0
mushroom	1	2
number 1	1	2
tree	15	0
teapot	1	2
tree trunk	1	2
waves	1	2

## FIGURAL ACTIVITY 3

120 students  
1311 responses

	<u>number</u> <u>used</u>	<u>originality</u> <u>points</u>
abstract design	20	3
accordion	1	3
aquarium	4	3
arrow	17	3
arbor	1	3
baby	1	3
backpack	2	3
bag	10	3
balloon	2	3
barber shop pole	7	3
barn	2	3
bars, parallel	2	3
barrel	2	3
barrel vault	2	3
baseball cap	1	3
basketball court	1	3
bat	1	3
beaker	1	3
beaters	1	3
bed	12	3
belt	1	3
binoculars	1	3
bird bath	1	3
bird legs	1	3
blackboard	5	3
blouse	2	3
bomb	2	3
book	23	3
book ends	1	3
book shelves	2	3
boots	2	3
bottle	4	3
bow	4	3
bowls	1	3
box/cube	24	3
branch	2	3
branding iron	2	3
bread	1	3
brick	1	3
briefcase	1	3
bridge	1	3
bucket	1	3
buckle	1	3
bullet	3	3
bus	1	3

bus stop	1	3
butterfly	7	3
cake	2	3
cabinet	1	3
calendar	1	3
calculator	1	3
camera	1	3
can	27	2
candle	12	3
candy	2	3
candy bar	2	3
candy cane	9	3
canister	3	3
car	16	3
card	2	3
carton	1	3
cassette tape	2	3
castle	1	3
cat	3	3
centipede	1	3
chair	17	3
chaps	1	3
checker board	5	3
cheese	3	3
chopsticks	1	3
cigarette	2	3
cigarette pack	1	3
clap board	1	3
clip board	2	3
clock	4	3
clouds	2	3
coat	1	3
coffin	1	3
columns	3	3
cone, ice cream	1	3
compact	1	3
computer	1	3
cooling tower	1	3
crackers	1	3
crayon	4	3
credit card	1	3
cross	1	3
crown	1	3
cylinder	1	3
cymbals	1	3
desk	4	3
diamond	2	3
dice	2	3
dishwasher	1	3
dog	1	3
dollar bill	2	3
dollar sign	3	3
door	36	2
door knob	2	3



dress	1	3
dresser	1	3
drumsticks	1	3
dynamite	1	3
earrings	1	3
effects pedal	1	3
elephant	1	3
elevator	2	3
electrical switch	1	3
envelope	5	3
eraser	3	3
eyes	5	3
exclamation point	1	3
face	13	3
feathers	1	3
fence	9	3
file	1	3
finger	4	3
firecracker	4	3
fireplace	2	3
flag	14	3
flamingo	1	3
flashlight	1	3
flower	5	3
football field	2	3
fork/spoon	4	3
fountain	1	3
frame	4	3
foundation, bldg	1	3
game	2	3
giraffe	2	3
gazebo	1	3
gingerbread man	1	3
girdle	1	3
glass, drinking	12	3
glass, martini	1	3
goal posts	6	3
graph	1	3
grass	1	3
guard house	1	3
guillotine	1	3
guitar	1	3
gum	1	3
gun	3	3
hair	1	3
hair dryer	1	3
hanger	1	3
hat	3	3
hat rack	1	3
hole	1	3
hose	1	3
hour glass	7	3
house	51	2
house, bird	1	3

house, dog	1	3
hurdles	1	3
hut	1	3
insulation	1	3
insect	1	3
jack in the box	2	3
jail	3	3
jewelry	1	3
joint	1	3
keyboard	2	3
kite	2	3
knife	3	3
ladder	19	3
lamp	4	3
legs	8	3
lemonade stand	1	3
letter	41	2
lighter	1	3
light switch	2	3
lines	5	3
lipstick	4	3
log	3	3
lollipop	7	3
magazine rack	1	3
magnet	1	3
mail box	2	3
map	1	3
marshmallow	1	3
mask	1	3
masts	14	3
match	2	3
matchbook	1	3
maze	3	3
measuring spoon	1	3
mirror	3	3
missile	1	3
monkey	1	3
monkey bars	5	3
monster	3	3
motor cycle	1	3
mouse	1	3
mouse hole	1	3
mouth	2	3
mug	6	3
mushroom	4	3
necklace	1	3
net	1	3
notebook	1	3
number	4	3
obstacles, ski	1	3
oil tank	1	3
olive	1	3
outlet	4	3
orange	2	3

oven	1	3
package	1	3
pane of glass	1	3
pants	6	3
paper	18	3
periscope	2	3
pen/pencil	17	3
person	24	3
picture	3	3
pier	1	3
pillow	1	3
pipe	4	3
pizza	1	3
plaid	1	3
podium	2	3
pocket	1	3
poles w/ circles	1	3
pool	2	3
popsicle	3	3
flower pot	4	3
present	7	3
puzzle	3	3
pyramid	1	3
radiator	1	3
radio	1	3
railroad track	9	3
rain	1	3
red sea	1	3
refrigerator	2	3
report card	1	3
river	1	3
road	33	2
robot	2	3
rocket	5	3
roman numeral	1	3
roof	3	3
room	7	3
ruins	1	3
salt shaker	1	3
sandwich	1	3
scale	1	3
scale, musical	2	3
screw	1	3
seesaw	1	3
shark	1	3
ship	1	3
shirt	6	3
shoelace	2	3
sign	2	3
sign, traffic	13	3
signal, traffic	5	3
silo	2	3
skirt	1	3
skis	3	3

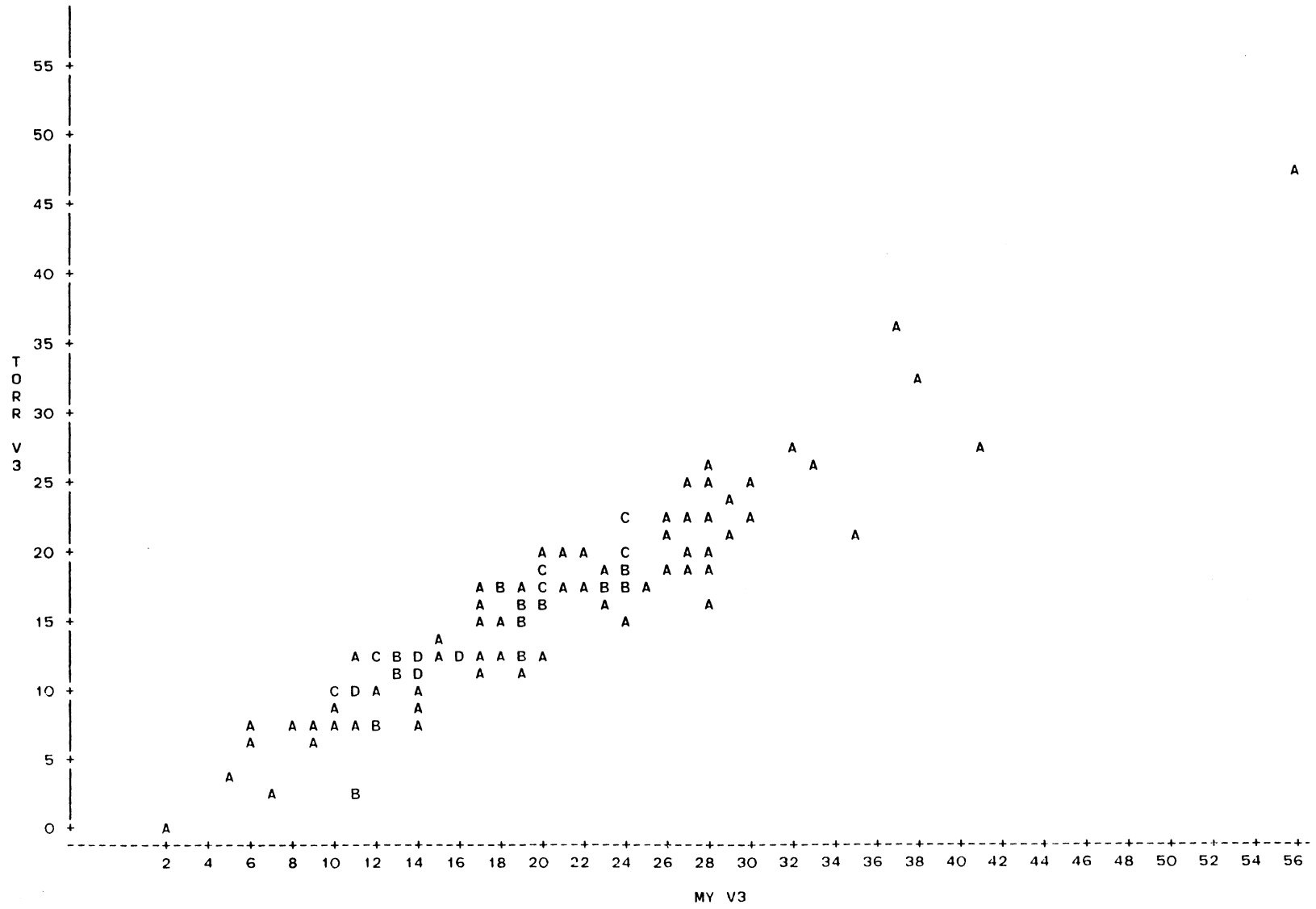
skyscraper/building	40	2
skyline	7	3
slide	2	3
smokestack	4	3
snake	1	3
sofa	1	3
space ship	1	3
speaker	3	3
spool of thread	1	3
square/rectangle	8	3
stage	2	3
stairs	2	3
stamp	1	3
stick	1	3
stilts	7	3
stocking	1	3
stove	1	3
straw	3	3
stream	1	3
suitcase	1	3
sun	1	3
surfboard	1	3
swing set	4	3
symbol	3	3
syringe	1	3
table	15	3
table cloth	1	3
teeth	1	3
telephone	4	3
telephone poles	10	3
television	10	3
tent	1	3
tic-tac-toe	16	3
tightrope	1	3
tie	1	3
tile	1	3
tin man	2	3
tire	2	3
toaster	1	3
toll gate	1	3
tool box	1	3
totem pole	1	3
towel	1	3
tower	4	3
toy	1	3
train	3	3
trap	1	3
trash can	8	3
tray	1	3
treasure chest	1	3
tree	50	2
triangles	5	3
truck	2	3
T-square	3	3

tube	3	3
tunnel	3	3
valet	1	3
vase	6	3
broken vase	1	3
volleyball net	1	3
waffle	1	3
walls	14	3
walrus	1	3
watch	6	3
water	1	3
water bottle	1	3
water tower	1	3
watering can	1	3
watermelon	1	3
well	1	3
whistle	3	3
window	25	3
wine rack	1	3
wolf	1	3
wood, piece	5	3
worm	1	3
wrench	1	3
xylophone	1	3
yo-yo	1	3
zipper	1	3

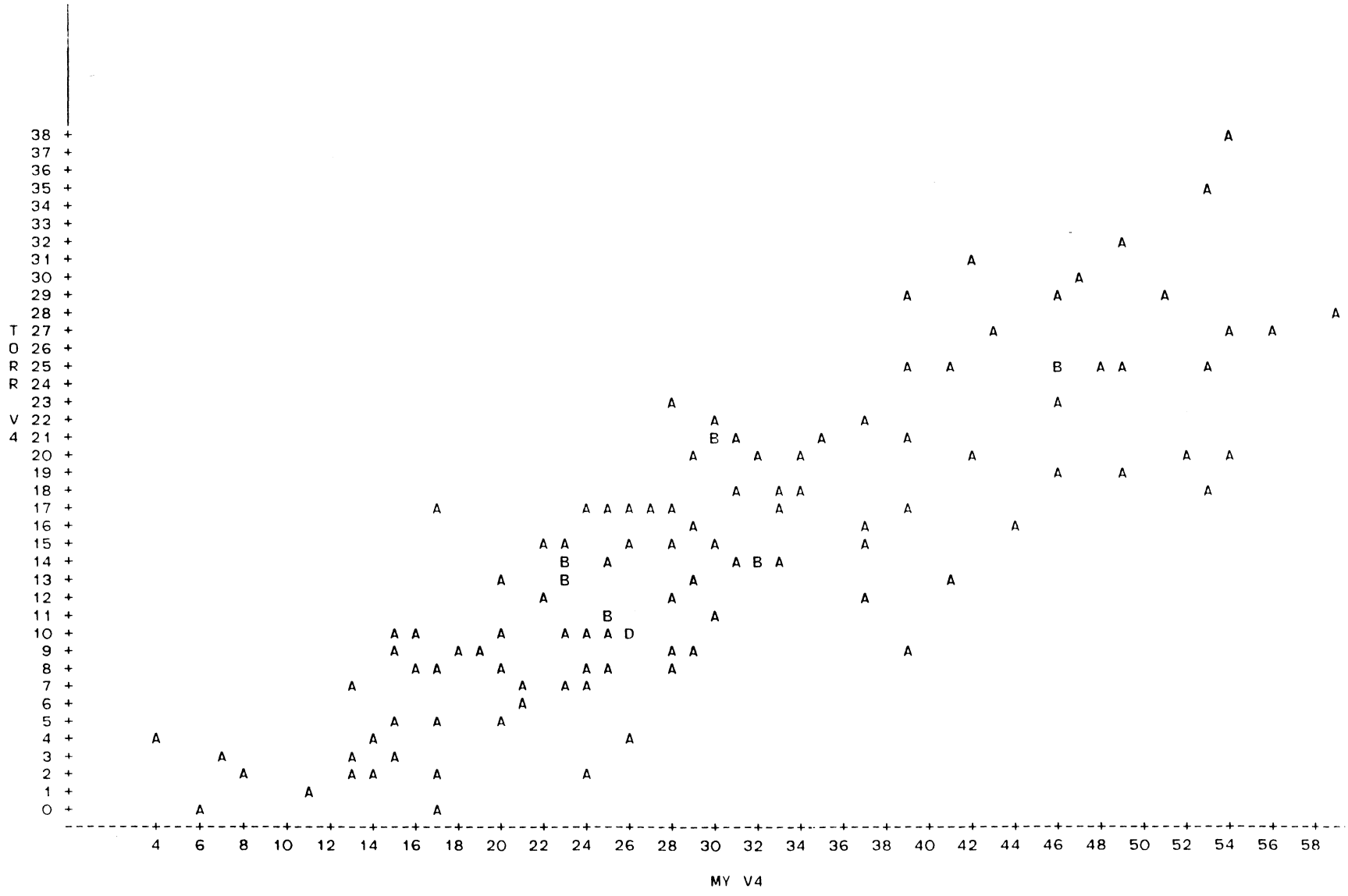
APPENDIX D

PLOTTED DATA BY ACTIVITY

PLOT OF OLD AND NEW SCORES FOR  
VERBAL ACTIVITY 3

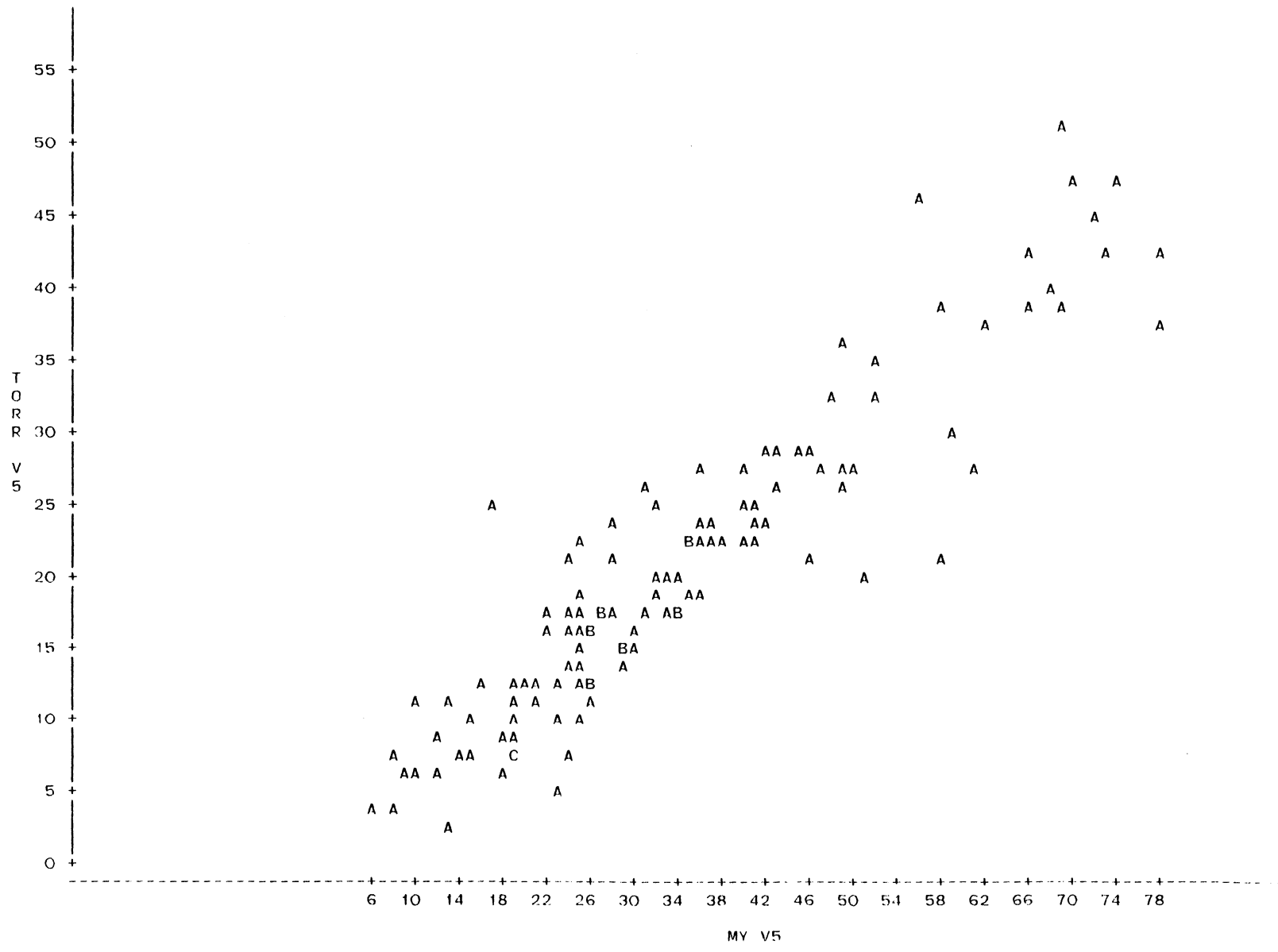


NOTE: 1 OBS HAD MISSING VALUES



NOTE 1 OBS HAD MISSING VALUES

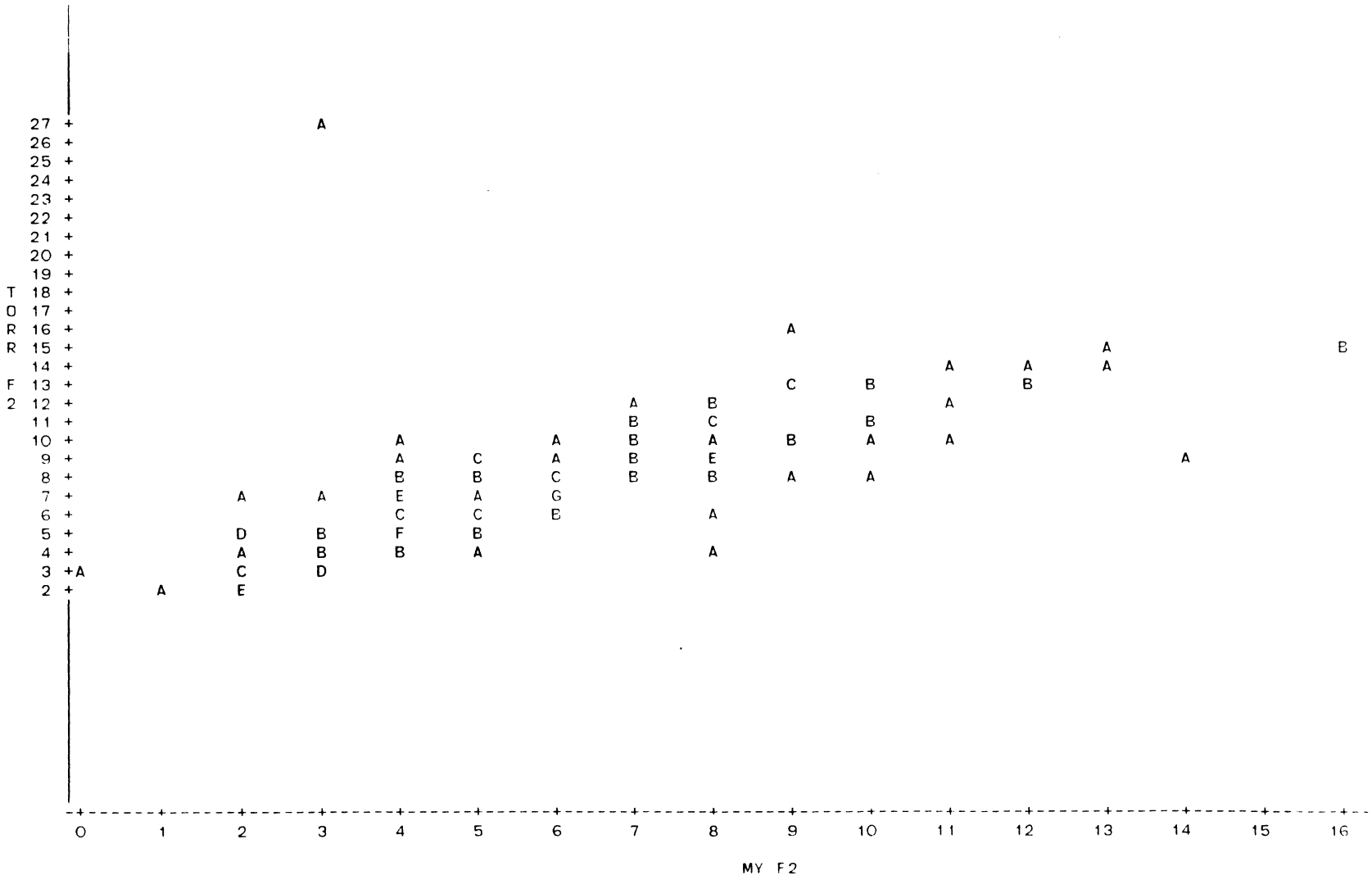


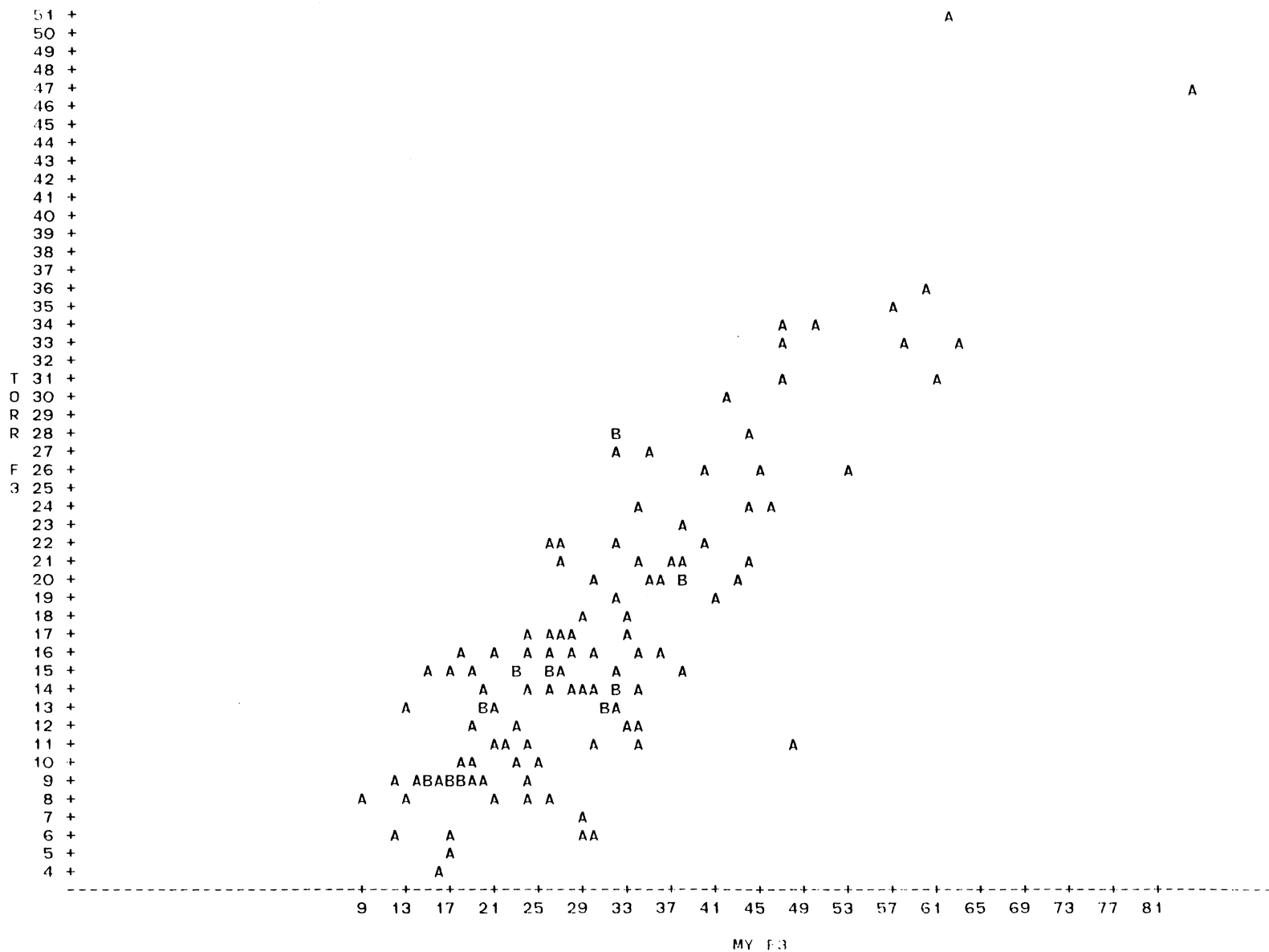


PLOT OF OLD AND NEW SCORES FOR  
VERBAL ACTIVITY 5

NOTE: 1 OBS HAD MISSING VALUES

PLOT OF OLD AND NEW SCORES FOR  
FIGURAL ACTIVITY 2





PLOT OF OLD AND NEW SCORES FOR  
FIGURAL ACTIVITY 3

VITA

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