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A Comparison of Oral & Written Verbal Expressions of Creative Thinking Using the Prose Quantification System

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A COMPARISON OF ORAL AND WRITTEN VERBAL EXPRESSIONS OF CREATIVE THINKING USING THE PROSE QUANTIFICATION SYSTEM

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EXPRESSIONS OF CREATIVE THINKING
USING THE PROSE QUANTIFICATION SYSTEM

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I would like to dedicate this thesis to the memory of my beloved grandmother, Lillie M. Parker, who taught me by the example of her life to be strong and courageous.

> Be strong and courageous. Do not be terrified; do not be discouraged, for the Lord your God will be with you wherever you go. Joshua 1:9.

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The purpose of this study was to compare oral and written expressions of creative thinking which took the form of prose, e.g. stories. The Prose Quantification System (PQS) was the instrument of comparison. The PQS is an instrument developed to predict teachers' ratings of the creative quality of written prose. The study investigated the following: (a) interjudge agreement and intrajudge stability for oral and written stories, (b) Teacher Ratings of Story Creativity (TRSC) of oral and written stories, (c) alternate mode (i.e., oral vs. written) equivalence and (d) criterion validity of the PQS.

PQS story-starters (unfinished opening lines to a story) were administered to 87 fifth-grade students enrolled in four classes in two schools located in Nashville, Tennessee. Each student received two story-starters about the same content or object (i.e., box) but in different contexts (usual vs. unusual settings). Students were asked to complete one story orally and the other in written form.

Thus, a total of 174 stories were collected. The stories were then (a) blindly rated by eight teachers according to the creativity level of the stories using a seven point Likert Scale and (b) scored by five judges who were self-trained in the use of the PQS using the PQS Scoring Manual (Redfield and Martray, 1984b).

Interrater agreement and intrajudge stability were computed using an average correlation coefficient and percent agreement, respectively. Both interrater agreement and intrajudge stability were computed separately for the oral and written language samples. Results indicated that the PQS for oral and written language samples, used by judges self-trained with the Scoring Manual, is reliable across judges and over specified periods of time.

Eight 2 x 2 x 2 ANOVAs were used to determine whether PQS judges and teachers allowed story-starter context (usual vs. unusual setting), order of requested response (oral first vs. written first) and mode (oral vs. written) to influence their scores and ratings. Results indicated a main effect for mode for TRSC and the following PQS scores: elaboration, originality, organization, and total score. TRSC of written stories were significantly higher than TRSC of oral stories; PQS elaboration, organization and total scores of oral stories were significantly higher than PQS elaboration, organization and total scores of written stories; PQS originality scores for written stories

were significantly higher than PQS originality scores for oral stories. ANOVAs indicated the following significant interaction effects: (a) PQS ideational fluency scores of written stories in a usual setting were significantly higher than PQS ideational fluency scores for oral stories in an unusual setting; (b) PQS associational fluency scores for written stories in an unusual setting were significantly higher than PQS associational fluency scores for oral stories in a usual or unusual setting and for written stories in a usual setting; and (c) PQS originality scores were significantly higher for written stories in either a usual or unusual setting than PQS originality scores for oral stories in a usual setting. Therefore, the PQS judges viewed the oral stories to be more creative overall than the written stories while the teachers viewed the written stories to be more creative overall than the oral stories.

Multiple regression analyses were used to investigate the relationship (a) between the PQS (subscale and total scores) and TRSC of oral stories and (b) between the PQS (subscale and total scores) and TRSC of written stories. These stepwise multiple regression procedures indicated that PQS total scores of oral stories are the best predictors of oral TRSC and PQS total scores of written stories are the best predictors of written TRSC. Therefore, the

PQS is an accurate predictor of TRSC of oral and written stories.

Results of this study indicated that (a) the PQS is a reliable instrument when used as a measure of the creative quality of oral and/or written language samples by judges self-trained with the PQS Scoring Manual, (b) oral and written expressions of creative thinking differ, and (c) the PQS is an accurate predictor of TRSC of oral and/or written stories. It is suggested that future research include (a) reexamination of alternate mode equivalence of the PQS and (b) investigation of the reliability of TRSC.

CHAPTER I

INTRODUCTION

Verbal expression is important in all aspects of life and especially to success in the educational system. In elementary and secondary schools, students' progress in academic areas is assessed most frequently by obtaining either written or oral verbal responses. Thus, an individual's progress in the educational system depends, in part, upon his/her ability and/or facility with verbal expression. In fact, the 1955 White House Conference on Education listed effective oral and written expression as important focuses of educational efforts (Scrivner, 1969). It seems reasonable to assume that effective oral and written expression continue to be important goals of education. Historically, educational emphasis has definitely been placed on the development of written expression compared to oral expression (MacCampbell, 1964).

Factors influencing the quality of verbal expression, e.g., creativity, intelligence, home environment, and emotional well-being, are certainly important when considering an individual's ability to progress successfully in school. Creative ability is a particularly important influencing factor in school. According to Torrance

(1962), the process or cognitive factors involved in creative activity are of utmost importance to successfully acquiring information in the school environment. Of the cognitive factors involved in creativity, Torrance views divergent thinking abilities as possibly the most salient. Divergent thinking involves the ability to produce a number of different responses to given information. Because of Torrance's emphasis on the cognitive factors involved in creativity, e.g., divergent thinking, he holds that creative thinking plays an important role in an individual's ability to acquire information in academic settings. Therefore, it would appear that creative oral and written expression would enhance an individual's ability to effectively relate acquired information and thus increase his/her chance for success in the educational system.

The historical educational emphasis upon written expressions is reflected in programs designed to enhance the development of creative writing skills. As a result of this emphasis on written expression, the development of programs designed to enhance creative oral expression has virtually been ignored. "Our programs would appear to be based on two assumptions: first, that written communication is more important and precedes oral communication and second, that people learn to speak by writing" (MacCampbell, 1964, p. 123).

If oral and written language are identical in nature, then it would be safe to assume that the effects of programs designed to enhance creative writing ability would also enhance creative oral ability, thus eliminating the need for programs emphasizing creativity in oral expression. But, to the contrary, oral and written language differ. After analyzing the differences between students' oral and written compositions, Bushnell (1930) found that the oral compositions were more fluid, disorganized, and incoherent compared to the written compositions. Bushnell's finding may have resulted from evidence that oral language is " . . . the first to develop, the more practical, and the less subject to systematic training of the two forms of expression (and) has remained on the more primitive level" (Bushnell, 1930, p. 5). In support of Bushnell's position is the opinion of Vygotsky (1962) that " . . . written speech (is) a separate linguistic function, differing from oral speech in both structure and mode of function" (p. 98). Although Bushnell did not specifically measure creativity in his study, he did compare oral and verbal expression. It is most likely that when Bushnell presented his subjects with a topic on which to create an oral and a written composition, that the subjects used cognitive factors to complete the task. Possibly they drew upon their divergent thinking abilities to produce a variety of responses to given information.

Thus, the production of oral and written verbal expressions appears to depend, at least in part, on factors associated with creative thinking.

Oral and written verbal expressions (and consequently, oral and written expressions of creative thinking) develop differently. For example, oral expressions normally develop before written expressions while written expressions are more subject to formal instruction. Therefore, it seems logical that individuals may differ in their abilities to creatively express themselves in oral and written modes. Due to environmental, hereditary, etc. factors, an individual's ability to express him/herself creatively in the oral mode may be superior to his/her ability to express him/herself creatively in the written mode or vice-versa. Realizing that a student's verbal creative ability may best be improved by enhancing the development of the oral rather than the written mode is potentially useful to educators in developing programs to specifically plan for individual students' verbal creative development and for their successful language usage. It is most likely that when an individual's verbal creative development is enhanced in either the oral or written modes that they enhance and strengthen their ability to use the cognitive factors (especially divergent thinking abilities) involved in creative thinking. Thus, the strengthened cognitive factors should improve language usage.

The goal in this study is to determine whether the factors which influence oral and written expressions of creative thinking differ. If they differ significantly, then after replication of the findings, it would be in the best interest of students to develop programs for enhancing oral as well as written expressions of creative thinking. If this and subsequent studies show that oral and written expressions of creative thinking do not differ significantly, then the school systems would be safe in employing programs which enhance the development of either the written or oral modes (the assumption being that any improvement in one mode would transfer to the other). Determination of those factors which may differentially influence oral versus written language will be accomplished by comparing the quality of oral and written samples of prose as measured by the Prose Quantification System (Holt, 1983; Redfield & Martray, 1984a; Redfield & Martray, 1984b; Redfield, Steagall-Tamme, Martray & Roenker, 1984; Tamme, 1982).

The Prose Quantification System (PQS) was developed to provide a scoring system for the quality of expressive language. Although the PQS has proven to be a reliable and valid measure of the quality of written verbal expressions of creativity for fifth-grade students (Holt, 1983; Redfield & Martray, 1984a), the reliability and validity of the PQS as a measure of the quality of oral verbal expressions of creativity has yet to be

established. Therefore, before oral and written expressions of creative thinking can be compared using the PQS, the reliability and validity of the PQS as a measure of the quality of oral verbal expressions of creativity must be established. If the PQS proves to be a reliable and valid measure of oral language samples, then the quality of oral and written samples of prose will be compared.

The PQS, unlike other tests of verbal expressions of creativity, allows for a logical flow of responses in story form. The development of the PQS was based on the following factors which influence judgment of the quality of written prose: (a) divergent thinking abilities which contribute to creativity (Guilford, 1968; Torrance, 1974) and (b) organization of the composition or story which is hypothesized to contribute to the logical flow of the story (Redfield, et al., 1984). Not only has the PQS proven to be a reliable and valid measure of verbal expressions of creativity as defined by Torrance, but also it is a reliable predictor of teacher judgment of creativity in prose (Holt, 1983; Redfield & Martray, 1984a; Redfield & Martray, 1984b; Redfield, et al., 1984; Tamme, 1982).

CHAPTER II

LITERATURE REVIEW

The primary goal in this study is to compare oral and written expressions of creative thinking which will take the form of prose, e.g. stories. The Prose Quantification System (PQS) will be the instrument of comparison. Previous studies have indicated that the PQS is a reliable and valid predictor of teacher judgment concerning the creative quality of written expressions (Holt, 1983; Redfield & Martray, 1984a; Tamme, 1982). In order to be able to compare the oral and written samples of creative thinking gathered in this study, it must first be determined whether or not the PQS is a reliable and valid predictor of teacher judgment concerning the creative quality of oral expression. If the PQS proves to be a reliable and valid measure of the creative quality of oral expression, then oral and written samples will be compared to determine if there are any significant similarities and/or differences between the two. If it does not prove to be a reliable predictor of the quality of oral expression, of course, the PQS scores of the written and oral modes cannot be compared.

Definition of Creativity

In this study, oral and written expressions of creative thinking will be analyzed and compared. Therefore, it is necessary to define creativity. Although the research on oral expressions of creativity has been quite limited, research concerning creativity, in general, has been vast. Researchers have generated literally hundreds of definitions of creativity (Taylor, I., 1959). While these definitions differ in many ways, they share common aspects. Commonly accepted characteristics of creativity seem to include the following abilities: perception of new and unsuspected relationships; productions of original ideas and/or products; and organization of seemingly unrelated factors into a unique and improved order (Taylor, S., 1968). These abilities appear to apply to both creative thought and expression.

Models of Creativity

By expanding definitions of creativity, researchers have developed models of creative thinking and/or expression. Creative thinking refers to the cognitive factors involved in creativity, such as divergent thinking abilities. Expressive creativity refers to the symbolizing of creativity, or a creative product. Creative thinking is evident when it is expressed in some way, in a creative production.

Holt (1983) in his review of the literature on creativity discovered that there are four general models which attempt to explain the nature of creative thinking and/or expression: personality, environment, process, and product.

Personality Models

Personality models are based on the personality traits which are hypothesized to relate and/or contribute to creativity. The following are some personality traits which are purported to contribute to an individual's level of creativity: motivation, conventionality versus unconventionality, dependence versus independence, introversion versus extroversion (Freeman, Butcher, & Christie, 1971).

Environmental Models

As would be expected, the effects of the environment on creative expression or production is the main focus of the environmental models of creativity. Such environmental factors as parenting style, classroom atmosphere, teaching approaches, teacher attitudes and student exercises have been identified as important stimuli which facilitate students' creative production (Foster, 1971; Guilford, 1968; Taylor, 1968; Torrance, 1962).

The personality and environmental models help identify some factors contributing to creative thought and/or expression. However, the models which pertain more

specifically to this study are the process and product models because they attempt to identify factors which possibly contribute more directly to creative thinking and expression.

Process Models

The process models of creativity generally concern themselves with the cognitive processes involved in creative thinking and production. Process models focus specifically on divergent thinking abilities (Guilford, 1968; Torrance, 1962, 1974). The ability to produce a variety of responses to a set of given information is characteristic of divergent thinking. This production is evidence of the divergent thinking process. Finding all possible routes to a given location is an example of divergent thinking.

Product Models

The product models of creativity focus on the end result of creativity, the product. The product of creative thinking is deemed important because it gives evidence of creative process or thinking. It is inferred that an individual must be thinking creatively before he/she can generate a creative product.

The process models of creativity are particularly relevant to this study because they specifically focus on divergent thinking abilities. Subjects in this study will have to draw upon their divergent thinking abilities to

effectively produce a number of related responses to given information. The given information in this case will be incomplete opening sentences to a story, i.e. story-starters. The product models are important to this study because products of creative thinking (oral and written samples of prose, i.e. stories) will be analyzed and compared. The samples of prose will be the point of comparison between the creative product and the creative process.

Perhaps the most extensive research on the nature of creative thinking and expression as it applies to this study is that of J. P. Guilford (1968). As a result of his research, Guilford concluded that divergent thinking is one of the most important factors which influences creative production.

Divergent Thinking and Creativity

Guilford (1968) has identified fluency, flexibility, elaboration, and originality as the four basic intellectual processes or factors which comprise divergent thinking and contribute significantly to creative production.

Fluency

Guilford identified three types of fluency: associational, ideational, expressional. Associational fluency refers to the ability to complete a relationship. A product exemplifying associational fluency ability is listing all words that mean the opposite of sweet, in a given amount of time.

Ideational fluency refers to the ability to generate a quantity of ideas that are in a specific class, at a fast rate of speed. A product exemplifying ideational fluency ability is listing all things that fit into the class of things that are soft, sweet, and white, within a certain time limit.

Expressional fluency refers to the ability to generate sentences quickly and easily. A product exemplifying expressional fluency ability is creating as many five word sentences within a given time limit as possible.

Flexibility

Guilford (1968) has identified two types of flexibility: spontaneous and adaptive. Spontaneous flexibility involves responding to a problem in a variety of ways. The respondent changes the category of responses without instruction to do so. Listing a variety of uses in different categories for a piece of paper, such as writing a letter, making an airplane, starting a fire, and stopping up a hole in a wall exemplifies products of spontaneous flexibility ability.

Adaptive flexibility refers to the ability to make some change in order to solve a problem. This change may be in the following areas: interpretation of the task, approach or strategy, or in possible solutions. When attempting to learn a piano sonata, the ability to change

the interpretation of the task from one of maximizing technique (correctness of notes) to one of maximizing musicality exemplifies a product of adaptive flexibility.

Elaboration

Elaboration refers to the ability to produce a variety of implications for a given situation. An important component of elaboration is planning. A product exemplifying elaboration is the production of detailed steps needed to complete a plan or project.

Originality

Originality is characterized by semantic transformation. Semantic transformation includes any change, revision, redefinition, and reorganization of something. A story is a product which may reflect semantic transformation (Holt, 1983).

Summary

Creativity has often been associated with cognitive processes whose end result is some type of creative product. Of these influencing cognitive processes, divergent thinking abilities (fluency, flexibility, elaboration, and originality) are possibly the most important. Divergent thinking abilities are especially important in relation to verbal expressions of creativity because the components of divergent thinking, when maximized, contribute significantly to the overall quality of the verbal expression (Guilford, 1968; Tamme, 1982;

Torrance, 1962). When the quality of the verbal expression is increased, teacher judgment of students' academic progress may be enhanced. The end result of maximized divergent thinking abilities is an increased chance of academic success.

Expressions of Creativity

Although there are many expressions of creativity--such as music, paintings, sculpture, dance, etc.--this study will focus on verbal expressions of creative thinking, particularly oral and written expressions of creative thinking.

Written Expressions of Creativity

Effective written expression has been an important educational goal, at least since the White House Conference on Education in 1955 (Scrivner, 1969). Because creativity appears to enhance academic success (Torrance, 1962), developing students' ability to write expressions of creative thinking likely provide an effective way to obtain the educational goal of effective written expression.

The educational system places great emphasis on written expressions of creative thinking (Darnell, 1962), perhaps at the expense of oral expressions of creative thinking. Programs of instruction for creative writing are currently operating in some schools.

Oral Expressions of Creativity

Unlike written expressions of creative thinking, oral expressions of creative thinking have not been emphasized

in the educational system. This lack of emphasis contradicts the opinion of most educators and researchers that oral expression is basic and fundamental to other types of verbal activity (MacCampbell, 1964; Scrivner, 1969; Walden, 1969). Oral expression is considered fundamental to other verbal activity because (a) children perpetually engage in it (Trauger, 1963) and (b) as proposed by Walden (1969), most children do not have to be formally taught to speak upon entrance to school. Perhaps because of its fundamental nature, oral expression takes a back seat to the development of reading and written expression from the very beginning of an individual's educational career.

Because most children do not have to receive formal instruction to learn to speak and because speech is a result of normal development, oral expressions of creative thinking have been somewhat overlooked in research. For example, MacCampbell (1964) recognized the importance of organizing instruction for improving oral "skill" but said nothing of organizing instruction to enhance oral expressions of creative thinking.

It has been established that the ability to creatively express oneself in the oral and/or written modes enhances the probability of success in the educational system (Torrance, 1962). Thus, organized programs to enhance oral as well as written expressions of creative thinking deserve consideration for implementation. Programs

designed to enhance oral expressions of creative thinking could benefit students in other areas such as creative writing (Burrows, et al., 1964; Bushnell, 1930; Hennings, 1981; Lyman, 1929) and social interaction, by improving oral communication skills. "The ability to use the spoken word to accurately communicate thought or express feeling is the most significant skill developed by individuals in the highly complex social organization of modern life" (Anderson, et al., 1964, p. 5). The ability to accurately communicate thoughts and express feelings or ideas effectively might be enhanced by the ability to express these thoughts in a variety of ways (i.e. the products of fluency, flexibility, elaboration, and originality). Therefore, hypothetically, oral expressions of creative thinking should improve an individual's overall communication ability.

Summary/Evauation of Findings on Oral and Written Expressions of Creativity

Although there is little research which compares oral and written expressions of creative thinking, there has been a small amount of research devoted to comparing the quality of oral and written expressions. One such research project directly compares oral and written expressions (Bushnell, 1930). Bushnell compared the oral and written stories of 100 tenth graders in New York City. He analyzed the oral and written stories for

grammatical differences. He found the written expressions to be "consistently superior to oral expression in the qualities of thought content and sentence structure, and as less subject to nearly all kinds of error" (Bushnell, 1930, p. 65). The oral compositions were characterized as being more fluid than the written stories, that is, they contained fewer pauses, i.e. periods, commas, etc. The oral compositions were more disorganized and incoherent than the oral stories. Because the oral and written products differ, hypothetically, the cognitive processes which dictate the production could differ.

Mildred Rilings (1965) also compared oral and written expression. She studied the similarities and differences between fifth grade students' oral and written language. Although she stated that "the exact relation of written language to oral language is still to be established" (p. 10), she found that children use structural variations in their oral language which they are unable to carry over into their written language. For example, children use more movable elements such as adverb of place, adverb of manner, adverb of time, adverb of cause and condition, and the indirect object expressed with a preposition in spoken language as compared to written language.

The differences between oral and written expressions have been documented (Bushnell, 1930; Rilings, 1965). However, it seems reasonable that oral and written

expressions are similar in some ways. At the base of this similarity is the fact that improvement in one mode of expression quite often results in some improvement in the other (Burrows et al., 1964; Darnell, 1962; Walden, 1969). There is more evidence to show that improved oral expression improves written expression than vice-versa (Burrows, et al., 1964; Bushnell, 1930; Hennings, 1981; Lyman, 1929). One example of improved written expression as a result of improved oral expression is reported by Lyman (1929) " . . . a course in composition, consisting largely of oral work brought about greater improvement in writing than did a course in writing alone" (p. 12). Thus, according to this finding, oral expression warrants more emphasis in educational programs than has been traditionally given.

As stated previously, the production of oral and written verbal expressions appears to depend on factors associated with creative thinking (divergent thinking abilities). Thus, oral expressions and consequently, oral expressions of creativity are seen to be " . . . an important first step in the process of translating ideas into the verbal patterns of written expression" (Hennings, 1981, p. 44). Darnell (1962) considers telling original stories to be a necessary prerequisite for beginning to write creatively.

Written expressions of creativity, such as lists of unusual ideas and stories, have been evaluated by various methods (Campbell & Willis, 1978; Lawton, 1968; Meeker & Meeker, 1979, Moslemi, 1975; Torrance, 1974). Most of these methods used to evaluate stories are based on a one or two factor conceptualization of creativity. However, there is one method which is based on a multi-factor conceptualization of creativity and can be used to evaluate creativity in written stories, the Prose Quantification System (PQS). In this study the PQS will be used to compare the quality of oral and written stories. The PQS is the instrument of choice to compare the stories because its development was based on the following factors which influence judgment of the quality of written prose: (a) divergent thinking abilities (Guilford, 1968; Torrance, 1974) and (b) organization of the composition or story, which contribute to creativity. One reason for the selection of the PQS is that it has proven to be a reliable and valid measure of creativity as defined by Torrance and because it is a reliable predictor of teacher judgment of creativity (Holt, 1983; Redfield & Martray, 1984a; Redfield, et al., 1984; Tamme, 1982). The reliability and validity of the PQS for oral language samples is unknown. To establish the reliability and validity of the PQS for oral language samples is one goal of this study.

Methods for Assessing Verbal Expression

Because students' responses to classroom assignments most often take the form of written verbal expression (Dunkin & Biddle, 1974), the primary method for assessing the quality of verbal expression has been teacher judgment. Although teacher judgment is the most common method for assessing verbal expression, other more formal systems have been developed (Campbell & Willis, 1978; Lawton, 1968; Meeker & Meeker, 1979; Moslemi, 1975; Redfield, et al., 1984; Torrance, 1974). Most of these systems rely upon the concept that divergent thinking abilities (fluency, flexibility, elaboration, and originality) have a major influence on creative production. A brief description of each system is given below.

Assessing the Creativity of Expression

E. P. Torrance (1974) developed an assessment device which focuses on the creativity of written expressions. Torrance's Test of Creative Thinking (TTCT) is based on the concept that divergent thinking abilities (fluency, flexibility, elaboration, and originality) contribute significantly to creative production. Although the TTCT assesses divergent thinking abilities, it requires subjects to list responses which eliminates the natural "flow" of language that is typical of essays and/or stories frequently required of students in the classroom.

Reliable scoring systems which allow for evaluation of the natural flow of written language have been

developed (Campbell & Willis, 1978; Meeker & Meeker, 1970; Moslemi, 1975). These systems evaluate various aspects of the creative quality of prose according to operational definitions.

Campbell and Willis (1978) operationally defined fluency, flexibility, and elaboration to produce an exact and reliable system to assess creativity in prose in order to evaluate creativity enhancement programs. Fluency was defined as the number of different but relevant ideas given to a topic. Flexibility was defined as a change in direction of thought or pattern set from the previous sentence. Elaboration was defined as the amount of information given beyond that considered necessary to communicate the basic idea (e.g. conjunctions, adjectives, adverbs, prepositional phrases, etc.).

Moslemi (1975) developed a five-point Likert scale scoring system based on the following criteria: (a) originality; (b) idea production, which incorporates fluency, flexibility, and elaboration; (c) language usage (e.g. use of imagery, personification, metaphors, vividness of terminology, colorful word combinations); and (d) uniqueness of style.

Meeker and Meeker's (1979) scoring system for verbal expressions of creativity is based upon Guilford's (1968) concept of expressional fluency. A story is scored for fluency (one point for each word written up to 100 points) and for originality (10 points for each unique idea that falls within any of nine different originality categories).

The resulting score purportedly provides a sample of how quickly students write and develop new ideas in a given amount of time (Meeker, 1981).

Although the systems developed by Campbell and Willis, Moslemi, and Meeker and Meeker allow for the natural flow of language and consider more than one factor contributing to creativity, they do not address the factors that teachers take into consideration when judging students' written assignments.

While the systems described above were developed to assess creativity in children's writing, other systems were developed to assess the grammatical structure of children's written prose.

Assessing the Structure of Verbal Expression

There have been several attempts to quantify verbal expression, specifically children's writing. Some of these quantifying methods have focused on the grammatical structure of written prose (Lawton, 1968; Maloney & Hopkins, 1973). These instruments count subordinate clauses, common vocabulary words, verbs, pronouns, adjectives, and so on. This type of method which focuses on grammatical structure appears to measure only one aspect of creativity--elaboration.

While most of the systems described above are based on the concept that divergent thinking abilities influence creative production, they do not consider factors which could effect academic achievement.

The Prose Quantification System

Although the systems for assessing creativity in written expression mentioned above have proven to be reliable, they do not address factors which possibly contribute to subjective evaluation of academic achievement, specifically factors taken into consideration by teachers when judging the quality of students' written expression. The PQS was developed to quantify creativity in written prose and is based on a multifactor conceptualization of creativity (Redfield, et al., 1984; Redfield, Holt, & Martray, 1986; Tamme, 1982). It was also developed for use in research to reliably predict teacher ratings of creativity in written language and to identify factors possibly related to academic achievement. Administration of the PQS involves presentation of the opening line to a story (i.e. story-starter) with a request to complete the story within a designated period of time.

The PQS consists of seven subscales based upon factors identified by teachers as important to the creative quality of children's stories (Redfield, et al., 1984; Tamme, 1982). Six of the factors are similar to ones described by Guilford (1968) and Torrance (1974): fluency (ideational and associational), flexibility (relevant and irrelevant), originality, and elaboration. The seventh factor is organization of the story which is similar to Guilford's concept of system building. System building

is defined as an "interlocking, organized, or structured combination of items of information" (Guilford, 1968, p. 125). Stories generated in response to the PQS story-starters receive a score for each subscale and a total score equal to the sum of the subscale scores. The operational definitions for the PQS factors (Redfield & Martray, 1984b) appear in Appendix A.

Purpose of the Study

It is hypothesized that the factors which affect oral and written expressions of creative thinking differ. If these factors differ, then an individual's verbal creative thinking and expressive potential ability may best be realized by developing either the oral and/or written modes. Obtaining a device that identifies these alleged differences would be an important aid in helping to develop educational programs to suit the verbal creative abilities of each individual. The PQS will be used to evaluate oral and written samples of prose (stories) because: (a) it has proven to be a reliable and valid measure of written expressions of creative thinking as defined by Torrance (1974) and (b) it is a reliable predictor of teacher judgment of creativity in prose.

Although the PQS is a reliable and valid measure of written expressions of creative thinking, the reliability and validity of the PQS as a measure of oral expressions of creative thinking has yet to be established. Thus, the

first task in this study is to establish the reliability and validity of the PQS as a measure of oral expressions of creative thinking.

If the PQS proves to be a reliable and valid measure of oral expressions of creative thinking, then written and oral expressions of creative thinking can be compared.

CHAPTER III

Method

Participants

Participating in this study were 87 fifth grade students (48 male and 39 female) enrolled in two schools in the Metropolitan Nashville-Davidson County School System. Among the subjects were three classified as Learning Disabled and one as Intellectually Gifted. Fifth graders were chosen because students in the fifth grade served as subjects in previous studies in which the reliability and validity of the PQS were examined (Holt, 1983; Redfield & Martray, 1984a; Tamme, 1982). Thus, the selection of fifth graders as subjects makes the results of this study more comparable to the results of previous studies.

Instrumentation

The PQS was developed to quantify factors which contribute to the creative quality of written prose (Redfield & Martray, 1984a; Redfield & Martray, 1984b; Redfield, et al., 1984). PQS scores are yielded by responses to a story-starter; story-starters are incomplete opening sentences to stories.

PQS scores are based on divergent thinking abilities identified by Guilford (1968) and Torrance (1974) as they contribute to creativity (i.e., fluency, flexibility, elaboration, and originality) and organization of the story. Organization of the story is deemed important because of its hypothesized contribution to the logical flow of expression (Redfield, et al., 1984).

The PQS is comprised of seven subscales, which are as follows: (a) Ideational fluency, (b) Associational fluency, (c) Elaboration, (d) Relevant flexibility, (e) Irrelevant flexibility, (f) Originality, and (g) Organization. Each subscale yields a score; subsequently, these scores are added together to yield a total score. Operational definitions of the seven subscales (Redfield & Martray, 1984b) are listed in Appendix A.

Originality Scores

In this study, as in previous studies of the PQS, the base originality score was first computed. Base originality is defined as the uniqueness or statistical infrequency of the use(s) to which the object or content of the given story-starter was put. The content or object of the story-starters used in this study was a box. The box was placed in either a usual or unusual setting, i.e. context. A description of the two story-starters used in this study can be found in Appendix B.

The box story-starter was chosen because both forms (usual and unusual) have been demonstrated as equivalent across previous studies (Holt, 1983; Tamme, 1982).

In establishing base originality scores, the stories written by the participants were divided into four groups based on the context of the story-starter (usual versus unusual) and mode of response (oral versus written). Each story within each of the four groups was read by the experimenter to determine the primary usage of the story-starter object (i.e., box).

Of the four groups, two contained forty-three stories and two contained forty-four stories. The stories were grouped according to the classification schemes used by Tamme (1982) and Holt (1983). The originality classification scheme used in this study may be found in Appendix C. The list below summarizes the scoring criteria for originality used in this study:

Responses in 1 story out of 44 received a score of 10
Responses in 2 stories received a score of 9
Responses in 3 stories received a score of 8
Responses in 4 stories received a score of 7
Responses in 5 stories received a score of 6
Responses in 6 stories received a score of 5
Responses in 7 stories received a score of 4
Responses in 8 stories received a score of 3
Responses in 9 stories received a score of 2

Responses in 10 stories received a score of 1

Responses in 11 or more stories received a score of 0

Stories that did not relate to the story-starter content, i.e., object, received a score of 0. Since statistical infrequency is dependent upon sample size, base originality scores differ across studies as warranted by sample size.

The criteria for scoring the remaining two components of originality, twist and transformation, remain constant across studies. If a story has a surprise or unusual ending, it receives one point for a twist. If the object of the story-starter changes or transforms into something else in the course of the story, that story receives a point for a transformation. Thus, an originality score may range from 0 to 12.

Interrater Agreement and Intrajudge Stability of the PQS

In the development of the PQS, five non-teacher judges were trained in the use of the PQS. Interjudge agreement, based on an average correlation coefficient (McNemar, 1974), for the total score was .80; intrajudge stability, based on percent agreement, ranged from .89 to .93 (Tamme, 1982).

In a validation study, Holt (1983) demonstrated interrater agreement, based on an average correlation coefficient, across nine raters of .81. Holt established intrajudge stability by having the same nine judges

rescore ten stories randomly selected from the pool of stories used to establish interjudge agreement after an eight to ten week period. Total score intrajudge stability, based upon percent agreement among nine judges, ranged from .84 to .94.

Convergent and Discriminant Validity of the PQS

Holt (1983) used stepwise multiple regression to analyze the relationship among the PQS, TRSC, Torrance Tests of Creative Thinking (TTCT), and the Carlson Scale for Measuring the Originality of Children's Stories (Carlson, 1968). Holt's analysis indicated that Carlson Scale scores entered the prediction equation first, yielding a multiple R of .61. PQS and TTCT scores entered second and third, respectively. Carlson Scale and PQS scores together yielded a multiple R of .68. The three predictor variables, together, yielded a multiple R of .70 (Redfield, Holt, & Martray, under review, 1986). Pearson product moment correlation coefficients between TRSC and (a) Carlson Scale, (b) PQS, and (c) TTCT scores were .61, .54 and .40, respectively. Hence, it was concluded that the PQS is a valid predictor of TRSC.

Alternate Form Equivalence

Scores obtained from the PQS and TRSC functioned as the dependent variables in analyses for alternate form equivalence. The results of the analyses of variance (ANOVAs) indicated that PQS judges and teachers viewed

stories, written in response to a story-starter whose content was a box, similarly when scoring and rating them, respectively. However, the PQS judges and teachers viewed the stories differentially when scoring and rating them when the stories were written in response to a story-starter whose content was either money, string or paper (Holt, 1983; Tamme, 1982). Nevertheless, PQS scores appear to accurately reflect teacher ratings of written expressions of creative thinking (Redfield & Martray, 1984).

Design

This study assumed a 2 x 2 x 2 mixed factorial design. The repeated measure was mode of response (written vs. oral). The remaining two factors were story starter context (usual vs. unusual setting) and order of requested response mode (written followed by oral vs. oral followed by written). Dependent variable measures were the PQS and TRSC. A diagram of this design can be found in Appendix D. The story-starters are listed in Appendix B.

Procedures

Each student participant (n=87) was presented with two story starters concerning a bos. One story starter required a written response; the other required an oral response. Participants were randomly assigned to either (a) write about a box placed in a usual setting and respond orally regarding a box placed in an unusual setting or (b) write about a box placed in an unusual setting and respond orally regarding a box placed in a

usual setting. Order of story starter presentation was counterbalanced by response mode and context.

Oral Stories

All subjects responded individually to a story-starter presented orally by the experimenter. The subjects were allotted three minutes in which to complete their response. The average speaking rate is approximately one hundred and twenty words per minute while the average writing rate is approximately forty words per minute (Fairbanks, 1944). Thus, the subjects were allowed one-third the time to respond in the oral mode as compared to the written mode. The oral verbal responses were tape recorded and transcribed. A fifth grade teacher, with master's and reading specialist degrees, transcribed and typed the oral stories. She was instructed to type the stories in the exact way the subjects told them. She included utterances such as "uh" in the transcription. She was instructed to punctuate the material based on her judgment. It was assumed that her experience and training qualified her to adequately perform this task.

Written Stories

All subjects responded in classroom groups to a written story-starter. The subjects were enrolled in four different classrooms, therefore, the written stories were obtained at four different time periods. Because subjects in previous studies were allotted eight minutes in which to complete their written responses to story-starters, the subjects in this study were also required

to complete their written responses in eight minutes. The written stories were typed by the individual who transcribed the oral stories. Compared to the oral responses, written responses yielded evident spelling and punctuation errors. The transcriber was instructed not to correct such errors. The written stories were also typed to prevent the confounding effects of judges and raters knowing that oral and written stories were collected and/or from knowing the mode in which each story was composed.

PQS: Training and Reliability

Five undergraduate psychology majors enrolled in upper level courses and one school psychology graduate student who was trained in the use of the PQS served as judges. Each judge was presented with a Scoring Manual for the PQS (Redfield & Martray, 1984b). The manual provides sample stories for practice and is intended as an alternative to the traditional workshop method of training used in previous studies (Holt, 1983; Tamme, 1982). The judges were allowed to discuss scoring procedures of the PQS but were instructed not to discuss the actual scoring of the stories in this study. The validity and reliability of the PQS Manual as an effective training device was established by computing the average correlations and percent agreement procedures described below.

The judges scored twenty written stories randomly selected from the pool of eighty-seven written stories and twenty oral stories randomly selected from the pool of eighty-seven oral stories. Interjudge agreement was established separately for the oral and written stories. Two written stories for one judge were missing; therefore, the average correlation coefficients are based on 18 stories for that judge. An average correlation for the oral stories and an average correlation for the written stories were obtained.

After a four week period, the judges rescored ten written stories and ten oral stories randomly selected from the pool of stories used to establish interjudge agreement. Intrajudge stability was established separately for the oral and written stories. A percent agreement between the first and second rating was computed for each judge. Of the ten written stories that were randomly selected from the twenty stories used to re-establish interjudge agreement for written stories, one of the stories was missing for the judge mentioned earlier. Therefore, the percent agreement for that judge is based on nine stories. One story for all five judges was missing for the percent agreement on the oral stories. Therefore, the percent agreement for the oral stories is based on nine stories. The judge with previous training in the PQS was not included in the establishment of intrajudge stability.

Teacher Ratings of Story Creativity (TRSC)

Eight teachers who had taught fourth, fifth or sixth grade within the past two years were each paid ten dollars to help with this study. Seven of the teachers were recruited from an elementary school in southcentral Kentucky and one was enrolled in a night class at Western Kentucky University. The teacher enrolled in the night class was offered the extra incentive of bonus points in class for participating in this study. The teachers were instructed to rate the stories using a seven point Likert scale ranging from a low of very poor (1) to a high of superior (7). An example of the rating scale and instructions for using the Likert scale presented to teachers may be found in Appendix E. Four of the teachers rated half of the oral stories and half of the written stories while the remaining four teachers scored the other half. The presentation of stories to the teachers was counterbalanced with respect to mode (written versus oral), order of presentation of mode (written/oral versus oral/written) and context (usual versus unusual). Therefore, each teacher rated a total of eighty-seven stories. The teachers were not acquainted with the subjects who composed the stories nor were they aware as to what verbal mode (i.e., oral or written) in which the stories had been composed.

The teachers were asked to list the specific criteria they generated to evaluate and rate the stories within

each of the seven creativity levels. The teacher criteria compiled in this study were compared informally to the original teacher generated criteria (Tamme, 1982) and to the teacher criteria generated in the validation study (Holt, 1983) to determine if the criteria generated in this study were similar to criteria generated in the previous studies. The amount of criteria generated by the teachers in the present study differs from the amount of teacher generated criteria obtained in previous studies (Holt, 1983; Tamme, 1982). The teachers in this study generated very few criteria and used different levels of the same criteria to place stories in all seven categories. Therefore, while the quantity of criteria generated by teachers in this study was less than in previous studies, the teachers in this and previous studies appear to conceptualize creativity similarly. A list of the criteria generated by the teachers who participated in this study may be found in Appendix F.

Analyses

Eight 2 x 2 x 2 mixed factorial ANOVAs were performed. TRSC functioned as the dependent variable for one analysis; PQS scores functioned as the dependent variables for the other analyses. The purpose of the analyses was to determine if teacher = raters and PQS judges similarly evaluated language samples regardless of response mode (written vs. oral), story starter context (usual vs. unusual) and/or order of requested response mode (oral first vs. written first).

To replicate results of earlier studies of written stories (Holt, 1983; Tamme, 1982), zero-order correlation and Stepwise Multiple Regression procedures were used to investigate the criterion validity of the PQS. TRSC functioned as the criterion variable. PQS subscale and total scores functioned as the predictor variables. These procedures were also used to separately analyze data yielded by oral stories.

Hypotheses

It was hypothesized that the PQS total and subscale scores yielded by the oral stories would differ significantly from scores yielded by the written stories. It was also hypothesized that the TRSC based on oral stories would differ significantly from the TRSC based on written stories.

CHAPTER IV

Results

Interjudge Agreement and Intrajudge Stability

Interjudge agreement was established for the oral stories when six judges scored twenty randomly selected oral stories from the original pool of eighty-seven. An average correlation of .98 for PQS total score among the six judges was obtained (McNemar, 1962).

Interjudge agreement was reestablished for the written stories when six judges scored 30 randomly selected written stories from the original pool of 87. An average correlation of .92 for PQS total score among the six judges was obtained (McNemar, 1962). The average correlations for the PQS subscale scores of oral stories and written stories are listed in Appendix G.

Intrajudge stability was established for the oral stories when five judges rescored ten stories randomly selected from the pool used to establish interjudge agreement. A percent agreement between the first and second scorings was computed. The percent agreement for the PQS total score for oral stories ranged from .85 to .90.

Intrajudge stability was reestablished for the written stories using the same procedure as described for the oral stories. The percent agreement for the PQS total score for written stories ranged from .84 to .90. The percent agreement for each judge and subscale of the PQS may be found in Appendix H.

Alternate Mode Equivalence

Analyses of Variance (ANOVA) were computed to determine the effects of the following independent variables on the dependent variables (viz., TRSC of oral and written stories and PQS subscale and total scores of oral and written stories): context of story-starter (usual versus unusual), order of requested response of mode (written first versus oral first) and the repeated measure, mode (oral versus written). The results of the 2 (context) by 2 (order of presentation of mode) by 2 (mode) ANOVA using PQS total scores of oral and written stories as the dependent variables are listed in Table I. These results indicate a main effect for the repeated measure, or mode of story, i.e., $F(1, 83) = 10.14$, $p < .01$. There were no significant main effects for context or order of presentation and there were no significant interactions. Results indicated that the judges assigned significantly higher creativity scores to the oral stories than to the written stories.

Table I

Analysis of Variance: PQS Total Scores for Oral and Written Stories

Source	df	SS	MS	F	P
Total:					
Mean	1	354633.81	354633.81	273.33	
Context	1	423.90	423.90	.33	n.s.
Order	1	.06	.06	.00	n.s.
CX x Order	1	176.39	176.39	.14	n.s.
Error	83	107689.59	697.80		
Mode (RM)	1	111.25	111.25	4.95	$<.05$
RM x CN	1	38.90	38.90	1.73	n.s.
RM x Order	1	8.64	8.64	.38	n.s.
RMxCXxOrder	1	13.35	13.35	.59	n.s.
Error	83	1865.09	22.47		

The results of each of the 2 x 2 x 2 ANOVAs using PQS subscale scores as dependent variable measures are reported in Appendix I.

The results of the 2 x 2 x 2 ANOVA using the TRSC of oral and written stories as the dependent variable measures are reported in Table II. These results indicate a main effect for the repeated measure, or mode, i.e., $F(1, 83) = 4.95$, $p < .05$; teachers rated the written stories as significantly more creative than the oral stories.

Table II

Analysis of Variance: TRSC for Oral and Written Stories

Source	df	SS	MS	F	P
Total:					
Mean	1	30212.71	30212.71	753.28	
Context	1	32.11	32.11	.80	n.s.
Order	1	7.12	7.12	.18	n.s.
CX x Order	1	.00	.00	.00	n.s.
Error	83	3328.93	40.11		
Mode (RM)	1	111.25	111.25	4.95	$<.05$
PM x CN	1	38.90	38.90	1.73	n.s.
RM x Order	1	8.64	8.64	.38	n.s.
RMxCXxOrder	1	13.35	13.35	.59	n.s.
Error	83	1865.09	22.47		

Criterion Validity

Stepwise multiple regression analyses were used to investigate the following: (1) relationship between the PQS (subscale and total) scores of oral stories and TRSC of oral stories and (2) relationship between the PQS (subscale and total) scores of written stories and TRSC of written stories. Pearson product moment correlations were also computed to establish the relationship between the following: (1) PQS subscale scores and the total score

score for oral stories and (2) PQS subscale scores and the total score for written stories.

Oral Stories

Results of the stepwise multiple regression procedure performed on the oral story scores are reported in Table III. Total Score, Originality, and Ideational Fluency, together, comprised the best predictor model of TRSC for oral stories. The remaining variables did not significantly add to the prediction model.

The results of the zero-order analyses of oral story scores, as shown in Table IV, indicate that the PQS total score is the best predictor of TRSC with regard to oral stories ($r = .45$, $R^2 = .19$, $p < .01$).

The zero-order correlations between PQS total score and each subscale score for oral stories are reported in Table V. The results indicate that Associational Fluency ($r=.36$, $R^2 = .13$, $p < .01$), Elaboration ($r = .96$, $R^2 = .92$, $p < .001$), Flexibility ($r = .78$, $R^2 = .61$, $p < .001$), and Originality ($r = .30$, $R^2 = .09$, $p < .01$) each account for a significant degree of the variance in the Total Score for oral stories.

Written Stories

Results of the stepwise multiple regression procedure computed on the written story scores are reported in Table VI. Total PQS Score, Organization, and Flexibility, together, comprised the best predictor model of TRSC for written

Table III

Stepwise Procedure with TRSC of Oral Stories as the Criterion Variable

Source	df	SS	MS	F	P
Total	86	2554.23			
Regression	7	855.23	122.18	5.68	$<.001$
Total Score	1	505.98	505.98	23.52	$<.001$
Originality	1	159.92	159.92	7.42	$<.01$
Ideational	1	113.35	113.35	5.27	$<.05$
Associational	1	42.12	42.12	1.96	n.s.
Flexibility	1	28.44	28.44	1.32	n.s.
Organization	1	3.49	3.49	.16	n.s.
Elaboration	1	1.93	1.93	.09	n.s.
Residual	79	1699	21.51		

Note that Flexibility, Associational, and Ideational refer to the following PQS subscales, respectively: the sum of Relevant and Irrelevant Flexibility; Associational Fluency; and Ideational Fluency, respectively.

Table IV

Zero-Order (Pearson product-moment) Correlations

Covariables	r	
Oral PQS and Oral TRSC	.45	($R^2 = .19$, $p < .01$)
Written PQS and Written TRSC	.60	($R^2 = .37$, $p < .01$)

stories. The remaining variables did not significantly add to the prediction model.

Table V

Zero-Order (Pearson product-moment) Correlation Coefficient with PQS Total Scores for Oral Stories as the Criterion Variable

Variables	r	
Ideational	.09	n.s.
Associational	.36	(R^2 = .13, $p < .01$)
Elbaoration	.96	(R^2 = .92, $p < .001$)
Flexibility	.78	(R^2 = .61, $p < .001$)
Originality	.30	(R^2 = .09, $p < .01$)
Organization	-.12	n.s.

Note that Flexibility, Associational, and Ideational refer to the following PQS subscales: the sum of Relevant and Irrelevant Flexibility; Associational Fluency; and Ideational Fluency, respectively.

The results of the zero-order analyses of written story scores, shown in Table IV, indicate that the PQS total score is the best predictor of TRSC with regard to written stories (r = .60, R^2 = .37, $p < .01$).

Table VI

Stepwise Procedure with TRSC of Written Stories as the Criterion Variable

Source	df	SS	MS	F	P
Total	86	2739.95			
Regression	7	1322.28	188.90	10.53	< .001
Total Score	1	977.01	977.01	54.46	< .001
Organization	1	214.17	214.17	11.94	< .01
Flexibility	1	112.18	112.18	6.25	< .05
Ideational	1	7.36	7.36	.41	n.s.
Associational	1	6.54	6.54	.36	n.s.
Originality	1	2.94	2.94	.16	n.s.
Elaboration	1	2.08	2.08	.12	n.s.
Residual	79	1417.67	17.94		

The zero-order correlations between PQS total score and each subscale score for written stories are reported in Table VII. The results indicate that Associational Fluency (r = .50, R^2 = .25, p .001); Elaboration (r = .75, R^2 = .56, p <.001); Flexibility (r = .56, R^2 = .31, p <.001); and Originality (r = .40, R^2 = .16, p <.001) each account for a significant degree of the variance in the Total Score for written stories.

Table VII

Zero-Order (Pearson product-moment) Correlations with PQS Total Scores for Written Stories as the Criterion Variable

Variables	r	
Ideational	.16	n.s.
Associational	.50	(R^2 = .25, $p < .001$)
Elaboration	.75	(R^2 = .56, $p < .001$)
Flexibility	.56	(R^2 = .31, $p < .001$)
Originality	.40	(R^2 = .16, $p < .001$)
Organization	.05	n.s.

Note that Flexibility, Associational, and Ideational refer to the following PQS subscales: the sum of Relevant and and Irrelevant Flexibility; Associational Fluency; and Ideational Fluency, respectively.

CHAPTER V

Discussion

The following issues were addressed in this study: (a) interjudge agreement and intrajudge stability of the PQS for oral stories; (b) replicability of interjudge agreement and intrajudge stability of the PQS for written stories; (c) reliability of the PQS Scoring Manual (Redfield & Martray, 1984b) as a method of training PQS judges; (d) differences between oral and written stories given that the PQS proved to be a reliable and valid instrument when used to judge the creative quality of both oral and written samples; (e) the criterion validity of the PQS for evaluating oral stories; and (f) cross-validation of the PQS for written stories.

Interjudge Agreement and Intrajudge Stability Oral Stories

The average correlation (McNemar, 1962) among the six judges (five trained with the PQS manual and one trained in the traditional workshop setting) was .98. The average correlation was based on the total score. This correlation indicates an acceptable level of agreement among the six judges.

Intrajudge stability coefficients ranged from .85 to .90. The stability coefficients were also based on total score assigned by the five judges who were self-trained using the PQS manual. These coefficients indicate that the judges, after four weeks, rescored the oral stories in much the same way as they scored them the first time.

Written Stories

The average correlation coefficient (McNemar, 1962) among the six judges on the PQS total score was .92. This represents an acceptable level of agreement among the six judges and is consistent with the average correlation obtained in the Holt (1983) study, i.e., .81, in the Tamme (1982) study, i.e., .80, and also with the average correlation obtained from the oral stories in this study.

Intrajudge stability coefficients ranged from .84 to .90. The stability coefficients were based on the total score assigned by the five judges who were self-trained using the PQS manual. These coefficients indicate that the judges rescored the written stories in much the same way as they scored them the first time. These coefficients are almost identical to the ones obtained for the oral stories and are consistent with the stability coefficients obtained in the Holt (1983) study, i.e., .84 to .94, and in the Tamme (1982) study, i.e., .89 to .92. These results contribute to the reliability of the PQS for use with written as well as oral stories.

The interjudge agreement and intrajudge stability coefficients obtained from oral and written stories in this study and the reliability coefficients obtained from the studies conducted by Holt (1983) and Tamme (1982) imply that the PQS is a reliable instrument when used by judges trained in the traditional workshop setting or when used by judges who are self-trained using the Scoring Manual for the PQS (Redfield & Martray, 1984b). The reliability coefficients obtained in this study also indicate that the PQS is a reliable instrument when used with oral and/or written language samples. As stated by Holt, interjudge agreement and intrajudge stability should be computed in future studies on the PQS to document the reliability of the PQS across time. These reliability coefficients must be computed in subsequent studies using the PQS to score oral samples in order to establish the overall reliability of the PQS for oral samples. Furthermore, the interjudge agreement and intrajudge stability should be computed each time judges are trained using the PQS Manual. Hence, this would help to establish the overall reliability of the Scoring Manual for the PQS (Redfield & Martray, 1984b) as a method of training.

Finally, it may be of interest at some point to compare the ratings teachers trained in the PQS scoring criteria assign to stories to the ratings teachers who have received no training in the PQS assign to stories. This would help

determine if the PQS makes a difference in how teachers judge the creativity level of stories.

Alternate Mode Equivalence

The results of the ANOVAs with PQS scores of oral and written stories and TRSC of oral and written stories serving as dependent variables, indicate that the PQS judges and the teachers viewed the oral and written stories in different ways. The PQS judges (based on total score) viewed the oral stories to be more creative overall while the teachers viewed the written stories to be more creative overall. This difference could stem from the fact that the teachers inadvertently penalized the oral stories because they deviated from what they have come to expect when evaluating creativity. Possibly the written stories were viewed more positively by the teachers on the basis of the familiarity of the form.

As mentioned above, the judges assigned significantly higher PQS total scores to the oral stories than to the written stories. A possible explanation of this difference can be found in the finding of Mildred Rilings (1965) that children use qualifiers in oral language that they cannot or do not carry over into written language. Elaboration accounted for a significant degree of the variance in the PQS total score of oral stories (R^2=.90). Therefore, it appears that elaboration in oral stories may have enhanced the total score of oral stories to a degree that was not possible in the written stories. Context

and order of presentation were found to yield equivalent total scores across the written and oral modes. Furthermore, judges assigned significantly more points to the oral stories on elaboration, originality, and organization. Context and order of presentation were found to yield equivalent elaboration and organization scores across the written and oral modes. The fact that the judges perceived the oral stories to be more organized than the written stories differs from the results of Bushnell's (1930) study. He found the oral stories to be more disorganized than the written stories. A possible explanation of this difference could be that the judges were positively influenced by the way in which the transcriber punctuated the oral stories. In order to compare the oral and written stories, the judges and the raters had to be unaware of the mode in which the stories were expressed. Thus, the nature of this study may have spuriously increased the scores of the oral stories. Another possible explanation of the difference could be the fact that the student participants had been organizing oral verbal responses from the time that they learned to speak and have only been organizing written verbal responses from the time that they learned to write. Thus, the participants' longer experience with organizing oral language could have been reflected in their superior oral organization scores. A possible next course of study that would help to determine if transcribing the oral stories

spuriously increased their scores would be to have both modes of stories tape recorded. Either the participants could read their written stories onto a tape or they could transcribe their own oral stories. The judges and raters would then judge and rate the stories by listening to the tapes or transcriptions thereof.

The fact that the judges scored the oral stories significantly higher on elaboration supports the finding in the study by Rilings (1965), mentioned earlier, that children use qualifiers in oral language that they do not or cannot carry over into written language.

The results of each of the 2 x 2 x 2 ANOVA's using ideational and associational fluency scores, indicate that the interaction of context of story-starter and mode of story differentially influenced the scores the judges assigned to ideational and associational fluency. In relation to ideational fluency, stories in the usual context were judged as containing significantly more uses for the story-starter object (i.e., box) than were oral stories in an unusual context. In relation to associational fluency, written stories in the unusual context were judged as containing significantly more instances of things done with, to, or by the object (i.e., box) than (a) oral stories in a usual context, (b) oral stories in an unusual context and (c) written stories in a usual context. Finally, flexibility scores of oral and written

stories were equivalent in relation to mode, context, and order of presentation. Perhaps the written stories in an unusual context received higher scores on associational fluency because: (1) as a result of the context in written form, the participants could generate more things done with, to, or by the object of the written story-starter in an unusual context than they could to a written story-starter in a usual context, and (2) the subjects had a written account of the things done with, to, or by the object of the story-starter to refer back to and were less likely to repeat themselves on the written stories than on the oral stories. While composing the oral story, subjects had to rely on their memory to recall what they had said. Repetitions of associational fluency were not scored. The issue of repetition in oral stories as compared to written stories was not addressed in this study. This issue should be addressed in future studies to establish whether oral stories contain more instances of repetition than do written stories. This issue is important because if subjects are not aware of repeating, especially in associational and ideational fluency, their scores may be negatively effected. Hence, it is important to determine if memory has a significant effect on the PQS scores of oral stories.

Criterion Validity

Stepwise multiple regression procedures were used to determine the relationship between the PQS (subscale and

total) scores of oral stories and TRSC of oral stories. The results of the multiple regression indicate that the PQS total score is a valid predictor of TRSC for oral stories. While the PQS total score is the best predictor of TRSC of oral stories, the second best predictor of TRSC of oral stories is originality. Ideational fluency is also a significant predictor of TRSC of oral stories. Thus, the level of originality and the number of different uses of the story-starter content have a significant effect upon how teachers rate the creativity level of oral stories. The total score is the best predictor of TRSC of oral stories because it is more representative of the different factors (i.e., divergent thinking abilities) which influence creative production than the separate subscales which represent only one or part of one divergent thinking ability.

The results of the zero-order analyses with PQS total scores for oral stories as the criterion variable indicate that each of the subscales, excluding ideational fluency and organization, account for a significant degree of the variance in the total score. Because most of the subscale scores are significantly related to the total score, this indicates that the total score yields an accurate reflection of the subscale scores that comprise it. Elaboration accounted for the most variance in the total score. An explanation for this is that elaboration, most often, receives the highest score among the subscales.

The results of the regression procedure to investigate the relationship between the PQS (subscale and total) scores of written stories and TRSC of written stories indicate that the PQS total score, as determined in this study, continues to be a valid predictor of TRSC. As was the case for oral stories, the best predictor of TRSC of written stories is the PQS total score for the same reason as described for the oral stories. In previous studies (Holt, 1983 & Tamme, 1982), the single best predictor of TRSC of written stories was the PQS total score which is consistent with the results of this study. For both the oral and written stories, elaboration appeared to be the worst predictor of TRSC. This finding is inconsistent with the Holt study and the Tamme study. A possible explanation for the seemingly low prediction ability of elaboration is found in looking at the relationship of the PQS subscale scores to the PQS total score in both the written and oral modes. For both modes, elaboration was highly correlated with the total score (i.e., oral, $\underline{r}$ = .95, $\underline{R}^2$ = .90, $\underline{p} < .001$; written, $\underline{r}$ = .75, $\underline{R}^2$ = .56, $\underline{p} < .001$). Because elaboration has such a significant effect on the PQS total score of oral and written stories, it only appears to have little or no effect on TRSC. Unlike oral stories the second best predictor of TRSC of written stories is organization. Flexibility is also a significant predictor of TRSC of written stories. In the study by Tamme,

organization and flexibility (specifically irrelevant flexibility) were also found to be significant predictors of TRSC of written stories. The results of the zero-order analyses with PQS total scores for written stories as the criterion variable indicate that each of the subscales excluding ideational fluency and organization, account for a significant degree of the variance in the total score. Because most of the subscale scores are significantly related to the total score, this indicates that the total score yields an accurate reflection of the subscale scores that comprise it. This finding is consistent with the results of the zero-order analyses conducted using oral PQS total scores. Therefore, it appears that the PQS subscale scores assigned to oral and written stories contribute to the PQS total scores of oral and written stories, respectively, in much the same way. As was the case for oral stories, elaboration accounted for the most variance in the written total score.

The best prediction model of TRSC of oral stories is made up of the following variables: total score, originality, and ideational fluency. In this study, the best prediction model of TRSC of written stories differs from that found for TRSC of oral stories. The best prediction model of TRSC of written stories consists of total score, organization, and flexibility. The best prediction model obtained by Holt--i.e., ideational fluency, associational

fluency, and elaboration--differs from the one obtained for written stories in this study. However, the best prediction model obtained by Tamme, i.e., total score, originality, and organization, is quite similar to the one obtained for written stories and the one obtained for oral stories in this study. The common factor in the oral and written prediction models obtained from this study and the prediction models obtained in the Holt and Tamme studies is total score. Therefore, because the PQS total score is more representative of the factors which influence creative production than are its component subscale scores, it continues to be the most stable predictor of TRSC.

Conclusions

In conclusion, the results of this study do provide evidence that the PQS is a valid and reliable instrument when used to evaluate the creativity level of oral expressions of creative thinking. Before the PQS can be used as a measure of the creative quality in oral language samples with confidence, its interjudge and intrajudge reliability and criterion validity must be reestablished in future studies with oral language samples. Interjudge and intrajudge reliability of the PQS must be reestablished in future studies to establish the reliability of the PQS across time when used as an instrument to measure the creative quality in oral language samples. In order to determine whether the PQS continues to predict TRSC of oral stories in future studies, its criterion validity must be reestablished.

Also the validity and reliability of the PQS as a measure of the creativity level of written expressions of creative thinking, as established in previous studies (Holt, 1983; & Tamme, 1982) is supported by the results of this study. The judges in this study were self-trained with the Scoring Manual for the PQS (Redfield & Martray, 1984b). Their interjudge agreement and intrajudge stability coefficients indicated appropriate levels of reliability; therefore, the PQS Scoring Manual appears to be a reliable method of training future PQS judges.

It must be mentioned that, because creativity is difficult to assess and measures of creativity are difficult to validate (Guilford, 1971; Yamamoto, 1965), the results of this study should be interpreted with caution. For example, the results of this study should be replicated before the PQS can be used with confidence as a measure of the creative quality in oral and written language samples. Nevertheless, the results of this study are of value in the further development of the PQS as a valid and reliable measure of creativity in oral and written expressions of creative thinking.

This study also provides evidence that oral and written expressions of creative thinking differ. The oral stories appear to be more organized, original and contain more adjectives, adverbs, prepositional phrases, descriptive words or phrases and qualifiers that are not necessary to complete a sentence, thought, or idea than

the written stories. Further study of the differences and similarities of oral and written expressions of creative thinking using the PQS and TRSC is required before the factors which influence the two modes can begin to be delineated with confidence.

Because teachers and PQS judges did not evaluate the oral and written stories in the same way (judges assigned oral stories higher scores and teachers rated the written stories more highly), this relationship must be looked at in more detail in subsequent studies.

Finally, there has been some concern (Redfield, et al., 1986) about the reliability of the ratings teachers assign to stories. Until the reliability of TRSC for oral and written stories is established, the results of this study should be interpreted with caution.

APPENDIXES

APPENDIX A

Operational Definitions for the Prose Quantification Systems Factors

I. Ideational Fluency refers to the number of different uses served by the content or object (e.g., box) of any given story-starter. To score for Ideational Fluency, the number of unique or different uses served by the story-starter object within the story are counted.

II. Associational Fluency is defined as the number of different things done with, to or by the object of any given story-starter and/or the consequence of each use described under Ideational Fluency. To score for Associational Fluency, the number of things actually done with, to, or by each object and/or consequence of the usage described under Ideational Fluency are counted (repetitions are not counted).

III. Elaboration refers to adjectives, adverbs, prepositional phrases, and other descriptive words/phrases and qualifiers (e.g., maybe, instead, then, at last, finally, although, later, not, n't, somewhat) not necessary for completing a thought, sentence, or basic idea. To score for Elaboration, the number of adjectives, adverbs, prepositional phrases, descriptive words/phrases and qualifiers which give power to or aid in clarifying/understanding the story are counted.

IV. Relevant Flexibility is defined as the number of basic ideas or subthemes contained within the story which are consistent with the overall theme of the story. Subthemes are indicated by changes in action, perception, or thinking on the part of the author or a character in the story. To score for Relevant Flexibility, the number of basic ideas or subthemes presented in the story are counted.

V. Irrelevant Flexibility is defined as the number of basic ideas or subthemes contained within the story which are inconsistent with the overall theme of the story. Subtheme changes are indicated by changes in action, perception, or thinking on the part of the author or a story character. To score for Irrevelant Flexibility, the number of irrelevant (i.e., inconsistent) changes in the focus or approach of the story are counted. The Irrelevant Flexibility score is entered as a negative number (if there are instances of Irrelevant Flexibility) and is subtracted from the total score.

VI. Originality consists of three components: Base Originality, Transformation, and Ending Twist. Base Originality is defined as the uniqueness of the use(s) to which the object of any given story-starter is/are put. Uniqueness is determined by separating all of the stories obtained from a given large sample or population into categories according to content

(box) by context (usual setting versus unusual setting). Then, the uses of the story-starter objects are determined for each story within each of the categories. Base Originality scores are then determined on the basis of the statistical infrequency of the responses.

Transformation points are added to the Base Originality score if a story describes a transformation (i.e., if an object was transformed to create another, different object). A point is added to the Base Originality score for each transformation described within a story.

A Creative Twist point is added to the Base Originality score if a story has a "surprise" (i.e., unusual or unexpected) ending.

VII. Organization is defined as the number of sentences related to the prior, adjacent sentence. If a sentence is related to the prior sentence, it receives a point; if a sentence is not related to the prior adjacent sentence, it does not receive a point. The relationship between sentences is judged by asking, "Is the idea of the sentence related to the prior, adjacent sentence?" The story-starter is not counted as a sentence; however, the first phrase or sentence written by the author is evaluated for its relationship to the story-starter.

To score for Organization, the number of sentences which are related to the prior adjacent sentence, beginning with the story-starter, are counted. If a sentence is not related to the prior sentence, it does not receive a point. The relationship is judged by asking, "Is the idea of the sentence related to the prior, adjacent sentence?" The Organization score equals the total number of points received for related sentences divided by the total number of sentences multiplied by ten.

APPENDIX B

Story-starters: Content by Context

	Context	
Content	Usual	Unusual
Box	When I went into the kitchen, I saw a box on the table, and ...	I came home from school one day and saw a box floating in the air in front of my house, and, ...

APPENDIX C

Prose Quantification System: Originality Classification Scheme

In the studies conducted by Holt (1983) and Tamme (1982), originality was defined as the uniqueness of the use(s) to which the object of any given story-starter was put. Uniqueness was determined by first dividing the stories into the content by context (i.e., story-starter) categories. Then, the uses of the story-starter objects were determined for each story within each of the groups. Finally, originality scores were determined on the basis of the statistical infrequency of the responses (i.e., uses) within each group. The method Holt and Tamme used to determine and assign originality scores were replicated in the present study.

The stories collected in this study were divided into context by mode categories resulting in four categories: (1) oral-unusual, (2) oral-usual, (3) written-unusual and (4) written usual. Then, in order to determine the number of stories in each category having the same object usage, (1) each story was read, (2) the primary usage of each story-starter object was determined, and (3) a frequency count was taken of the usages in the four groups, separately.

Many of the object usages are similar and some are often incorporated into a larger purpose within a story. To facilitate organizing and counting the frequency of usages, Tamme (1982) devised a classification scheme.

This classification scheme was replicated in the study conducted by Holt (1983). In Holt's study, three story-starter contents were used (i.e., string, paper, and box). Because the present study only used the box content, Holt's classification scheme relating only to boxes was replicated here.

Table C-1 illustrates the box scheme used in this study to classify the usages of the story-starter object. The categories that are indented are subsumed under the preceeding non-indented category. For example, if the use of the box was as a present, it is counted under the "present" category unless it turns out to be a joke, in which case the usage is counted under the "joke" category. If the joke finally turns out to be a dream, the usage would then be counted under the "dream" category.

Table C-1

Object Usages: Box Classification Scheme

Object Usages
dream
joke
present
type of present
box as container
what the box contained
rode in box
box talked

Tables C-2 through C-5 represent the four context by mode categories used in the present study. The tables outline the object usage classifications for each category based on stories collected in the present study. Each table summarizes (a) the object usage classifications and (b) the number of stories having the same specified object usage in that category. The object usage category "others" refers to (a) stories in which the object usage was not duplicated in any other stories and (b) stories that did not relate to the story-starter. Object usage categories have not been indented unless necessary to indicate that a usage was subsumed under the preceding non-indented category.

After determining the primary object usages for each context by mode category and the number of stories with each group having the same object usages, originality scores had to be assigned to the stories. Tamme (1982) and Holt (1983) assigned originality scores to stories according to the statistical infrequency of the usage of the story-starter object. The statistical infrequency of an object usage was based on the percentage of stories within each context by mode category having the same object usage. The critical percentages on which Tamme and Holt based the originality scores were 5%, 10%, 15% and 20%.

Table C-2

Mode Classification: Oral-Unusual (n = 44)

Object Usage
Box contained animals (n = 11)
Money inside (n = 3)
Helium inside (n = 3)
Note inside (n = 2)
Aliens inside (n = 2)
Box granted wishes (n = 5)
Flood made box float (n = 3)
Present (n = 2)
Others: not duplicated (n = 10)
not related (n = 3)

Table C-3

Mode Classification: Oral-Usual (n = 43)

Object Usage
Box contained animals (n = 13)
Food inside (n = 8)
Box contained container (n = 4)
Aliens inside (n = 2)
Lucky charm inside (n = 2)
Box was container (n = 2)
Box was machine (n = 3)
Present (n = 3)
Present was stuffed animal (n = 2)
Others: not duplicated (n = 4)

Table C-4

Mode Classification: Written-Unusual (n = 44)

Object Usage
Box contained animals (n = 7)
Contained Helium (n = 2)
Food inside (n = 2)
Box contained creature (n = 3)
Box was magical and talked (n = 6)
Dream (n = 2)
Joke (n = 3)
Box controlled by remote control (n = 2)
Box granted wishes (n = 2)
Box was spaceship (n = 5)
Present (n = 2)
Others: not duplicated (n = 8)

Table C-5

Mode Classification: Written-Usual (n = 43)

Object Usage
Box contained animals (n = 9)
Food inside (n = 5)
Note inside (n = 3)
Money inside (n = 2)
Box contained machine (n = 2)
Present (n = 6)
Magic Box (n = 4)
Others: not duplicated (n = 12)

Table C-6 summarizes: (a) the critical percentages, with parentheses around the actual number of stories per category; (b) the stories per object usage, i.e., based on the critical percentages, the corresponding number of stories in a category that would have the same object usages; and (c) the originality scores assigned to the stories based on the stories per object usage.

Table C-6

Percentages (n = 43, 44)	Stories/Usage	Scores
5% (2.2)	1	10
	2	9
	3	8
	4	7
10% (4.4)	5	6
	6	5
15% (6.6)	7	4
	8	3
20% (8.8)	9	2
	10	1
	$\geq$ 11	0

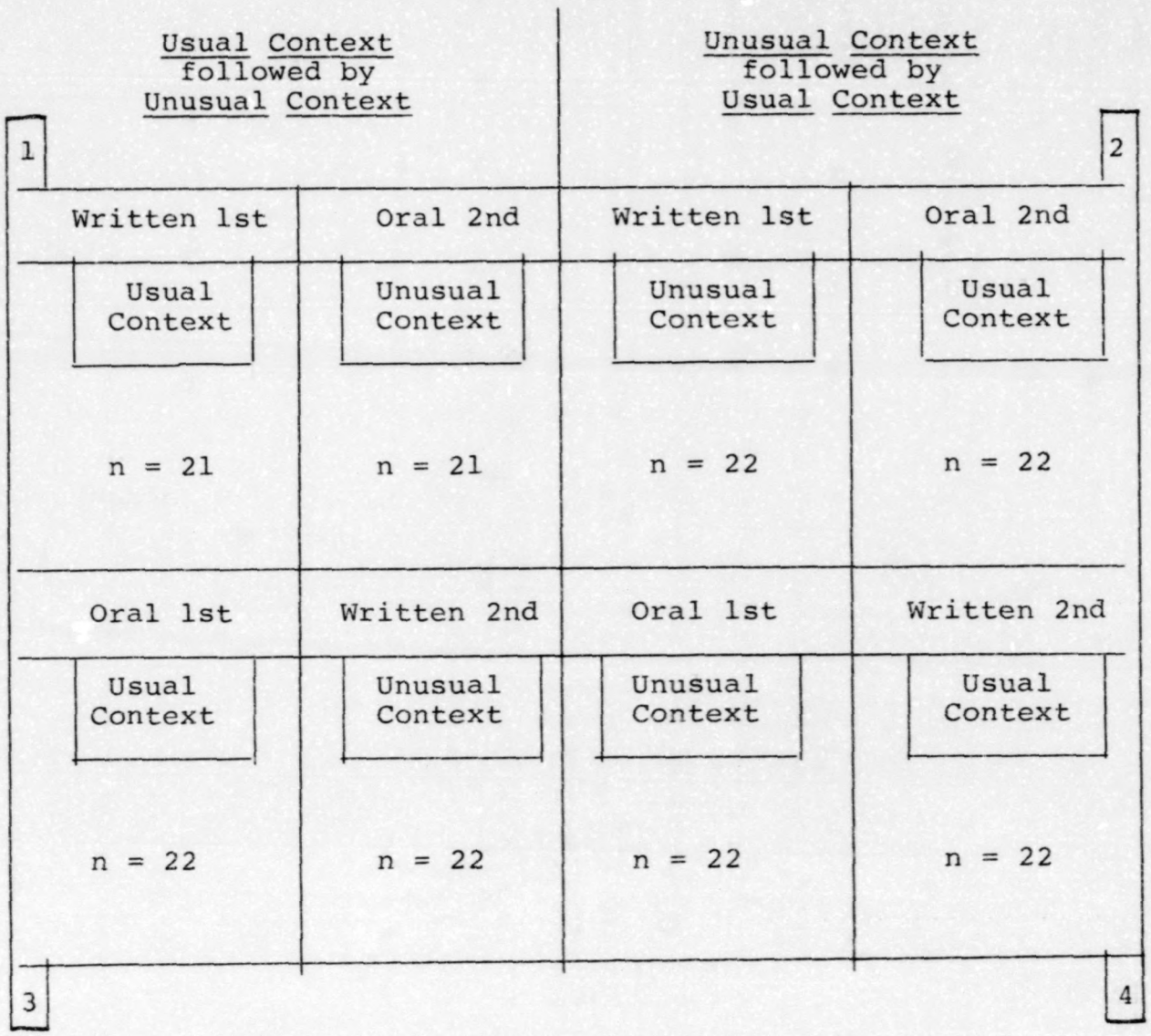
Note: Stories that did not relate to the story-starter also received a score of 0.

Finally, it should be noted that the remainder of the criteria used for scoring originality were not modified. A story could receive two additional points, one for a transformation and one for a creative twist. Thus, a subject's total originality score could vary between 0 and 12.

APPENDIX D

Diagram of 2x2x2 ANOVA

Conditions



Cell one contains 21 subjects: Written stories first in usual context/Oral stories second in unusual context.

Cell two contains 22 subjects: Written stories first in unusual context/Oral stories second in usual context.

Cell three contains 22 subjects: Oral stories first in usual context/Written stories second in unusual context.

Cell four contains 22 subjects: Oral stories first in unusual context/Written stories second in usual context.

APPENDIX E

Directions for Teacher Ratings of Stories

Teacher Number (on outside of folder)

1. Read each of the stories and rate them using the following scale:

   1 = worst
   2 = average
   3 = best

   RATING: Based on Creativity level of the story--not mechanics of writing

   After each story has been placed in either stack 1, 2, or 3 ...

2. Take stack "1" and rate each story as being either "1a" or "1b" using the following scale:

   1a = very poor
   1b = poor

   Place 1a and 1b in separate stacks.

3. Take stack "2" and rate each story as being either "2a", "2b", or "2c" using the following scale:

   2a = fair
   2b = average
   2c = good

   Place 2a, 2b, and 2c in separate stacks.

4. Take stack "3" and rate each story as being either "3a" or "3b" using the following scale:

   3a = very good
   3b = superior

   Place 3a and 3b in separate stacks.
   Thus, each story has been assigned one of the following ratings and has been placed in stacks accordingly:

   1a = very poor
   1b = poor
   2a = fair
   2b = average
   2c = good
   3a = very good
   3b = superior

   Note: In doing this you may arrange the stories from one stack to another as often as you want, i.e., you may change your initial ratings.

5. For each stack list a description of the criteria used for placing stories in that stack.

6. Attach each list to the corresponding stack of stories.

APPENDIX F

Teacher Generated Criteria for Creativity

Criteria listed for placing stories in the "Superior Category:

imaginative
contained descriptive words and sentences
level of vocabulary words was difficult
story made sense
logical story
plausibility of story
sequenced events correctly
science fiction
created interest

Criteria listed for placing stories in the "Very Good" Category:

same as 3b but to a lesser extent
good endings
original ideas
stayed with main idea
wide variety of phrasing
coherent
interesting conclusion
over-all fun to read

Criteria listed for placing stories in the "Good" Category:

same as 3a and 3b but to a lesser extent
long stories

Criteria listed for placing stories in the "Average Category:

same as 3b, 3a, and 2c but to a lesser extent
real life experiences
average ideas

Criteria listed for placing stories in the "Fair" Category:

same as 3b, 3a, 2c, and 2b but to a lesser extent
short
lack of originality

Criteria listed for placing stories in the "Poor" Category:

same as 3b, 3a, 2c, 2b, and 2a but to a lesser extent
likely to occur in real life
more interesting than 1a

Criteria listed for placing stories in the "Very Poor" Category:

same as 3b, 3a, 2c, 2b, 2a, and 1b but to a lesser extent
no creativity
story not understandable
did not develop main idea

APPENDIX G

Average Correlations of the PQS Subscale Scores for Oral Stories

Ideational fluency: .28

Associational Fluency: .49

Elaboration: .99

Relevant Flexibility: .76

Irrelevant Flexibility: .27

Originality: .99

Organization: .36

Average Correlations of the PQS Subscale Scores for Written Stories

Ideational Fluency: .57

Associational Fluency: .66

Elaboration: .91

Relevant Flexibility: .52

Irrelevant Flexibility: .38

Originality: .98

Organization: .42

APPENDIX H

Intrajudge Stability Table:

Prose Quantification System

Oral Stories

Scale	Judge A	B	C	D	E
Ideational Fluency	.60	1.00	.95	1.00	1.00
Associational Fluency	.61	.80	.72	.67	.82
Elaboration	.81	.85	.75	.66	.73
Relevant Flexibility	.73	.75	.77	.36	.53
Irrelevant Flexibility	.90	1.00	.80	1.00	1.00
Originality	.97	1.00	.97	.86	.98
Organization	.83	.78	.77	.87	.72
Total Score	.88	.90	.88	.85	.84

N = 10

Intrajudge Stability Table:

Prose Quantification System

Written Stories

Scale	Judge				
	A	B	C	D	E
Ideational Fluency	.72	.94	.83	.89	.94
Associational Fluency	.76	.72	.76	.77	.78
Elaboration	.73	.87	.64	.75	.84
Relevant Flexibility	.74	.82	.77	.71	.62
Irrelevant Flexibility	.81	.89	.78	.89	.89
Originality	.99	.95	.93	.93	.96
Organization	.79	.83	.80	.78	.78
Total Score	.85	.90	.88	.89	.84

N = 9

APPENDIX I

Analyses of Variance with Prose Quantification System Subscale Scores for Oral and Written Stories as the Dependent Variables

Table I-1

PQS Ideational Fluency Scores for Oral and Written Stories

Source	df	SS	MS	F	P
Total					
Mean	1	143.32	143.32	1140.76	
Context	1	.10	.10	.80	n.s.
Order	1	.00	.00	.00	n.s.
CX x Order	1	.00	.00	.00	n.s.
Error	83	10.43	.13		
Mode(RM)	1	.00	.00	.00	n.s.
RM x CX	1	.37	.37	4.10	<.05
RM x Order	1	.10	.10	1.06	n.s.
RM x CX x Order	1	.00	.00	.00	n.s.
Error	83	7.54	.09		

Results of the 2 x 2 x 2 ANOVA using ideational fluency scores of oral and written stories as the dependent variables indicated a significant interaction between the repeated measure (mode of story) and context (usual versus unusual). Results of the Duncan multiple range test used post-hoc, indicated that oral stories in a usual context were judged as containing more uses for the object of the story-starter (i.e., box) than oral stories in an unusual context.

Table I-2

PQS Associational Fluency Scores for Oral and Written Stories

Source	df	SS	MS	F	P
Total					
Mean	1	368.80	368.80	168.31	
Context	1	1.39	1.39	.63	n.s.
Order	1	.77	.77	.35	n.s.
CX x Order	1	4.31	4.31	1.97	n.s.
Error	83	181.87	2.19		
Mode(RM)	1	1.69	1.69	.94	n.s.
RM x CX	1	31.30	31.30	17.39	<.001
RM x Order	1	.25	.25	.14	n.s.
RM x CX x Order	1	.16	.16	.09	n.s.
Error	83	149.42	1.80		

Results of the 2 x 2 x 2 ANOVA using associational fluency scores of oral and written stories as the dependent variables indicated a significant interaction between the repeated measure (mode of story) and context (usual versus unusual). Results of a Tukey Test post hoc analysis indicated that written stories in an unusual context were judged as containing significantly more instances of things done with, to, or by the object of the story-starter than oral stories in a usual or unusual context and written stories in a usual context.

Table I-3

PQS Elaboration Scores for Oral and Written Stories

Source	df	SS	MS	F	P
Total					
Mean	1	130815.57	130815.57	117.65	
Context	1	74.57	74.57	.07	n.s.
Order	1	6.79	6.79	.01	n.s.
CX x Order	1	347.47	347.47	.31	n.s.
Error	83	92290.13	1111.93		
Mode(RM)	1	7896.73	7896.73	11.29	.01
RM x CX	1	334.55	334.55	.48	n.s.
RM x Order	1	24.39	24.39	.03	n.s.
RM x CX x Order	1	261.74	261.74	.37	n.s.
Error	83	58055.86	699.47		

Results of the 2 x 2 x 2 ANOVA using elaboration scores of oral and written stories as the dependent variables indicated a main effect for mode of sotry. The oral stories were judged as containing significantly more adjectives, adverbs, prepositional phrases, descriptive words or phrases qualifiers that were not necessary to complete a sentence, thought, or idea (Redfield & Martray, 1984b) than written stories.

Table I-4

PQS Flexibility Scores for Oral and Written Stories

Source	df	SS	MS	F	P
Total					
Mean	1	1026.51	1026.51	181.15	
Context	1	1.03	1.03	.18	n.s.
Order	1	6.66	6.66	1.17	n.s.
CX x Order	1	.11	.11	.02	n.s.
Error	83	470.32	5.67		
Mode(RM)	1	4.72	4.72	2.34	n.s.
RM x CX	1	.45	.45	.22	n.s.
RM x Order	1	.14	.14	.07	n.s.
RM x CX x Order	1	1.26	1.26	.62	n.s.
Error	83	167.84	2.02		

Results of the 2 x 2 x 2 ANOVA using flexibility scores of oral and written stories as the dependent variables indicated no main effects and no significant interactions.

Table I-5

PQS Originality Scores for Oral and Written Stories

Source	df	SS	MS	F	P
Total					
Mean	1	7338.12	7338.12	418.47	
Context	1	1.30	1.30	.07	n.s.
Order	1	7.77	7.77	.44	n.s.
CX x Order	1	6.80	6.80	.39	n.s.
Error	83	1455.46	17.54		
Mode(RM)	1	129.97	129.97	16.34	<.001
RM x CX	1	51.59	51.59	6.49	<.05
RM x Order	1	18.80	18.80	2.36	n.s.
RM x CX x Order	1	1.12	1.12	.14	n.s.
Error	83	660.13	7.95		

Results of the 2 x 2 x 2 ANOVA using originality scores of oral and written stories as the dependent variables indicated the following: (a) a main effect for the repeated measure, or mode of story and (b) a significant interaction between the repeated measure and context of the story. In relation to the main effect, judges viewed the written stories as significantly more original than oral stories. In relation to the interaction, results of a Tukey Test post hoc analysis indicated that written stories in usual and unusual contexts were viewed by judges to be significantly more original than oral stories in a usual context.

Table I-6

PQS Organization Scores for Oral and Written Stories

Source	df	SS	MS	F	P
Total					
Mean	1	10067.20	10067.20	3403.26	
Context	1	8.54	8.54	2.89	n.s.
Order	1	7.69	7.69	2.60	n.s.
CX x Order	1	2.48	2.48	.84	n.s.
Error	83	245.52	2.96		
Mode(RM)	1	22.08	22.08	10.90	<.01
RM x CX	1	.48	.48	.24	n.s.
RM x Order	1	.04	.04	.02	n.s.
RM x CX x Order	1	.25	.25	.12	n.s.
Error	83	168.12	2.03		

The results of the 2 x 2 x 2 ANOVA using the organization scores of oral and written stories as dependent variables indicated a main effect for the repeated measure, or mode of story. The oral stories were viewed by judges as more organized (i.e., the number of sentences related to the previous adjacent sentence) than the written stories.

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