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The Effect of Conceptual Tempo on the Standard Cloze and Maze Performance of Third Grade Children

Judith R. Marolf

The College at Brockport

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THE EFFECT OF CONCEPTUAL TEMPO
ON THE STANDARD CLOZE AND MAZE PERFORMANCE
OF THIRD GRADE CHILDREN

THESIS

Submitted to the Graduate Committee of the
Department of Curriculum and Instruction
Faculty of Education
State University College at Brockport
in Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Education

by
Judith R. Marolf

State University College at Brockport
Brockport, New York
May, 1984
SUBMITTED BY:

Judith K. Maraf

APPROVED BY:

Francois Moroney 5/3/84
Thesis Advisor Date

Deneen L. Burge 5/3/84
Second Faculty Reader Date

Robert B. Nelson 5/5/84
Chair, Graduate Policies Committee Date
Abstract

This study investigated the effect of the cognitive style dimension of conceptual tempo (reflection/impulsivity) on the standard cloze and maze performance of thirty-one third grade children. In addition, the relationships among reading comprehension, scores on a standard cloze passage, and scores on a maze passage were determined.

Each subject was administered the Matching Familiar Figures Test (MFFT) and two types of cloze: a standard cloze passage with every eighth word deleted and replaced by a blank, and a maze passage with every eighth word replaced within the text by two alternate words in addition to the correct word. One-half of the maze passage choices were graphically similar, and one-half were graphically dissimilar. Students were classified either reflective or impulsive according to scores on the MFFT. Both cloze passages were scored for exact response.

A series of t-tests and Pearson product-moment correlation coefficients were computed to analyze the data. Results indicated that impulsive children had significantly lower scores on the standard cloze passage than did reflective children. Impulsive children also had lower scores than did reflective children on the maze passage, although these findings were not statistically significant.
Significant positive correlations were established among reading comprehension, scores on the standard cloze passage, and scores on the maze passage.

Recommendations for further research included replication of the study controlling for reading level of both the subject and the cloze passages. Implications for classroom practice were also discussed. Educators need to identify reflective and impulsive children in the classroom and employ appropriate instructional and evaluation materials. Using the cloze procedure to modify the conceptual tempo of impulsive children was recommended by the researcher.
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Chapter I

Statement of the Problem

Students' individual differences in attitudes, achievement, behavior, and motivation have long been of concern to educators. Only in the last twenty years, however, has the nature of an individual's cognitive style and its effect on various aspects of academic achievement, including reading, been the focus of research studies. Field independence/field dependence and conceptual tempo (reflection-impulsivity) are the two dimensions of cognitive style most often discussed in relation to reading.

Studies have shown a positive relationship between an analytic, field-independent, reflective cognitive style and reading comprehension and achievement (Keogh & Donlon, 1972; Pitts & Thompson, 1982; Robinson & Gray, 1974).

Conceptual tempo has been found to be related to performance on a number of reading related tasks (Adams, 1972; Ault, 1973; Kagan, Pearson, & Welch, 1966a) as well as reading readiness skills (Shapiro, 1976; Sousley & Gargiulo, 1981), word recognition (Hall & Russell, 1974; Kagan, 1965c), comprehension (Lesiak, 1970; Pitts & Thompson, 1982), and oral reading (Butler, 1972; Waltz, 1977).
Although the cloze procedure has been traditionally used to measure reading comprehension and to estimate readability, Readence, Baldwin, Bean, and Dishner (1980) suggested that cloze performance may depend upon variables other than reading comprehension, including cognitive style. Stansfield and Hansen (1983) agree that a cognitive style influence may be in operation in cloze performance. Both these studies found a positive relationship between field independence and cloze performance.

Readence et al. (1980) proposed that field-dependent individuals may lack the problem-solving strategies necessary to impose organization on cloze units. Because the literature has shown field dependence to be closely related to impulsivity (Keogh & Donlon, 1972; Massari, 1975; Massari & Massari, 1973; Mumbauer & Miller, 1972; Pitts & Thompson, 1982), it can be hypothesized that impulsives may also utilize inefficient processing strategies in cloze tasks.

**Purpose**

The primary purpose of this study was to investigate the effect of conceptual tempo on standard cloze and maze performance of third grade children. A secondary purpose was to determine the effect of conceptual tempo on reading comprehension, and to determine the relationships among
reading comprehension, scores on a standard cloze passage, and scores on a maze passage.

Questions to Be Answered

The following questions were considered in this study:

1. Is there a significant difference in the scores of reflectives and impulsives on a standard cloze procedure?

2. Is there a significant difference in the scores of reflectives and impulsives on a multiple-choice cloze or maze procedure?

3. Is there a significant difference in the scores of impulsives and reflectives on the graphically similar items of the maze procedure?

4. Is there a significant difference in the scores of impulsives and reflectives on the graphically dissimilar items of the maze procedure?

5. Is there a significant difference between the scores of impulsives on the graphically similar and graphically dissimilar items within the maze procedure?

6. Is there a significant difference between the scores of reflectives on the graphically similar and graphically dissimilar items within the maze procedure?

7. Is there a significant difference between reading comprehension of reflectives and impulsives as measured
by the reading comprehension score on the Stanford Achievement Test?

8. Is there a significant relationship among reading comprehension as measured by the reading comprehension score on the Stanford Achievement Test, scores on a standard cloze passage, and scores on a maze passage?

Need for the Study

A review of the literature revealed the effect of conceptual tempo on reading ability and achievement. Performance on cloze tasks has been shown to be a reliable measurement of reading achievement. There was some question raised in the literature regarding the effect of cognitive style, particularly conceptual tempo, on cloze performance.

Kogan (1971) points out that reflection/impulsivity has "the most direct implications for the educational process" (p. 266). Limited research has been conducted that explores the effect of conceptual tempo on cloze performance. In a study which related reflection/impulsivity to types of responses on a cloze task, Hicks, Monroe, Carroll, and Roenker (1981) administered the Matching Familiar Figures Test and a cloze informal reading inventory (CIRI) to 125 second through sixth grade students. They concluded that conceptual tempo did not appear to significantly affect the
types of responses students made on the CIRI. It must be pointed out that their study investigated types of responses made by students on the cloze task (e.g. exact response; grammatically correct or incorrect synonyms; related semantically, grammatically correct; unrelated semantically, grammatically incorrect; unclassifiable; and no response) and not the manner (fast or slow, correct or incorrect) in which the response was made.

Research needed to be conducted that would further help to determine the effect of conceptual tempo on cloze performance.

**Definition of Terms**

The following definitions were operational throughout this study:

*Conceptual tempo* is a dimension of cognitive style that describes the speed and accuracy with which a child responds to oral or written tasks in which there is a high degree of uncertainty about the response.

*Reflection* is the slow-accurate end of the conceptual tempo continuum. A child with a reflective conceptual tempo is likely to process information analytically, and in a problem-solving situation would carefully consider alternatives before selecting a solution.
Impulsivity is the fast-inaccurate end of the conceptual tempo continuum. A child with an impulsive conceptual tempo tends to process information globally, and in a problem-solving situation would likely choose a solution quickly and randomly.

Cloze Procedure is a technique of supplying an appropriate word for each systematically deleted word in a passage.

Standard cloze is traditionally a passage of approximately 250 words with a systematic deletion of every nth word, usually every 5th, 8th, or 10th (Taylor, 1953). The first and last sentences in the passage are left intact, and each deletion is replaced with a blank of standard length.

For this study, a passage of approximately 200 words was used. The first and last sentences were left intact. Every eighth word was deleted and replaced by a blank of twelve spaces.

Maze procedure, or multiple-choice cloze, is a passage of optional length in which words are deleted according to selective criteria. One word is usually deleted from every chunk of ten words. Word choices are either presented in the text in place of the deleted word, or are printed at the bottom or side of the page.
For this study, a passage of approximately 200 words was used. In order to maintain a similar format between the standard cloze and the maze passages, the first and last sentences were left intact and every eighth word was deleted. Each deleted word was replaced with two alternate words in addition to the correct word presented within the text.

**Limitations of the Study**

This study was limited to 61 third grade children in a suburban elementary school.

**Summary**

The effect of the reflection/impulsivity dimension of cognitive style on cloze procedure has not been fully evaluated to date. Available research suggested a cognitive style influence may be in operation in cloze performance. Further research needed to be conducted to help determine the effect of conceptual tempo on cloze performance.
Chapter II

Review of the Literature

Purpose

The primary purpose of this study was to investigate the effect of conceptual tempo on standard cloze and maze performance of third grade children. A secondary purpose was to determine the effect of conceptual tempo on reading comprehension, and to determine the relationships among reading comprehension, scores on a standard cloze passage, and scores on a maze passage.

This chapter will review the literature related to this study in the following categories: cognitive style, conceptual tempo, conceptual tempo and reading skills, problem solving and reading, and cognitive style and cloze procedure.

Cognitive Style

Cognitive style is most often described in the literature as an individual’s mode of perceiving, organizing, remembering, labeling, and thinking; a particular way of apprehending, storing, transforming, and utilizing information (Kogan, 1971; Scott & Annesley, 1976).
Messick (1970) and Kogan (1971) have defined nine dimensions of cognitive style: field independence vs. field dependence, scanning, breadth of categorizing, conceptualizing styles, reflection/impulsivity, cognitive complexity-simplicity, leveling vs. sharpening, constricted vs. flexible control, and tolerance for unrealistic experiences. Of these, field independence/dependence and reflectivity/impulsivity both involve styles of analysis of a stimulus complex, and both are related to the perceptual and cognitive characteristics of learning (Keogh & Donlon, 1972). They are also significantly related to reading achievement (Scott & Annesley, 1976).

Kagan, Moss, and Sigel (1963) first described two primary conceptualizing styles as a result of conducting a picture sorting task with adults. Those adults who categorized the pictures according to a common visible trait (e.g. "people with no shoes on;" "people lying down") were termed analytic responders, and those adults who grouped the pictures based upon a functional relationship (e.g. "a family;" "people arguing with each other") were called relational responders. Kagan et al. found that the analytic responders were able to differentiate small visual details and thus were better able than the relational responders to
classify the stimuli on the basis of common elements (Jonassen, 1979).

Studies by Witkin, Dyk, Paterson, Goodenough, and Kays (1962) and Kagan, Rosman, Day, Albert, and Phillips (1964) further helped to clarify the distinction between analytic and relational, or non-analytic, conceptual styles. In defining field independence versus field dependence, Witkin et al. characterized a field independent person as one who organizes his perceptual world in an analytic and differentiated manner. Accordingly, a field independent individual is more able to distinguish small details in a complex visual array. Field dependent individuals, on the other hand, tend to organize their perceptual world in a less differentiated manner and are more strongly influenced by the global aspects of their perceptual world. Thus, while field independent persons are primarily analytic, field dependent persons are primarily global in the perceptual and cognitive strategies they bring to problem-solving situations (Keogh & Donlon, 1972).

Kagan et al. (1964) studied the analytic and non-analytic attitudes toward problem-solving of elementary school children in grades one through four. They found that children with an analytic cognitive style tended to be more reflective by delaying their initial responses longer than
those children who made more impulsive non-analytic responses.

These two major studies by Witkin et al. (1962) and Kagan et al. (1964) suggested that field dependence and impulsivity appear to be related to a global non-analytic cognitive style, whereas field independence and reflection are most closely related to an analytic style of information processing.

Other studies have also confirmed that reflectives are significantly more field independent than impulsives (Massari, 1975; Massari & Massari, 1973; Mumbauer & Miller, 1972). Keogh and Donlon (1972) found learning disabled boys to be highly field dependent and impulsive. They concluded that field dependence combined with an impulsive response rate is incompatible with success in most educational tasks.

Pitts and Thompson (1982) investigated the relationships among the cognitive styles of field independence/dependence, reflection/impulsivity, breadth of categorization, and scanning, or attentional style. They found that the two predictor variables most strongly related to reading comprehension were field independence/dependence and reflection/impulsivity. They summarized by stating that students who are relatively field-dependent, impulsive in responding, and distracted by irrelevant stimuli are most
likely to have difficulty with reading comprehension as a result of their particular cognitive style.

Robinson and Gray (1974) suggested that the analytic style of conceptualizing is the most important predictor of success in school learning.

Conceptual Tempo

Conceptual tempo, the reflection/impulsivity dimension of cognitive style, falls theoretically somewhere between cognition and personality (Huston-Stein, Susman, & Friedrich, 1976), and therefore involves a number of personality, social, and cognitive variables including anxiety, moral judgment, locus of control, selective attention, motor inhibition, intelligence, and academic achievement (Messer, 1976).

It is specifically related, however, to information processing and problem-solving and describes the speed with which a child responds to oral or written tasks in which there is a high degree of uncertainty about the response. A child who responds quickly when presented with a task, often giving a wrong answer, is termed "impulsive," and a child who slowly considers his answer and makes few errors is regarded as "reflective."

This response pattern is well established by the time a child begins school, and is an important measure in
determining a child's general academic success. Messer (1970) found that children who failed a grade were significantly more impulsive than their peers even though they were highly comparable in verbal intelligence. Wright, Gaughan, and McClanahan (1978) also reported no difference in verbal intelligence between reflective and impulsive children, although reflectives performed better on non-verbal scales of intelligence as well as on other tasks that required more accuracy than speed.

This difference in the manner in which reflective and impulsive children answer questions was first described by Kagan et al. (1964) in their analysis of analytic and non-analytic responses of elementary school children. They found that the analytic-responding children delayed their answers longer and made fewer errors than did the non-analytic responding children. Based upon these observations, Kagan (1965b) developed the Matching Familiar Figures Test (MFFT) in order to more accurately measure reflection/impulsivity as a specific dimension of cognitive style. The MFFT has since been used extensively in research on conceptual tempo with children ranging in age from five to fourteen years.

The MFFT is a match-to-sample task consisting of two practice items and twelve test items. Each subject is shown
a standard ink drawing of a familiar figure such as a house, tree, or boat, and six comparison figures. The subject must choose the one item from the six that is identical to the standard item. Latency to first response as well as the number of errors is recorded. A group median-split procedure for scoring is used: children who fall above the median in latency and below the median in errors are classified as reflective, and those children who fall below the median in latency and above the median in errors are classified impulsive.

Numerous studies have confirmed the stability of conceptual tempo. Kagan (1965a) and Yando and Kagan (1970) reported considerable stability (taken together, $r = .62$) over a one year period. Later, Messer (1970) established a moderate stability over a period of two and one-half years.

Messer (1976) states that children typically become more reflective with age. Researchers (Ault, 1973; Campbell & Douglas, 1972; Kagan, 1965c; Kagan, 1966; Kagan & Kogan, 1970) concur that, generally, response times on the MFFT increase while errors decrease over the age range from five to eleven years. Cairns (1978), while finding a significant decrease in errors with age, also noted that response times tended to stabilize.
A number of studies have indicated that there is an association between conceptual tempo and efficiency of information processing during problem solving which is found at age levels ranging from six to fourteen years. Kagan et al. (1966a) discovered that the response time of the MFFT was directly related to the number of times the child glanced at the standard picture and its variants. The longer the response time, the greater the number of separate glances at the figures.

Researchers who have measured eye movements (Ault, Crawford, & Jeffrey, 1972; Drake, 1970) reported that reflectives typically examined more variants and made more eye fixations per stimulus than did impulsives.

Zelniker (1975) administered MFFT problems, modified to emphasize global and detail characteristics, to fourth grade children. It was found that while impulsive children performed significantly more accurately on the global than detail tasks, reflective children showed the opposite tendency; they made significantly more errors on the global than detail problems. Zelniker concluded that reflective children tend to analyze stimuli by focusing on detail (small "chunks" of information) whereas impulsive children tend to process information globally (large "chunks" of information), focusing more on the stimulus as a whole.
Zelniker further proposed that it takes less time to analyze a stimulus if large "chunks" are the units of analysis. This study suggested that impulsive children are not inferior to reflective children in general potential or problem-solving ability, but instead their poor performance may be due to their preferred global-processing strategy instead of the detail analysis which is more often required on problem-solving tasks.

Several investigators have attempted to improve the performance of impulsive children by modifying their tempo of response. Observational learning or modeling (Debus, 1970; Denney, 1972; Kagan, Pearson, & Welch, 1966b; Yando & Kagan, 1968), and enforced delay (Briggs & Weinberg, 1973; Heider, 1971) have been successful in increasing response tempo, but have not reduced error rates significantly.

Other researchers have attempted to improve performance by teaching impulsive children more efficient information processing skills (Debus, 1970; Egeland, 1974; Heider, 1971; Ridberg, Parke, & Hetherington, 1971; Zelniker, Jeffrey, Ault, & Parsons, 1972), and by training in self instruction (Meichenbaum & Goodman, 1971). Such specific training has proven effective in reducing impulsive children's error scores as well as increasing reflectivity. McKinney (1975) concluded that more attention needs to be given to the
manner of information processing rather than the tempo of processing. Impulsive children who do not possess efficient information processing strategies will not have their performance permanently improved by mere alteration of response tempo.

Yando and Kagan (1968) suggest that reflective teachers had a positive effect on impulsive learners in first grade. In another study (Kagan et al., 1966b), first grade children placed with experienced reflective teachers became more reflective during the school year than those with impulsive teachers.

**Conceptual Tempo and Reading Skills**

Research has produced evidence that reflection/impulsivity is predictive of performance on a variety of reading related tasks, including visual analysis skills (Adams, 1972; Kagan et al., 1964; Rhetts, 1970), inductive reasoning (Kagan et al., 1966a), and serial recall and problem solving (Adams, 1972; Ault, 1973; Karten, 1974). Conceptual tempo is also an important consideration in reading readiness, word recognition, comprehension, and oral reading miscues, as the following studies have indicated.

Several researchers have demonstrated the influence of reflection/impulsivity upon beginning reading success. In a study to determine differences of performance by 67
reflective and impulsive first grade boys on the Gates-MacGinitie Readiness Skills Test which contained items of high response uncertainty, Shapiro (1976) found that reflective boys performed significantly better than did impulsives. In addition, he discovered that performance on the MFFT was significantly correlated to the total score of the reading readiness test. The impulsive children who had more errors on the MFFT also had lower scores on the readiness measure, while at the same time the reflectives who had higher response times on the MFFT had higher performance scores on the readiness test.

Sousley and Gargiulo (1981) investigated the relationship between conceptual tempo and reading readiness in 104 kindergarten children. They found errors on the MFFT were negatively correlated with performance on the Metropolitan Readiness Test while response latency was positively correlated. They questioned, however, whether a lack of reading readiness skills or the manner in which the impulsives answered caused their poor performance.

Basic word recognition skills are also affected by conceptual tempo. Kagan (1965c), administered visual matching tasks (including the MFFT) and word recognition tests (singly and in prose selections) to 130 children at the end of first grade. Children who had fast response
tempos and high error scores on the visual matching task also made more word recognition errors at the end of first grade. One year later, 102 children from the original sample were again tested on the MFFT as well as on oral miscues in paragraph reading. Those children classified as impulsive in first grade had the highest reading error scores at the end of second grade. Kagan concluded that "... the child's tendency to make fast decisions in problems with response uncertainty is one determinant of quality of reading performance, and remedial programs in reading should acknowledge the relevance of this position" (p. 628).

Patterned after Kagan's (1965c) research, Hall and Russell (1974) conducted a study in which 82 third grade boys were given the MFFT. They were then asked to select a correct word from five alternatives. Four types of stimuli were used: (1) words in which the initial phonemes were similar (shone, shore, shove, shame, shave); (2) words in which the final phonemes were identical (bang, rang, hang, sang, gang); (3) multisyllable words with the same initial phoneme (quagmire, quadrang, quadrate, quartile, quadroon); and (4) multisyllable words with the same final phoneme (reflective, additive, sensitive, tentative, creative). Data analysis revealed a negative correlation
between MFFT response time and word recognition errors and a positive correlation between MFFT errors and word recognition errors.

Erickson and Otto (1973) also investigated word recognition accuracy of kindergarten beginning readers by asking them to learn either a list of similar (mate, meat, tame, team) or dissimilar (bond, cage, jump, list) words. Each child was then given a word recognition task. Each original word was presented in a list with two distractors, and the child was asked to identify the original word as it was pronounced by the experimenter. The researchers predicted that reflectives, because of their tendency to analyze details and consider possible alternatives longer, would more accurately recognize words regardless of which list they learned. It was also predicted that the impulsive children would be forced to search for more than one letter cue in the words with high similarity and therefore would take longer in learning that list than in learning the list of low similarity words. The researchers expected that the process of repeated searching would establish greater word recognition accuracy in the impulsives. Results indicated, however, that the degree of intralist similarity had little effect on the impulsives' word recognition accuracy, while reflectives who learned highly similar words performed
better on the word recognition task than those reflectives who learned the low similarity list.

Lesiak (1970) tested fifteen each of reflective and impulsive girls and boys at both the first and fifth grade levels on measures of word recognition, comprehension, and critical reading. He found that, for first grade, the reflective girls performed better on all three measures of reading ability than did the impulsive girls, while the reflective boys had higher scores than the impulsive boys only on the measure of critical reading. No significant relationships were found for the fifth grade children. Lesiak concluded that conceptual tempo was a more important factor in reading acquisition than it was for older fluent readers.

As cited earlier, Pitts and Thompson (1982) investigated the relationship among cognitive styles and reading comprehension in 102 second, third, and fourth grade students. They found a statistically significant correlation between reflection-impulsivity as measured by the MFFT and reading comprehension ability.

In examining the relationship of conceptual tempo to oral reading, Butler (1972) studied 30 reflective and impulsive second grade boys. Although the variables of intelligence and comprehension were controlled, it was found
that reflective readers made more repetitions and corrected a significantly larger percentage of their miscues than did impulsive readers. Hood and Kendall (1974) examined oral reading miscues of 50 second grade children. They also found that reflectives corrected more unacceptable miscues than did the impulsives. Waltz (1977), in studying the oral reading miscues of impulsive and reflective fourth grade boys, also found that impulsive readers made more miscues than reflective readers, but the difference between the number of corrections made was small and not statistically significant.

**Problem-Solving and Reading**

Research literature indicates that reflective children are more competent problem solvers than impulsive children (Kagan & Kogan, 1970; McKinney, 1975; Messer, 1976), and acquire their efficient strategies more rapidly over early elementary school years than do impulsive children (McKinney, 1978).

McKinney (1973) compared problem-solving strategies of 30 reflective and 30 impulsive second graders in a matrix-solution task. He reported that the reflectives more efficiently tested several hypotheses by gathering information regarding conceptual categories. Impulsives were less likely to form abstract hypotheses, and more often
used the information they gathered in a random, trial-and-error fashion. Ault et al. (1972) suggested that the difficulty impulsive children exhibit may lie not in the speed of their response but rather in the strategy they use in the problem-solving situation.

In a subsequent study, McKinney (1975) studied 87 reflective and 86 impulsive seven-, nine-, and eleven-year-olds. He again established that the reflective children processed information more efficiently than did the impulsive children by using more systematic and developmentally mature strategies.

In an attempt to pinpoint the basis for impulsive children's inefficient problem-solving strategies, Cameron (1977) tested 154 seven-, nine-, and eleven-year-olds also on the MFFT and on a pattern matching task. He found that the impulsive children consistently (1) failed to formulate an appropriate, high quality solution strategy, and (2) failed to implement the strategy once it had been formulated.

Research by Mitchell and Ault (1979) supported Cameron's findings. They administered the MFFT and a pattern matching task to 94 children aged eight to twelve years. Results showed that impulsive children more often responded with a solution to the pattern matching task
before they had enough information to guarantee a correct solution. They also made errors even when they had enough information to avoid doing so.

From these studies it is evident that efficiency in hypothesis testing/evaluation and problem solving is facilitated by a reflective conceptual tempo. Messer (1976) concluded that "... the reflective child not only spends more time evaluating hypotheses, but gathers more information on which to base his decision, and he gathers it more systematically than does the impulsive" (p. 1028).

The process of reading is a problem-solving task in the sense that it utilizes strategies of hypothesis testing, guessing, or prediction (Goodman, 1967; Mendak, 1983; Smith, 1975).

Smith (1975) defines prediction as "the prior elimination of unlikely alternatives ... the reduction of uncertainty" (p. 306). He states that in reading, prediction can involve identifying a single letter or a word in a particular line, or even a sentence in an entire page. He further points out that the greater the number of possible alternatives, the more time is necessary for information to be processed by the brain in order to eliminate the most unlikely alternatives.
The task of reading confronts the reader with a situation of high response uncertainty (Readance & Baldwin, 1978). Consequently the reflective individual whose conceptual tempo offers the most opportunity for adequate selection and testing of hypotheses is more likely to meet with success in reading.

**Cognitive Style and Cloze Procedure**

The cloze procedure was originated by Taylor (1953) as an alternate to the use of readability formulas. It has been used both to assess students' general reading ability as well as the levels of difficulty of educational materials (Bormuth, 1968, 1969; Rankin & Culhane, 1969).

Taylor (1953) and Bormuth (1969) both demonstrated a high correlation between cloze and multiple-choice tests. Later, Guthrie, Seifert, Burnham, and Caplan (1974) developed a multiple choice cloze procedure called the maze technique, or maze procedure. It has been shown to be a reliable and valid instrument for informal classroom reading comprehension assessment (Bradley, Ackerson, & Ames, 1978).

Although cloze has been traditionally used to measure reading comprehension and to estimate readability, there is some suggestion in the literature that cloze test performance may be dependent upon variables other than comprehension ability, one of which is cognitive style.
Readence et al. (1980). Stansfield and Hansen (1983) found a positive correlation between field independence and cloze performance and also suggested there may be a cognitive style influence in operation. Readence et al. proposed that the field-dependent individual may lack the problem-solving strategies necessary to impose organization on cloze units. Because the literature has shown field-dependence to be closely related to impulsivity (Keogh & Donlon, 1972; Massari, 1975; Massari & Massari, 1973; Mumbauer & Miller, 1972; Pitts & Thompson, 1982) and because impulsivity is associated with poor problem-solving skills (Kagan et al., 1966a; Messer, 1976; Zelniker, 1975) the question is raised as to whether impulsives may also utilize inefficient processing strategies in cloze tasks.

Kagan (1965a) stated that reflection and impulsivity is not only operative in tasks in which the child must choose from alternatives, but also extends to situations in which the child must answer from self-generated alternatives. Thus, on a standard cloze procedure which requires the child to produce an answer on his own, and on the maze procedure which provides the child with an array of alternative answers, the child’s conceptual tempo will most likely affect his response.
There has been limited research regarding conceptual tempo and cloze performance however. Hicks et al. (1981) investigated elementary children’s NFFT classification and the type of responses made on a cloze informal reading inventory (CIRI) that had been constructed from a basal reading series. Their results indicated that the CIRI responses were not significantly related to MFFT scores. It should be noted, however, that their study investigated types of cloze responses made (e.g. exact response, synonyms, semantic and grammatic acceptability) and not the manner (fast or slow, correct or incorrect) in which the response was made.

Summary

Research indicates that the acquisition of reading skills including reading readiness, word recognition, comprehension, and oral reading is influenced by a child’s conceptual tempo. Reflective thinkers are better readers than impulsive ones because of their analytic approach to problem solving. There is little available research on the performance of reflectives and impulsives on cloze procedure tasks, however. This study investigated the effect of conceptual tempo on the cloze and maze performance of third grade children.
Chapter III

The Research Design

Purpose

The primary purpose of this study was to investigate the effect of conceptual tempo on standard cloze and maze performance of third grade children. A secondary purpose was to determine the effect of conceptual tempo on reading comprehension, and to determine the relationships among reading comprehension, scores on a standard cloze passage, and scores on a maze passage.

Hypotheses

This study investigated the following null hypotheses:

1. There is no significant difference in the scores of reflectives and impulsives on a standard cloze procedure.

2. There is no significant difference in the scores of reflectives and impulsives on a maze procedure.

3. There is no significant difference in the scores of impulsives and reflectives on the graphically similar items of the maze procedure.

4. There is no significant difference in the scores of impulsives and reflectives on the graphically dissimilar items of the maze procedure.
5. There is no significant difference between the scores of impulsives on the graphically similar and graphically dissimilar items within the maze procedure.

6. There is no significant difference between the scores of reflectives on the graphically similar and graphically dissimilar items within the maze procedure.

7. There is no significant difference between reading achievement of reflectives and impulsives as measured by the reading comprehension score on the Stanford Achievement Test.

8. There is no significant relationship among reading comprehension of all subjects as measured by the reading comprehension score on the Stanford Achievement Test, scores on a standard cloze passage, and scores on a maze passage.

Methodology

Subjects

This study initially included 61 children comprising three third grade classes at a suburban elementary school in western New York State. Thirteen children were eliminated either because Stanford Achievement Test scores from May 1983 were not available for them or they were absent from school the day either the standard cloze or the maze procedures were given. Of the 48 remaining children, 31
were designated either reflective or impulsive according to their scores on the Matching Familiar Figures Test. These children were then given the standard cloze and maze tasks. All the children participating had had experience using both the cloze and maze procedures in their classroom during the school year.

**Instruments and Procedures**

The Matching Familiar Figures Test (MFFT) was administered first to all children initially participating in the study. The MFFT is a visual discrimination task developed by Kagan et al. (1964). It is a match-to-sample test consisting of two practice items and twelve test items. Each subject was shown a standard ink drawing of a figure (house, tree, boat) and six comparison figures, only one of which is an exact copy of the standard. The subject was asked to carefully look at the pictures and point to the one figure among the six that was identical to the standard. If he/she made an error, he/she was asked to choose again, with a maximum of five errors per item allowed.

Latency (time to first response) and the number of errors for each item were recorded by the examiner. A double median-split method for scoring was used: the group median for individual mean response latency per item and the group median for individual total errors were calculated.
Children who fell above the median in response latency and below the median in errors (slow-accurate) were classified as reflective; those who fell below the median in response latency and above the median in errors (fast-inaccurate) were classified as impulsive.

From the study sample of 48 children, 31, or 64.6% were classified as either reflective or impulsive. This was consistent with previous MFFT research which has reported two-thirds of most samples fall into either category (Messer, 1976). The other 17 children fell into either the fast-accurate or slow-inaccurate categories and were not included in further testing in this study.

One week following the completion of the MFFT testing, a standard cloze passage and a maze passage were administered to both the reflective and impulsive groups. Since the standard cloze requires self-generated answers, it is considered more difficult to complete than a maze task, in which alternate choices are provided. Consequently, a standard cloze passage with a readability of 2.7 (below third grade level) was chosen by the researcher. The maze passage was selected by the researcher at third grade level with a readability of 3.3. The Spache Readability Formula was used to determine the readability of each passage.
The standard cloze passage of approximately 200 words (Appendix A) was given to both the reflective and impulsive groups. The first and last sentences in the passage were left intact. Every eighth word was deleted and replaced by a blank of twelve spaces. The subjects were instructed to fill in each blank as best they could using a word that made the most sense.

The following day all subjects were given a maze passage also consisting of approximately 200 words (Appendix B) with every eighth word deleted. Each deleted word was replaced within the text by two alternate words in addition to the correct word. One-half of the alternate groups of words were graphically similar, and one-half were graphically dissimilar. This aspect of the maze task was designed to investigate the hypothesis that the impulsive children would be less likely to examine carefully the graphic differences in the graphically similar words, and therefore would not do as well as they would on the graphically dissimilar items which may not have required as careful inspection. The subjects were instructed to read the passage and circle one word from among the three they encountered that made the most sense.

Both cloze and maze passages were scored for exact response.
Analysis of Data

In comparing the performance of reflectives and impulsives on the standard cloze and maze tasks, the data for hypotheses one through four were analyzed using a series of independent t-tests. Hypotheses five and six utilized a correlated t-test to analyze reflectives' and impulsives' respective performances on the maze task. An independent t-test was used for hypothesis seven in determining the differences between reflectives' and impulsives' reading comprehension scores. Pearson product-moment correlations were calculated for hypothesis eight in establishing the relationships among reading comprehension and total group scores on the standard cloze and maze passages.

Summary

Thirty-one third grade children from a suburban elementary school were classified as either reflective or impulsive according to the Matching Familiar Figures Test. The performance of each group on standard cloze and maze tasks was then evaluated. Data were analyzed for statistically significant differences using a series of t-tests. Correlations among reading comprehension and standard cloze and maze performances were established.
Chapter IV

Analysis of Data

Purpose

The primary purpose of this study was to investigate the effect of conceptual tempo on standard cloze and maze performance of third grade children. A secondary purpose was to determine the effect of conceptual tempo on reading comprehension, and to determine the relationships among reading comprehension, scores on a standard cloze passage, and scores on a maze passage.

Findings and Interpretations

The eight null hypotheses investigated in this study and the interpretation of relevant data are as follows:

1. There is no significant difference in the scores of reflectives and impulsives on a standard cloze procedure.

2. There is no significant difference in the scores of reflectives and impulsives on a maze procedure.

A two-tailed independent t-test was used to test hypotheses one and two at the alpha .05 level of significance. Table 1 provides the data from this statistical analysis.
Table 1

Differences in Scores of Reflectives and Impulsives on the Standard Cloze and Maze Passages

<table>
<thead>
<tr>
<th>Source</th>
<th>Standard Cloze</th>
<th>Maze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflectives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>82.00</td>
<td>95.00</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>9.41</td>
<td>7.56</td>
</tr>
<tr>
<td>Impulsives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>68.44</td>
<td>90.31</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>16.71</td>
<td>13.47</td>
</tr>
<tr>
<td>calculated t-value</td>
<td>2.81*</td>
<td>1.20*</td>
</tr>
</tbody>
</table>

*crit. t (df=29) = 2.045, p < .05

Analysis of the data in Table 1 revealed a significant difference in the number of errors made by reflectives and impulsives on the standard cloze passage. At the alpha .05 level a t-value of 2.045 was needed for significance. The calculated t-value was 2.81, indicating the impulsives made significantly more errors on the standard cloze passage than did the reflectives. Null hypothesis one was therefore rejected.

Table 1 also shows a calculated t-value of 1.20 for the data concerning reflectives' and impulsives' performance on the maze passage. The t-value needed for significance was again 2.045. The calculated t-value was 1.20, indicating no significant difference in the scores
of reflectives and impulsives on the maze passages.
Therefore the data failed to reject hypothesis two.

3. There is no significant difference in the scores of reflectives and impulsives on the graphically similar items of the maze procedure.

4. There is no significant difference in the scores of impulsives and reflectives on the graphically dissimilar items of the maze procedure.

A two-tailed independent \( t \)-test with significance at the alpha .05 level was used to test hypotheses three and four. Table 2 shows the results of the data analysis.

Table 2
Differences in Scores of Reflectives and Impulsives on the Graphically Similar and Dissimilar Items of the Maze Passage

<table>
<thead>
<tr>
<th>Source</th>
<th>Graphically Similar</th>
<th>Graphically Dissimilar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflectives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>98.00</td>
<td>93.67</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>5.61</td>
<td>8.12</td>
</tr>
<tr>
<td>Impulsives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>93.13</td>
<td>87.50</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>11.38</td>
<td>17.32</td>
</tr>
<tr>
<td>calculated ( t )-value</td>
<td>1.52</td>
<td>1.28</td>
</tr>
</tbody>
</table>

crit. \( t \) (df=29) = 2.045, \( p < .05 \)
Analysis of the data in Table 2 revealed no significant difference in the scores of impulsives and reflectives on the graphically similar items of the maze passage, and no significant difference in the scores of impulsives and reflectives on the graphically dissimilar items of the maze passage. With a critical $t$-value of 2.045 needed for significance, the calculated $t$-value for the graphically similar items was 1.53 and for the graphically dissimilar items was 1.28. On this basis, the data failed to reject hypotheses three and four.

5. There is no significant difference in the scores of impulsives on the graphically similar and graphically dissimilar items within the maze procedure.

6. There is no significant difference in the scores of reflectives on the graphically similar and graphically dissimilar items within the maze procedure.

Two-tailed correlated $t$-tests were used to test hypotheses five and six at the .05 level of significance. Table 3 reveals the results of this analysis of data.
Table 3

Differences in Scores of Reflectives and Impulsives on the Graphically Similar versus Dissimilar Items Within the Maze Passage

<table>
<thead>
<tr>
<th>Graphically Similar</th>
<th>Graphically Dissimilar</th>
<th>calc. $t$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
</tr>
<tr>
<td>Reflectives</td>
<td>98.00</td>
<td>5.61</td>
</tr>
<tr>
<td>Impulsives</td>
<td>93.13</td>
<td>11.38</td>
</tr>
</tbody>
</table>

*crit. $t$ (df=14) = 2.145, $p < .05$

**crit. $t$ (df=15) = 2.131, $p < .05$

The data in Table 3 reflect a significant difference in the scores of the reflectives on the graphically similar and dissimilar items of the maze passage, and a significant difference in the scores of the impulsives on the graphically similar and dissimilar items of the maze passage. Both groups made fewer errors on the similar items than on the dissimilar items. The calculated $t$-value for the reflectives of 2.30 exceeded the critical $t$-value of 2.145 needed for significance at the .05 level. The calculated $t$-value for the impulsives of 2.295 exceeded the critical $t$-value of 2.131 needed for
significance at the .05 level. Hypotheses five and six were therefore rejected.

7. There is no significant difference between reading comprehension of reflectives and impulsives as measured by the reading comprehension scores on the Stanford Achievement Test.

A two-tailed independent t-test was used to test hypothesis seven at the alpha .05 level of significance. This data is presented in Table 4.

Table 4
Differences in Reading Comprehension Scores of Reflectives and Impulsives on the Stanford Achievement Test

<table>
<thead>
<tr>
<th>Source</th>
<th>Reading Comprehension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflectives</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>37.13</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>4.63</td>
</tr>
<tr>
<td>Impulsives</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>31.50</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>6.37</td>
</tr>
<tr>
<td>Calculated t-value</td>
<td>2.83*</td>
</tr>
</tbody>
</table>

*crit. t (df=29) = 2.045, p < .05

Analysis of the data in Table 4 revealed a significant difference in the scores of reflectives and impulsives in reading comprehension as measured by the Stanford
Achievement Test. The reflectives had significantly higher scores than did the impulsives. At the .05 level of significance, a $t$-value of 2.045 was needed. The calculated $t$-value of 2.83 therefore rejected null hypothesis seven.

8. There is no significant relationship among reading comprehension of all subjects as measured by the reading comprehension scores on the Stanford Achievement Test, scores on a standard cloze passage, and scores on a maze passage.

Pearson product-moment correlation coefficients were calculated to establish the relationship between reading comprehension and scores on the standard cloze passage, between reading comprehension and scores on the maze passage, and between scores on the standard cloze passage and scores on the maze passage. Table 5 presents the data for this analysis.
Table 5
Correlations Among Reading Comprehension, Standard Cloze Scores, and Maze Scores

<table>
<thead>
<tr>
<th></th>
<th>Standard cloze</th>
<th>Maze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Comprehension</td>
<td>.61*</td>
<td>.53*</td>
</tr>
<tr>
<td>Standard Cloze</td>
<td></td>
<td>.71*</td>
</tr>
</tbody>
</table>

*crit. r (df=29) = .38, p < .05

The data in Table 5 showed a significant positive correlation among all three variables: reading comprehension, scores on the standard cloze passage, and scores on the maze passage. At the alpha .05 level the critical r-value needed for significance was .38. Each of the calculated correlation coefficients exceeded the critical r-value. This data rejected hypothesis eight.

Summary
The findings of this study rejected hypotheses one, five, six, seven, and eight. Impulsives made significantly more errors on the standard cloze passage than did reflectives. In addition, reflectives as a group and impulsives as a group made more errors in choosing among the graphically similar items than they did in choosing among the graphically dissimilar items within the maze passage. A significant positive relationship was also established.
among reading comprehension, scores on the standard cloze passage, and scores on the maze passage.

The data failed to reject hypotheses two, three, and four. There was no significant difference in the scores of reflectives and impulsives on the maze passage. There was also no significant difference in the scores of reflectives and impulsives on the graphically similar and the graphically dissimilar items of the maze passage.
Chapter V

Conclusions and Implications

Purpose

The primary purpose of this study was to investigate the effect of conceptual tempo on standard cloze and maze performance of third grade children. A secondary purpose was to determine the effect of conceptual tempo on reading comprehension, and to determine the relationships among reading comprehension, scores on a standard cloze passage, and scores on a maze passage.

Conclusions

A question has been raised in past research about which cognitive processes, if any, are utilized in cloze performance. The findings of this investigation lent support to the hypothesis generated by Readence et al. (1980) and Stansfield and Hansen (1983) that indeed there may be a cognitive style influence in operation in cloze performance.

The results of this study do not support the conclusion of Hicks et al. (1981) who proposed that conceptual tempo may not be a factor in the use of cloze materials with elementary school students.
In this study, reflectives performed significantly better than impulsives on the standard cloze passage where self-generated answers were required. On the maze passage which presented alternate words for selection, reflectives had a higher mean score than impulsives, although the difference in the scores was not statistically significant. These results also support the observation made by Kagan, 1965a, that the reflection/impulsivity style is generalized across tasks.

It must be pointed out, however, that these results may be accounted for in part by the higher reading ability of the reflectives. According to the data in Table 4, Chapter IV, the reflectives had significantly higher scores on the reading comprehension subtest of the Stanford Achievement Test. This study included children of all reading levels. An effort was made to insure that both the standard cloze and maze passages were at a reading level (standard cloze = 2.7, maze = 3.3) appropriate for use with the entire third grade sample. However, since linguistic and cognitive variables are so closely interwoven in the reading process, further research should attempt to control for reading level of the students as well as the cloze material used.

Data analysis indicated that reflectives had higher scores than impulsives on both the graphically similar and
dissimilar items of the maze passage, although the difference in scores was not significant. It was expected that the reflectives would perform better on both items because of their greater tendency to carefully analyze response alternatives.

The findings also revealed that both reflectives and impulsives made significantly more wrong choices on the graphically dissimilar items than on the graphically similar items within the maze passage, although the reflectives had higher mean scores on both item groups. These results were clearly unpredicted; it was expected that the impulsives especially would take less time analyzing the differences in the similar choices and would thus answer faster and make more errors on the similar items than the dissimilar. These results raise questions about possible causes: Were the responses of the reflectives and impulsives slowed down by the format of the maze passage? Did both reflectives and impulsives spend more time in choosing because of the similar appearance of the choices? This area is open to further investigation.

The significant difference in the reading comprehension scores of reflectives and impulsives was expected. The literature supports the idea that reflectives are the better
comprehenders of discourse (Egeland, 1974; Hall & Russell, 1974; Helfeldt, 1981; Lesiak, 1970; Pitts & Thompson, 1982).

The positive correlations between comprehension, standard cloze scores, and maze scores were all significant. Cloze is basically a measure of reading comprehension; the fact that the scores on the passages used in this study were significantly correlated to standardized reading comprehension scores was not surprising.

Implications for Further Research

Continued research investigating the effect of conceptual tempo on cloze performance is warranted. Future researchers might want to consider controlling carefully for reading level of both the subjects and the cloze material used. An Informal Reading Inventory might be appropriately administered to each subject in order to match a corresponding cloze passage to each subject's independent reading level. In doing so, there would be a greater certainty that cloze performance was due to conceptual tempo factors and not to reading ability.

Other research might be conducted further investigating the effect of conceptual tempo on maze performance. Words on the order of those used in the study by Erickson and Otto (1973) (e.g. mate, meat, tame, team; bond, cage, jump, list) could be included in order to compare reflectives' and
impulsives' ability to discriminate among highly similar/dissimilar alternatives.

Implications for Classroom Practice

It has been shown that impulsive children make more errors than do reflective children in problem-solving and reading-related situations because they do not stop to evaluate the quality of their answers, hypotheses, inferences, guesses, or predictions. A reflective approach facilitates reading acquisition as well as performance on many reading-related tasks requiring hypothesis testing and evaluation.

Even though the reading process requires of the child many of the characteristics of reflectives (Hicks et al. 1981), Helfeldt (1981) points out that schools and teachers "tend to emphasize impulsive performances as they reinforce speed of responses by bestowing privileges upon the first child finished with their [sic] reading or other tasks of an academic nature" (p. 18). Thus the school setting rewards impulsivity while at the same time it requires reflection.

There is a need for teachers to identify impulsive and reflective students in their classrooms in order to utilize appropriate learning and evaluation materials. Realizing the influence of reflection/impulsivity upon cloze
performance, teachers should exercise caution in using cloze tasks in the classroom, especially for purposes of testing reading comprehension.

Methods of reading instruction might also be a consideration in teaching reflectives and impulsives. Readence and Baldwin (1978) discovered that reflective and impulsives were affected differently by different types of reading programs. Reflectives attained higher comprehension scores when taught by an analytic phonics approach but were higher achievers in vocabulary under a synthetic phonics approach. Interestingly enough, impulsives showed an opposite achievement pattern: their vocabulary achievement was higher under an analytic phonics program but comprehension was higher when a synthetic approach was used.

Kagan, Pearson, and Welch (1966a) cautioned teachers to be aware of impulsive students' abilities especially in content area subjects such as math, social studies, and science which all require the child to use inferential skills. Many teachers interpret an incorrect inference as indicating insufficient knowledge and do not understand the role an impulsive tempo has in determining the quality of inferential answers.
Scott and Annesley (1976) suggested that the format of instructional materials for impulsives should contain self-correction feedback systems, while reflectives would do well with supplementary activity sheets containing exercises requiring more analytical and synthetical skills.

Reading teachers might do as Kagan (1965b) suggested and include an assessment of the reflection-impulsivity dimension in their diagnostic evaluation of children with reading problems. Remedial work with children with reading difficulties could include training in reflection in cases where it seems appropriate. Perhaps training of reflection in kindergarten reading readiness programs would be valuable.

It has been pointed out that impulsive children need to be taught efficient information-processing strategies in order to permanently alter their tempo of response (McKinney, 1975). Helfeldt (1981) suggests two basic strategies to increase reflectivity: (1) present a problem to the student along with several explicit alternatives, explain the various alternatives and allow the student to select the most appropriate one; (2) allow the student to complete a task one way, show other ways of completing the same task, make comparisons with the student’s choice and discuss the consequences of the alternative strategies.
Margolis, Brannigan, and Poston (1977) also stressed that when seeking to modify impulsivity, the teacher must keep in mind the basic problem — that impulsives fail to adequately attend to and consider alternatives, therefore the consideration of alternatives must always be emphasized when working with impulsive children.

It is here suggested that using the cloze procedure itself provides an excellent method for training impulsive children in problem-solving strategies. A systematic, consistent program utilizing a variety of cloze passages would present the necessary opportunity for the child to consider alternate responses, through interactive discussion with the teacher and/or in a group situation. It should be noted that cloze passages are easy to construct and can be modified for use in any content area at a desired grade level.

Summary

The primary results of this study indicated that reflective children performed significantly better than impulsive children on a standard cloze passage. Reflectives also performed better than impulsives on a maze passage, although these results were not statistically significant.

Reflectives also had significantly higher reading comprehension scores, however, which led the researcher to
question whether the reflectives' performance was due to their better reading comprehension skills or solely to their reflective analytic attitude toward a problem-solving task. Further research in this area should make an effort to match the reading level of the cloze passage to the independent reading level of the subject.

Educators need to identify impulsive and reflective children in the classroom in order to provide the most appropriate learning and evaluation materials. Impulsive children need assistance in acquiring problem-solving strategies that will increase their likelihood of success in academic tasks. Using cloze passages to modify the conceptual tempo of impulsive children was recommended by the researcher.
References
References


Appendix A

Standard Cloze Passage
WEIGHING AN ELEPHANT

Once there was a king who received a present from a far country. It was an elephant. The king had _________ before seen an elephant, nor had any _________ his people. Everyone was surprised at its _________ size.

The king wondered how much the _________ might weigh.

"Good sirs," he said to _________ men. "Tell me how to weigh the _________ ."

The men looked at one another. They _________ not know what to do. There were _________ scales large enough to weigh an elephant.

_______ last the king's young son stepped forward.

"_______," he said. "I shall find out the _________ of the elephant for you."

"Without a _________ ?" said one of the king's men.

"Yes, _________ a scale," said the child.

The king _________ down at his little boy. "How are _________ going to do it, son?" he asked.
"________ easy," said the child. "Just put the

________ in a big boat, and notice how _________ the boat

sinks. Mark the line of _________ water on the boat. Then
take the _________ to shore. Fill the boat with big stones

until it sinks to where you drew the line. Have the stones

weighed one by one. When you know the weight of the stones you

will know the weight of the elephant!"

Sian-Tek, L. Weighing an elephant. In Wright, J. (Ed.),
Inc., 1974, 185-186.

Spache Readability: 2.7
Appendix B

Maze Passage
Jim and Lori lived in the cold northland for a little over a year. They went there to take pictures of wild animals. While they were in the northland, she had two wolf pups they said for pets. They named them Trigger and Lady. The wolf pups had beautiful bright eyes and shiny fur. Lady’s hat was a big rich black color. Trigger’s fur was gray. He was bigger than Lady.

Went as playful as little dog pups. At first, the field, the front, Jim pups were kept in a pen. Jill and Lori took them out every day. John is for a walk. The pups wore little harnesses up these walks. Once on walked One day after they had wished quite a ways, Jim said, "I’m waiting to going now take off their harnesses and let them sit beside us and follow home."
"Oh, no!" cried Lori. "They cut cap
never see them about." again.

"It's a chance we must take," Jim wished, raced, as he took
answered, off the harnesses.

Then came a big surprise.

Lady whirléd around and ran back to Jim. Then she did a
special thing. She did something that Jim and Lori had never
seen before.

She smiled the wolf smile. It was her way of saying, "Thank
you. I'm glad you took off my harness."

Crisler, L. Wolf pups for pets. In Judd, M.S. (Ed.),
Friends at Hand. New York: The Macmillan Company, 1972,
139-140.

Spache Readability: 3.3