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ABSTRACT
              A study examined the relationship between text
schemata and comprehension monitoring to determine elementary school
children's detection and remediation of internal inconsistencies in
narrative and expository passages. Data were elicited (through
computerized experimental reading passages containing internal
inconsistencies) from 87 students in third, fourth, and sixth grades
from a suburban school district. Results revealed that the
third-grade subjects made little adjustments in either typical or
target reading rate between narrative and expository passages,
whereas subjects in both fourth and sixth grades made such
adjustments. Findings suggest that the third-subjects adopted a
strategy of skimming over the inconsistency, while the older subjects
slowed down, apparently in an attempt to reconcile the inconsistency.
Findings also suggest that for all subjects there was a tendency to
identify semantically consistent information that had not been
presented over inconsistent information that had been presented; this
was especially true for expository passages. (One table of data is
included.) (Author/KEH)

The Relationship of Text Schemata to Comprehension Monitoring

among 3rd, 4th, and 6th Grade Students

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Abstract

Third, fourth, and sixth grade students read narrative and expository passages presented on a microcomputer. Each passage containes an internal inconsistency. Of interest was the extent to which the subjects displayed comprehension monitoring processes as a function of grade and text type. Data indicate that the third grade subjects made little adjustments in either typical or target reading rate between narrative and expository passaages, whereas subjects in both fourth and sixth grade made such adjustments. In addition, results suggest that the third grade subjects adopted a strategy of skimming over the inconsistency, while the older subjects slowed down, apparently in an attempt to reconcile the inconsistency. For all subjects, there was a tendency to identify semanticly consistent information that had not been presented over inconsistent information that had been presented; this was especially true for expository passages. Data are interpreted in light of hypothesized trends in development of narrative and expository text schemata from reading experience in school.

Introduction

Learning in today's information rich society depends heavily on the ability to extract information from text. As a student progresses from early elementary grades through high school, the importance placed on reading to learn (as opposed to learning to read) increases. As such, the ability to learn from reading becomes an increasingly critical ingredient in school success.

Each reader brings a collection of skills, strategies, and knowledge to the reading situation. Among the relevant characteristics that learners bring with them are knowledge about the structure of texts themselves (text schemata)(Goetz & Armbruster, 1980; Mandler & Johnson, 1977), and metacognitive skills for regulating reading processes. One critical metacognitive skill is comprehension monitoring (Baker, 1979; Baker & Brown, 1984; Garner, 1989). Comprehension monitoring involves the ability to detect comprehension difficulty, and to decide on, and initiate, remedial action (strategies) to cope with comprehension failure (Baker, 1979; Baker & Brown, 1984). Text schemata may serve to guide the reader through the text, highlighting important segments, connecting individual propositions, and facilitating inferencing (Goetz & Armbruster, 1980). Use of text structure may also provide one criterion against which comprehension may be evaluated, and may also provide some basis for identifying relevant remedial strategies. Although little specific evidence exists linking comprehension monitoring with development of text schemata, data do exist suggesting that readers are more likely to display appropriate monitoring behavior in familiar reading situations. As such, one might expect monitoring to occur more readily in passages conforming to familiar text schemata.

Knowledge of text schemata develops primarily through exposure to, and interaction with, examples of text. The most common resource in elementary school reading instruction remains the basal reader. Therefore one of the major initial sources of exposure to text structures comes through the types of structure represented by the basal readers. Basal readers, however, vary considerably in their use of narrative and expository passages over grades. Flood and Lapp (1986) report that basal readers for primary grades contained predomiantely narrative text, but that the proportion of expository passsages increased as one moved from primary to late elementary grades. This distribution of exposure to varied text types might be expected to result in an earlier development of schemata for narrative than expository texts.

The extent to which readers use comprehension monitoring processes is related to the difficulty of the task, and to their familiarity with the nature of the task. In general, readers are more likely to display active monitoring processes with more familiar and less difficult material. Given the disparity in the experience that children have with expository versus narrative texts, and the likelihood of different levels of development of schemata for the different types of text, it is reasonable to expect greater use of while reading narrative text among younger readers (primary grades), with an increasing use of monitoring with increasing grade.

The primary purpose of of the present investigation is to explore the relationship between text schemata and comprehension monitoring. Specifically this research investigated elementary school children's detection and remediation of internal inconsistencies in narrative and expository passages.

Method

Subjects. The subjects were 87 students in third, fourth, and sixth grades from a suburban school district. All subjects were volunteers drawn from the various classrooms in a single school. All subjects displayed reading skills typical of their grade level as measured by standardized reading tests. Data on standardized reading performance were obtained from school records.

Materials. The materials consisted of two short warmup passages, two experimental passages approximately 400 words long, and a set of four multiple-choice questions for each of the experimental passages. Initial passages were selected from fifth and th grade materials, with alternate versions of each developed to be grade-level appropriate and approximate comparable reading difficulty across grade levels. The alternate versions were developed by simplifying vocabulary and sentence structure, without altering the deep structure of the passage. Readability of each version was estimated using the Flesch readability formula, and the versions were found to conform to desired grade levels. Each of the experimental passages contained an internal inconsistency. The inconsistencies were structured to provide a context sentence, a filler sentence, the inconsistent sentence, a filler sentence, and a second context sentence. The inconsistent sentence directly contradicted both of the context sentences. The inconsistencies were located about the middle of each passage, and related to the same passage idea across all grades.

Three of the multiple choice questions were written to assess learning of factual information from the passages. These questions constituted the basic comprehension measure. The fourth question was used to assess target recall. In this question, one alternative response

presented information that was consistent with the passage, but was not itsewlf in the text (consistent recall), an alternative that presented information that was inconsistent with passage meaning but was presented in the text (inconsistent recall), and two additional filler alternatives.

Procedures. Passages were presented one sentence at a time on an IBM microcomputer. Subjects controlled movement through the passage by pressing a key to move either to the next sentence in the text, or to regress and reread a previous sentence. During the experimental passages, the computer recorded exposure time for each sentence, and the sequence of presentation of the sentences. Procedures for using the computer were demonstrated and practiced with the warmup passages. Subjects then read the experimental passages. After each of the experimental passages, subjects answered the comprehension questions related to that passage.

RESULTS

The relevant dependent measures include typical reading rate (reading rate for the balance of the passage not related to the inconsistency), target reading rate (reading rate at the point of the inclonsistency), use of rereading, overall passage comprehension scores, and identification of target information. Means and SD's of reading rates, regressions, and total comprehension scores are presented in Table 1.

Reading Rate. Reading rates were expressed as time per word in internal clock units (47.07 loops per second). Data were analyzed using a 3 (Grade) X 2 (Text Type - Expository or Narrative) X 2 (Rate - Typical or Target) mixed factor ANCVA with Grade a between subjects

factor, and Text Type and Rate as within subjects factors. Significant main effects were found for Grade ($F_{(2, 81 d.f.)}$=10.89, p<.001), and for Rate ($F_{(1, 81 d.f.)}$=9.23, p<.005). In addition, significant interactions were found between Grade and Te t Type ($F_{(2, 81 d.f.)}$= 4.75, p<.05), Grade and Rate ($F_{(2, 81 d.f.)}$=3.42, p<.05), Text Type and Rate ($F_{(1, 81 d.f.}$=7.00, p<.01), and among Grade, Text Type and Rate ($F_{(2, 81 d.f.)}$=4.26, p<.02). In view of the three way interaction, separate within subjects ANOVA's were computed for each grade level.

For the third grade, there was a significant main effect for Rate ($F_{(1, 27 d.f.)}$=10.24, p<.005) with typical reading rate (mean=31.36) significantly slower than target reading rate (mean=27.38).

For the fourth grade, there was a significant main effect for Rate ($F_{(1, 27 d.f.)}$=5.40, p<.05), and a Text Type X Rate interaction ($F_{(1, 27 d.f.)}$=12.53, p<.001). Tukey WSD contrasts on the interaction indicated no difference in typical rates for the two text types, but target reading rates for the expository passages (mean=24.43) were significantly slower than for the narrative passages (mean=19.99). The main effect for Text Type approached significance ($F_{(1, 27 d.f.)}$=3.46, p=.07), with a trend in the direction of slower reading time for the expository passages (mean=24.19) than for the narrative passages (mean=22.74).

For the sixth grade, there was a main effect for Text Type ($F_{(1, 27 d.f.)}$=7.66, p<.01), and a significant Text Type X Rate interaction ($F_{(1, 27 d.f.)}$=7.80, p<.01). Tukey WSD contrasts indicated that target reading rates were slower for expository passages (mean=23.19) than for narrative passages (mean=16.30), with no other mean different pairwise.

Rereading. Rereading scores were derived by suming all instances of deviation from a linear path in presentation of the text. These data were analyzed using a 3 (Grade) X 2 (Text

Type) mixed factor ANOVA. Results indicated no significant effects, although there was a trend towards greater use of rereading with the expository text than with the narrative text (F(1, 81 d.f.)=2.95, p=.09).

Target Identification. Since very few foils were selected for these questions, target identification data were scored dochotomously as consistent or inconsistent (see materials)and any foil answers were eliminated from the analysis. Due to the nature of the data, logistic analysis was used. Results indicated an effect for Text Type (z=-2.62, p<.005) with an overall tendency for subjects to select more consistent than inconsistent alternatives, and a 2.34 times greater likelihood of selecting the inconsistent alternative (presented in the text but contradictory) for the expository passages than the narrative passages.

Comprehension. Comprehension scores were derived from the three literal comprehension questions that accompanied each passage. The Target Identification question was excluded from this score. Data were analyzed using a 3 (Grade) X 2 (Text Type) mixed factor ANOVA. Results indicated significant main effect for Text Type (F(1, 81 d.f.)=18.87, p<.001) with scores higher on the narrative passage (mean=2.679) than on the expository passage (mean=2.202).

Discussion

In general, the data support the perception of changes in the way in which children approach the tasks of reading narrative and expository texts, and in their response to errors in text, over grades three to six. Analysis of the reading rate data indicate that the third grade students spent less time on the target line (the inconsistent line) than on other portions of the text. This suggests that the youngest readers adopted a strategy of skimming over, or ignoring,

problem text in favor of moving on to the next portions. In addition, the third graders showed little difference in reading rates for narrative and expository text suggesting that they utilized a more general reading schema that was applied to both text types. In contrast both fourth and sixth grade students showed differential patterns in reading the narrative and expository passages. In both cases, reading rate was slower overall on the expository passage, and in both cases target reading time was longer than typical reading time for the expository passage. By contrast, target reading time was faster for the narrative passage for both fourth and sixth grade students. This suggests that students in the two older grades were employing different reading schemata for reading and evaluating the two types of text. Such a change is consistent with the prediction of increased monitoring of expository text with increasing grade level.

Data on target identification are also consistent with the text type effect found for the fourth and sixth grade students. For both grades, subjects were more likely to falsely recognize a sentence that was consistent with the passage content but not presented in the passage on the narrative passage than they were on the expository passage. For the expository passage, the higher odds of "recalling" the inconsistent line suggests thatb readers were more intent on processing individual propositions than on evaluating the entire passage for coherence.

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Table 1

Means and SD's of Dependent Variables

		Grade					
		3		4		6	
		Nar.	Exp.	Nar.	Exp.	Nar.	Exp.
Typical Reading Rate	Mean	31.84	30.88	25.49	23.95	20.22	20.67
	SD	10.51	10.80	7.87	8.56	3.23	4.10
Target Reading Rate	Mean	28.64	26.12	19.99	24.49	18.30	23.19
	SD	10.22	11.87	8.46	8.34	5.07	10.07
Overall Regressions	Mean	.60	.71	.71	1.04	.46	.71
	SD	.92	1.12	1.21	1.40	.74	1.05
Comprehension	Mean	2.61	2.00	2.71	2.39	2.71	2.21
	SD	.63	.82	.54	.74	.54	.83