DOCUMENT RESUME

ED 184 064 CS 005 298

AUTHOR Ganschow, Leonore: And Others
TITLE Effects of Context on Recognition of Words and Identification of Word Meanings by Reading Disabled Adolescents, Normal Adolescent Readers, and Younger Normal Readers.
PUB DATE Apr 79
NOTE 21p.; Submitted in partial fulfillment for the requirements of Doctor of Education at the University of Cincinnati. Paper presented at the Annual Meeting of the International Reading Association (24th, Atlanta, GA, April 23-27, 1979).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adolescents: Comparative Analysis; *Context Clues; *Decoding (Reading): Elementary Secondary Education; *Learning Disabilities: Reading Comprehension; *Reading Difficulties: Reading Research; Reading Skills; *Semantics: Vocabulary Skills; *Word Recognition

ABSTRACT

The influence of context on recognition of words (decoding) and identification of word meanings was examined by presenting 160 test words in list and narrative forms to 16 reading disabled adolescents, 16 normal adolescent readers, and 16 younger normal readers. Relationships between decoding problems and language difficulties were explored. Results showed that context facilitated recognition and identification of word meanings for all readers. There was no evidence of a deficit in use of context by reading disabled adolescents. Comparisons between groups suggested deficits in both word recognition and word meaning for reading disabled adolescents. Individual differences suggested independence between the two processes of decoding and meaning: some reading disabled adolescents had primary difficulty in decoding, while others had primary difficulty in identifying word meanings. (Author/RL)

EFFECTS OF CONTEXT ON RECOGNITION OF WORDS AND IDENTIFICATION OF WORD MEANINGS BY READING DISABLED ADOLESCENTS, NORMAL ADOLESCENT READERS, AND YOUNGER NORMAL READERS*

Leonore Ganschow
Northern Kentucky University
Highland Heights, Kentucky 41076

Daniel D. Wheeler
University of Cincinnati
Cincinnati, Ohio 45221

and

Richard R. Kretschmer, Jr.
University of Cincinnati
Cincinnati, Ohio 45221

*This research was conducted as partial fulfillment for the requirements of Doctor of Education at the University of Cincinnati. Paper presented by primary investigator at IRA, Atlanta, April, 1979.

EFFECTS OF CONTEXT ON RECOGNITION OF WORDS AND IDENTIFICATION OF WORD MEANINGS BY READING DISABLED ADOLESCENTS, NORMAL ADOLESCENT READERS, AND YOUNGER NORMAL READERS

Good readers are said to utilize a variety of strategies for recognizing (decoding) words and extracting meaning from print, with context enhancing performance (Byrne, 1973; Goodman, 1965; Klein, et al., 1974, 1973). Poor readers are said to utilize inefficient strategies, with context variously affecting performance (Cromer & Weiner, 1966; Neville & Pugh, 1976-7; Weber, 1970a,b).

This study examined effects of context on recognition of words (pronouncing words) and identification of word meanings (defining words and using them in sentences) by reading disabled adolescents with specific learning disabilities, normal reading adolescents, and younger normal readers.

Background

There are a number of possible explanations for why good and poor readers might differ in their ability to make efficient use of context. Two, in particular, were of interest to this investigation. One line of research suggests that reading differences lie in the perceptual processes involved in the decoding of words (Golinkoff & Rosinski, 1976; Kolers, 1976, 1975a,b; Perfetti & Hogaboam, 1975; Shankweiler & Liberman, 1972; Willows, 1974). In this view, poor decoding is said to inhibit word recognition, which precedes word

identification (retrieval of meaning) and passage comprehension (Golinkoff, 1975-6). Poor readers, then, might be expected to perform poorly on word recognition tasks but adequately on tasks requiring oral language facility. Furthermore, linguistic cues from the surrounding context might be expected to facilitate the recognition performance of poor decoders.

A second body of research suggests that differences in reading performance may result from language delays, deviances, or differences among poor readers. Some research suggests that language difficulties occur at the level of the word, or lexical access (Belmont, 1966; Blank & Bridger, 1966; Cromer, 1968; Vellutino, et al., 1975). Other research suggests that language difficulties are a result of failure of poor language users to comprehend complex linguistic relationships (Perfetti & Goldman, 1976; Wiig & Semel, 1976). Failure to use semantic and syntactic cues to derive sentence meaning (word by word reading) is also described in the literature (Cromer, 1970; Isakson & Miller, 1976). Another line of research suggests that poor readers have a deviant linguistic rule system (Kretschmer, 1977; Vogel, 1975; Weiner, 1974). In the view of those researchers supporting relationships between language difficulties and reading problems, the inability of readers to comprehend either the word or the context in which the word is embedded causes problems in identification of word meanings. Poor readers, then, might be expected to perform poorly on identification of word meanings and fail to make use of context.

Recent investigators suggest that a number of causal factors might be involved in reading disabilities (Valtin, 1978-9; Vernon, 1977) and

that an actual point of breakdown in learning to read needs to be determined (Vernon, 1977, p. 397). Recognition of words and identification of word meanings, then, might be seen as independent processes, with poor readers having either language difficulties or word recognition problems or some combination of both. If recognition of words and identification of word meanings are independent processes, poor readers with language difficulties might be expected to perform adequately on the recognition tasks but poorly on the identification of meaning tasks. Other poor readers might have specific deficits in word recognition and perform adequately on the meaning tasks. In this view, group comparisons for research do not yield useful evidence about an individual's specific reading problem. Valtin (1978-9) argues for a case study approach. Harris (1978-9) suggests that researchers are moving in the direction of defining subgroups but that much more research is needed.

This study raised questions about the effects of context on recognizing words and determining word meanings and how these words are used in sentences for three different sets of readers: reading disabled adolescents, normal reading adolescents, and younger normal readers. It explored differences between word recognition and identification of word meaning in order to determine whether subgroups could be differentiated on the basis of performance on these two tasks. Word recognition was assessed by asking the subjects to pronounce a word, and identification of word meaning was assessed by two measures: ability to give definitions and ability to use the words in sentences. Context was manipulated by presenting the test words either in a list or in a meaningful story.

Hypotheses

A decoding deficit hypothesis predicts that reading disabled adolescents would show a major deficit in word recognition, with minimal deficits in identification of word meaning.

A language deficit hypothesis predicts that reading disabled adolescents would show a major deficit in identification of word meaning, with minimal deficits in word recognition.

A combined view predicts some combination of the effects suggested by the other two views.

METHODOLOGY

Subjects

Subjects were 48 male students attending public schools in Southwest Ohio. There were 16 subjects in each of three groups: reading disabled adolescents, younger normal readers, and adolescent normal readers.

Reading Disabled Adolescents

All of the reading disabled subjects met the criteria for special services for the learning disabled set by the state of Ohio. Therefore, subjects either attended special classes for the learning disabled or received special tutoring. Seventh and eighth grade students scoring two or more years below grade level on standardized reading tests were initially selected by the learning disabilities supervisor from each school district. From the initial selection teachers/tutors were asked to determine the approximate reading grade level of their students. Those students reading below fourth grade level and/or less than two years

below grade level by teacher judgment were removed from the study. Sixteen remaining students served as experimental subjects. These subjects ranged in age from 13 years, 0 months to 15 years, 10 months ($\bar{X}$ = 13 years, 9 months).

Younger Normal Readers

For each experimental subject, a control subject (a younger normal reader) was selected. Six classroom teachers were asked to use teacher judgment in selecting one, two, or three average male readers from their classes. Matched with reading disabled adolescents by reading grade level six fourth graders, six fifth graders, and four sixth graders participated as control subjects. These subjects ranged in age from 9 years, 11 months to 12 years, 7 months ($\bar{X}$ = 11 years, 2 months). Intelligence scores obtained from school records showed a mean IQ of 101.

Adolescent Normal Readers

For each experimental subject, a second control subject (an adolescent normal reader) was selected. Three classroom teachers were asked to use teacher judgment in selecting average male readers from their classes. Matched with reading disabled adolescents by grade in school, 11 seventh graders and five eighth graders participated as a second control group. These subjects ranged in age from 12 years, 9 months to 15 years, 6 months ($\bar{X}$ = 13 years, 8 months). Intelligence scores obtained from school records showed a mean IQ of 106.

Materials

Materials consisted of 160 test words and four narrative stories containing these test words.

Test Words

Test words consisted of 160 words drawn from 10 graded word lists and 8 words missed by fourth grade readers in a pilot reading of the stories. The test words were divided into four lists of 40 words, each containing 20 fourth grade level words, 9 fifth grade level, 9 sixth grade level, and 2 frequently missed words. These words were typed in triple-spaced lists of two rows on 8 1/2" by 11" paper which was mounted on posterboard backing. Four randomized orders were constructed for each word list.

Narrative Stories

Four adventure stories from a high-interest, low-reading-level paperback series (Verdick, 1972) were adapted and modified for this experiment. Stories were approximately two triple-spaced typed pages, about 200 words in length. Forty test words were incorporated into each of the four narratives. The text was modified, when necessary, to incorporate the words into the story, with close attention paid to semantic and syntactic appropriateness. After modification, reading difficulty, as determined by the Dale-Chall readability formula (Dale & Chall, 1948), averaged 5.3 (range = 5.2 to 5.4). Each story, with test words underlined, was typed in triple-space on 8 1/2" by 11" paper which was mounted on a posterboard backing.

In all, four sets of test words and four narratives were used. Thus, each test word was presented in list and narrative forms for the recognition tasks and in list and narrative forms for the identification tasks.

Tasks

Each subject performed four tasks in two pre-determined orders: (1) a word recognition task in list condition; (2) a word recognition task in context condition; (3) an identification of word meaning and use of test word in sentence task in list condition; and (4) an identification of word meaning and use of test word in sentence task in context condition. Thus, each subject received all 160 test words, with 40 in each condition.

Administration and Scoring

The experimenter met with each subject individually in a room in the school. Subjects proceeded through the tasks in the pre-determined order, with each set of tasks taking approximately one class period. Procedures for each task were as follows:

Word recognition, list condition. In the word recognition task, list condition, each subject was asked to read the list of words and to guess if he did not know a word.

Word recognition, context condition. In the word recognition task, context condition, each subject was asked to read the narrative story first silently and then to tell the story in his own words. The retelling was done in order to ensure that the subject had read the story. The subject was then asked to re-read the story silently but to say the underlined test word outloud as he came to it. If the subject read the underlined words quickly without apparent re-reading, he was reminded to read the story silently.

For both recognition tasks the experimenter recorded

erroneous responses on a duplicate test copy and scored mispronunciations as incorrect.

Word identification, list condition. In the identification of word meaning task, list condition, each subject was asked to tell what the word meant and to use the word in a sentence. If the subject could not read the test word, the experimenter read the word for the subject.

Word identification, context condition. In the identification of word meaning task, context condition, each subject began with an initial silent reading of the story, as in the other context condition. The subject was then asked to re-read the story silently and to say the underlined test word outloud as he came to it. If the subject could not read the test word, the experimenter read the word for the subject. The subject was asked to tell what the word meant and to use the word in a sentence.

For both identification tasks the experimenter recorded the entire response on a duplicate test copy as the subject gave the response.

Identification of word meanings was scored by marking as errors incorrectly defined test words and no responses. Use of test words in sentences was scored by marking as errors test words used inappropriately (grammatically) in relation to prior and/or subsequent portions of the sentence and no responses. For the identification of word meaning tasks three raters marked as right or wrong a typed version of each subject's responses. Two ouf of three rater agreement was the criterion used for judging definitions and sentences as correct or incorrect.

the split-half reliabilities of the four tasks were word recognition, list = .78; word recognition, context = .87; word identification, list = .70; word identification, context = .82.

RESULTS

Table 1 shows the mean number of errors for each condition for

Insert Table 1 about here

the word recognition task and the two word identification tasks. The results for each task were analyzed using a 2 (condition) by 3 (group) analysis of variance with repeated measures on condition. The main effect of condition was significant for all three tasks. Performance was always better when the test words were presented in context than when they were presented in a list. The F (1,45) values were 15.46 ($p < .01$), 6.58 ($p < .05$), and 17.94 ($p < .01$) for the word recognition, definition, and use of word in sentence tasks, respectively.

The main effect of group was significant for all three measures. The F (2,45) values were 26.28, 11,83, and 14.53 (all p's $< .01$). Tukey's test was then used to determine which specific pairs of groups differed from each other on their overall performance (list and context conditions combined). The alpha level was set at .05. As would be expected, the reading disabled adolescents made significantly more errors than the normal reading adolescents on all three measures. Since the younger normal readers were matched to the reading disabled adolescents, significant differences were not expected. This was confirmed for both word identification measures. The difference was small and not significant. For the word recognition task, however, the differences were significant. The reading disabled adolescents made over two and a half times as many errors as the younger normal readers.

TABLE 1

Mean Number of Errors by Task, Condition, and Group

Group	Word Recognition Task			Word Identification Tasks: Giving Definition			Word Identification Tasks: Using Word in Sentence		
Condition:	List	Context	Combined	List	Context	Combined	List	Context	Combined
Reading Disabled Adolescents	11.3	8.3	9.8	10.6	8.8	9.7	8.5	5.9	7.2
Younger Normal Readers	4.6	2.6	3.6	10.4	8.1	9.3	8.4	4.8	6.6
Normal Reading Adolescents	1.1	.3	.7	4.2	3.4	3.8	2.1	1.3	1.7

None of the interactions between condition and group even approached significance. Context seemed to affect each of the groups equally.

Younger normal and adolescent normal readers both exhibited more errors in the identification of word meaning tasks than in the word recognition tasks. Adolescent disabled readers, however, had similar mean numbers of errors on the two tasks. Of interest to this investigation was whether reading disabled adolescents would show individual differences in performance between word recognition and identification of word meaning tasks. In order to determine whether there were differences, individual discrepancy scores for each subject were computed by subtracting identification of word meaning errors from word recognition errors. The first step was to determine whether the discrepancy scores were reliable. Reliability was determined using a Pearson product moment correlation coefficient. Results showed a correlation of .88, indicating that individual discrepancy scores were reliable across list and context conditions for reading disabled adolescents. The second step was to examine individual discrepancy scores within the reading disabled population. Large discrepancy scores for individual subjects were noted both in the direction of high word identification, low word recognition and its opposite, high word recognition, low word identification. Two reading disabled adolescents had mean discrepancies of over 10 points in the direction of high word identification, low word recognition. Three reading disabled adolescents had mean discrepancies of over 10 points in the direction of high word recognition, low word identification.

DISCUSSION AND CONCLUSIONS

Evidence for Effects of Context on Overall Performance

Context was found to facilitate recognition of words, identification of word meanings, and use of words in sentences for all three groups. This finding was in accordance with psycholinguistic studies which suggest that syntactic and semantic cues of the surrounding context facilitate recognition of words. The finding of equal context effects in all groups, including disabled readers, suggested that there was no linguistic deficit in ability to use context among reading disabled adolescents. This study also added support to existing psycholinguistic research on utilization of context: context provided readers with linguistic cues to make predictions about what words mean and how to use words in sentences. On the identification tasks students performed better on use of words in sentences than on defining words. This finding was in accordance with error pattern analyses following a psycholinguistic model, in which oral reading errors were generally found to be syntactically appropriate, though not necessarily semantically relevant. Studies on language acquisition and development also support the notion that children code a familiar form (the grammatical structure) without necessarily knowing its function (the meaning) (Slobin, 1973).

Evidence for Significant Differences between Groups across Tasks

Between-group comparisons supported a word recognition deficit for reading disabled adolescents with specific learning disabilities. Significant differences in mean number of word recognition errors between reading disabled adolescents and younger normal readers, despite matching of good and poor readers on the basis of reading ability,

raised the possibility that the two groups were not well matched. However, similarity of performance on the identification tasks suggested that this explanation could be rejected. Significant differences between these two groups, then, supported findings that poor readers have less automatic control over decoding than normal readers. This conclusion is supported further by the superior recognition performance of the normal reading adolescents in this study.

Between-group comparisons also supported a language deficit in word meaning for reading disabled adolescents with specific learning disabilities. Significant differences in mean number of word identification errors between adolescent disabled readers and normal reading adolescents suggested that reading disabled adolescents were linguistically immature. This is further supported by the finding that there were no significant differences in word identification performance between reading disabled adolescents and younger normal readers. The latter two groups made a large number of errors (25% of 40 words tested in the list condition and 21% of 40 words tested in the context condition). Normal reading adolescents, in contrast, made far fewer errors (10%). In view of the relative difficulty of the test words (4th, 5th, and 6th grade reading levels), the older disabled readers should have performed significantly better than younger normal readers and comparable to the normal adolescent readers. The six poorest identification of word meaning scores occurred among three fourth graders and three fifth graders. Thus, high error scores may be attributed to lack of linguistic maturity for these younger readers. However, the finding that older disabled readers' scores were

comparable to the younger normal readers suggested possible language problems for these older disabled readers.

Evidence for Word Recognition and Identification of Word Meaning as Independent Processes

Examination of discrepancies in performance on word recognition and identification of word meaning tasks supported the conclusion that good word recognizers might not necessarily be good word identifiers and good word identifiers might not necessarily be good word recognizers. Both normal adolescent and younger normal readers made more word identification errors than recognition errors, suggesting that these normal readers were able to decode words whose meanings might have been unclear to them. Reading disabled adolescents had similar mean numbers of errors on both recognition and meaning tasks, initially suggesting that these readers had difficulty with both tasks. However, individual discrepancies between the two tasks showed large variations in performance for these readers, lending support to research on the need to identify subgroups within a reading/learning disabled population. Despite apparent deficits in both recognition and word meaning, then, some reading disabled adolescents appeared to be good word recognizers and poor word definers; others appeared to be good word definers and poor recognizers. In this study five reading disabled adolescents had discrepant scores of over 10 points in one or the other direction.

Conclusions

Results supported both the decoding deficit hypothesis and the language deficit hypothesis. The combined view that reading disabled adolescents may show one or the other or both of these deficits was

supported. Consistent individual differences suggest that further research on the precise nature of the recognition and meaning errors of disabled readers could lead to diagnostic tests that make distinctions between decoding problems and language difficulties and to the development of instructional alternatives for subpopulations within a reading/learning disabled population.

Belmont, L., & Birch, H. G. The intellectual profile of retarded readers. Perceptual and Motor Skills, 1966, 22, 787-816.

Blank, M., & Bridger, W. Deficiencies in verbal labelling in retarded readers. American Journal of Orthopsychiatry, 1966, 36, 840-7.

Byrne, B. N. A comparison of word recognition errors in oral reading. Dissertation Abstracts International, 1973, 34, 2455A.

Cromer, W. The difference model: A new explanation for some reading difficulties. Journal of Educational Psychology, 1970, 61 (6), 471-83.

Cromer, W. The effects of "preorganizing" reading material on two types of poor readers. Dissertation Abstracts International, 1968, 29, 2190.

Cromer, W., & Wiener, M. Idiosyncratic response patterns among good and poor readers. Journal of Consulting Psychology, 1966, 30, 1-10.

Dale, E., & Chall, J. A formula for predicting readability: Instructions. Educational Research Bulletin, 1948, Feb., 37-54.

Golinkoff, R. M. Comprehension in good and poor readers. Reading Research Quarterly, 1975-6, 11, 623-59.

Golinkoff, R. M., & Rosinski, R. R. Decoding, semantic processing, and reading comprehension skill. Child Development, 1976, 47, 252-8.

Goodman, K. S. A linguistic study of cues and miscues in reading. Elementary English, 1965, 42, 639-43.

Harris, A. A reaction to Valtin's 'Dyslexia: Deficit in reading or deficit in research?' Reading Research Quarterly, 1978-9, 14 (2), 222-5.

Isakson, R. L., & Miller, J. W. Sensitivity to syntactic and semantic cues in good and poor comprehenders. Journal of Educational Psychology, 1976, 68 (6), 787-92.

Klein, H. A., Klein, G., & Bertino, M. Utilization of context for word identification decisions in children. Journal of Experimental Child Psychology, 1974, 17, 79-86.

Klein, G. A., & Klein, H. A. Word identification as a function of contextual information. American Journal of Psychology, 1973, 86, 399-406.

Kolers, P. A. Pattern-analyzing memory. Science, 1976, 191, 1280-1.

Kolers, P. A. Pattern-analyzing disability in poor readers. Developmental Psychology, 1975a, 11, 282-90.

Kolers, P. A. Specificity of operations in sentence recognition. Cognitive Psychology, 1975b, 7, 289-306.

Kretschmer, R. R., Jr. Language problems of learning disabled children. Unpublished manuscript, 1977.

Neville, M. H., & Pugh, A. K. Context in reading and listening: Variations in approach to cloze tasks. Reading Research Quarterly, 1976-7, 12, 13-31.

Perfetti, C. A., & Goldman, S. Discourse memory and reading comprehension skill. Journal of Verbal Learning and Verbal Behavior, 1976, 15, 33-42.

Perfetti, C. A., & Hogaborm, T. The relationship between single word decoding and reading comprehension skill. Journal of Educational Psychology, 1975, 67, 461-9.

Shankweiler, D., & Liberman, I. Y. Misreading: A search for causes. In J. F. Kavanagh & I. G. Mattingly (eds.), Language by ear and by eye. Mass.: The MIT Press, 1972.

Slobin, D. I. Cognitive prerequisites for the development of grammar. In C. A. Ferguson & D. I. Slobin (eds.), Studies of child language development. New York: Holt, Rinehart & Winston, 1973.

Valtin, R. Dyslexia: Review of methodology and theory. Reading Research Quarterly, 1978-9, 14 (2), 201-21.

Vellutino, F. R., et al. Verbal vs. non-verbal paired-associates learning in poor and normal readers. Neuropsychologia, 1975, 13, 75-82.

Verdick, M. Amazing adventures. Middletown, Conn.: Xerox Education Publications, 1972.

Vernon, M. D. Varieties of deficiencies in the reading process. Harvard Educational Review, 1977, 47 (3), 396-410.

Vogel, S. Syntactic abilities in normal and dyslexic children. Baltimore: University Park Press, 1975.

Weber, R. M. A linguistic analysis of first-grade reading errors. Reading Research Quarterly, 1970a, 5, 427-51.

Weber, R. M. First graders' use of grammatical context in reading. In H. Levin & J. Williams (eds.), Basic studies in reading. New York: Basic Books, 1970b. Pp. 147-63.

Weiner, P. A language-delayed child at adolescence. Journal of Speech and Hearing Disorders, 1974, 39 (2), 202-12.

Wiig, E. H., & Semel, E. M. Language disabilities in children and adolescents. Columbus, Ohio: Charles E. Merrill, 1976.

Willows, D. M. Reading between the lines: Selective attention in good and poor readers. Child Development, 1974, 45, 408-15.