PUNCTUATION AND INTONATION: THE EFFECTS ON YOUNG READERS' COMPREHENSION AND PERCEPTION OF TEXT

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This paper presents a comprehensive review of the research and literature relevant to the effects of phrase boundaries, line breaks, and other cues in text, on the intonation and resulting comprehension efforts of children. The review will focus on the theory that intonation miscues caused by confusion over punctuation, other phrase boundaries, and line breaks will make the apprehension of text more difficult than necessary for young developing readers. Finally, the evidence in the literature will be examined and the implications for design of texts for young children will be addressed.

Punctuation and Intonation

Gutknecht, Apol, and Morton (1982), from an analysis of second graders' miscues, determined that terminal punctuation and its location in text affects comprehension of less proficient readers. Most second graders in the study comprehended more when they read standard texts in which punctuation appeared randomly at the end of each sentence. At the same time, Gutknecht found that less proficient readers comprehended more when reading modified texts. Modified texts in this study consisted of textual material restructured so that the terminal punctuation was always at the end of a line of text and the next sentence started on the next line. It was concluded that as readers become more proficient, location of terminal punctuation in text does not reduce comprehension, and it was suggested that readers at all levels should be exposed to random terminal punctuation. However, this 1982 study does suggest that less proficient developing readers may benefit from terminal punctuation cues at the end of lines, rather than appearing randomly in the paragraph.

Baldwin and Coady (1978) explored the relationship between punctuation and grammatical expectation. Based on their findings, they suggest that the roles of English punctuation established in conjunction with traditional grammar neither predict nor explain reading behaviors involving punctuation. As a result, Baldwin and Coady raise the question of whether punctuation as an active cue system can be considered for 10 year-olds, and by extension, elementary school children. An implication is that punctuation, as a cue system in reading, has a later onset. Another question that could be asked, is whether or not the late onset of punctuation utilization is due to maturation of the reader or lack of appropriate early instruction.

Read et al (1978) suggest that many beginning readers have difficulty comprehending what they read, even though they can identify the individual words in a written sentence, because they depend heavily on prosodic cues. Prosodic cues have a influence on oral reading and comprehension (Witte, 1980).

If children can translate print into something resembling their own oral language, the retrieval of meaning will be accomplished with greater ease (Stice, 1978). Readers do not attend to all details before them on a page, but selectively attend to a sampling. Details selected are called cues because readers use them as a basis for making a guess as to the correct response (Vogel & McGrady, 1975).

Words alone do not carry meaning until they are placed in the structural system of the language. Intonation functions as a controller of meaning and provides more phrasing information to the reader for the purpose of organizing the words into meaningful units (Eisenhart, 1974; Stevens, 1981). Eisenhart states that readers must bring to the printed page, the ability to recognize the graphic cues that signal meaning. Graphic cues operate as a three part system: vocabulary, structure, and sound. The whole system should be taught nontechnically to children at an early age as they are learning to read. Children already know a lot about language structure intuitively, so the signals are not new. She indicates that training in graphic cues has to be done in the context of meaning in reading not as part of a spelling or grammar lesson. Gutknecht et al state that changes in stress, pitch, or pause indicate the reader's anticipation with regard to expected grammatical structure. They list seven categories of intonation: (a) within words, (b) between words within a phrase of a sentence, (c) relative to phrase or clause structure of a sentence, (d) at termination of phrase or sentence, (e) where conjunction is used in place of terminal punctuation, (f) direct quotes, and (g) no change.

Read et al (1978) observed that 7-year-old children correctly identified subject and predicate phrases with surprising accuracy. Poorer success was demonstrated when children were presented with sentences that contained misleading intonation contours. They seemed to be particularly dependent upon phrase-final lengthening as a cue signaling syntactic structure. The prosodic system, the rhythmic patterns of speech, consists of timed sequences of short and long syllable duration, accented and unaccented levels of stress, and the rise and fall of pitch — information readily available to the listener but missing when the listener becomes a reader (LeCoultre & Carroll, 1981). Martin and Meltzer (1976) conducted a study generated from the notion that if syllables were seen and heard as when spoken, it would help children make the connection between sequence of symbols seen and sequence of sounds heard. Their conclusion seemed to be that visual rhythm should improve ability to organize read sentences into well-structured wholes and facilitate fluency. Le Coultre and Carroll conducted a study to determine whether, as Martin and Meltzer predicted, visual syllable duration pattern affected comprehension. The visual display in their study consisted of a slash for a long syllable, a triangle for a short syllable, an inverted triangle to indicate a pause and dashes for rhythm-pulse. They concluded that visual rhythm gave children an advantage in ability to comprehend sentences. Their study could not clarify whether it was the duplication of speech rhythm or the nature of the visual display which aided comprehension. However, they indicated that any pattern not consistent with the speech pattern would not aid comprehension.

Ehri (1976) conducted a study with second, third, and below grade level fourth graders using words printed in three sizes to correspond to the intonation patterns of the text. The intoned text was then compared with a standard text and a random text in which words were printed in different sizes and spaces were varied at random. Her results indicated that children trained to read intoned print did not outperform the standard print or random print groups. She concluded that printed intonation cues are useless to beginning readers.

Ahlvers (1970) conducted a study aimed at instructing first-graders in intonation skills in reading. There was no significant difference in overall reading comprehension between the experimental groups, receiving the intonation instruction and the control groups, not receiving the intonation instruction. However, on the oral Test of Intonation, when children were rated for appropriate use of pitch, stress, and terminal juncture, there was a significant difference between groups.

Means (1968) found that children who use fewer inappropriate intonation patterns in oral reading, comprehend better in oral and silent reading. Independent readers appear to use each element of intonation equally well. Witte (1980) indicated that by modeling correct intonation patterns orally, combined with students repeated reading practice, comprehension performance can be improved in the reading of passages silently.

Vogel and McGrady point out the importance of children internalizing the intonation or melody pattern of their native language for the development of syntax and for reading comprehension. They state that intonation is perhaps the most important and least understood signaling system at the sentence level. Intonation's role in children's acquisition of reading behaviors and its relationship to instruction was examined by Coady and Baldwin's (1977) survey of Economy, Holt, Ginn, Houghton Mifflin, and Scott Foresman primers, in which they found difficult, confusing sentences with regard to intonation cues, and a virtually complete lack of guides for instruction in intonation in the teacher's manuals.

Flippo (1980) also examined the texts of major publishers of basal readers (Economy, 1980; Macmillan, 1975; Harper & Row, 1976; Rand McNally, 1974; Harcourt Brace Jovanovich, Bookmark, 1974, 1979; Scott Foresman, 1974; Houghton Mifflin, 1976; Holt, 1977). It was found that many of the second grade level basals examined, contained ending punctuation structure that could conceivably alter the meaning for unsophisticated primary grade children. Again, no suggestions were found in the teachers' manuals for children experiencing comprehension difficulties with the location of ending punctuation.

Because written language is devoid of intonation, the reader must reimplant the melody by utilizing clues that punctuation and one's own background of oral language provide. Auditory memory does not appear to be a factor. Children seem to have the ability to internalize melody patterns as they relate to language acquisition, and of a foreign language as well, while adults do not. Clay and Imlach (1971) found that poor progress in reading could be interpreted as a failure to structure a very complex set of response hierarchies to intonation cues. Children who make fewer pauses tend to be the best readers. Better readers complete a sentence with fall in pitch. Poor readers pause more and are likely to use a rising or sustained pitch implying uncertainty. Good readers read seven words between pauses and 4.7 words per stress. Poor readers read

1.2 words between pauses and stress every word as in reading a list.

The findings of Stice (1978) indicate that children who usually have the most success comprehending written language also have the most success comprehending oral contrastive stress in standard English. Conversely, lack of success in comprehension includes lack of success comprehending stress in standard English. Intonation as a signficant part of language is a potential instructional element for improving what the developing reader needs to know about language. She points out that several reading educators advocate teaching intonation patterns as part of the developmental reading curriculum. This would give readers a greater awareness of an additional signal system to indicate meaning. Reading, she maintains, is a matter of utilizing all the available cues to meaning. Intonation operates similarly across all dialects of English. Stice suggests some strategies that could be used to affect cue selection in the structuring of meaning: (a) segment utterances into recognizable and manageable units, (b) draw attention to special content, (c) make contrasts with previously stated or inferred information, (d) point out new material, (e) confirm or negate a query, (f) tag words, phrases, sentences according to type and function, (g) indicate that pause can be signaled with a punctuation mark, (h) indicate that context of passage and word placement in a phrase or sentence are aids to proper identification and meaning, and (i) develop awareness of WH words as cues.

Beardsley (1982) supports the view that children make use of context cues according to age and ability (Flippo, 1980, 1982). If linguistic constraints within the text are to be of value to the reader, some consideration must be given to understanding which cues are liely to be the most useful at different stages of reading development. Beardsley's study indicates that the more useful cue for all readers, other than six to seven year old poor readers, was the proactive semantic constraint. The gist of the phrase following a deleted word in the cloze test gave the most help in determining what the missing word could be. Young readers seemed to have expectations of meaning from the material they read based on their experiences with language. The youngest poor readers predicted words to fit the syntactic structure of the material. This may be due to the fact that young readers are bound by the limits of their ability to take in only certain elements of the materials and may not have interpreted the reading operation as a linguistic one. Good six year old readers and good and poor readers in the seven to eight year old age group showed that proactive and retroactive semantic cues were important information for interpretation.

Beardsley, and Clay and Imlach seem to agree that reading behavior becomes patterned close to the onset of instruction in ways determined by visual and linguistic quality of text; emphasis of the teacher and his/her methods; and the developmental status of the pupil in the visual, linguistic and cognitive areas. Approaches to instruction will inevitably influence the young readers' willingness to use what the material has to offer and the ability to integrate the different aspects of text.

The literature and studies outlined suggest or imply approaches which base early reading materials on meaningful language without too rigorous an emphasis on the precise visual scanning of letters and words, and helping children become aware of words in relation to one another (Beardsley, 1982). They also support the idea that the key to reading lies in the child's own language and not in some standard model of English (Stice, 1978). Finally, they emphasize the importance of intonation as a controller of meaning (eisenhart, 1974), and also suggest that punctuation exerts a variable influence upon comprehension (Baldwin & Coady; Gutknect et al).

Phrase Boundaries and Text Structure

As children learn that prosodic cues are not preserved in writing, they begin to make better use of other kinds of signals that are preserved, such as semantic and contextual features (Schreiber, 1980). The key to fluency is grouping words together into meaningful sequences and beginning to understand that the purpose for reading is to extract the message that the written form communicates. Students who have difficulty providing meaningful phrases for words comprehend little. Even if they understand the words, they will not grasp the meaning of paragraphs unless they organize the words into meaningful units (Stevens, 1981). Poor readers read word-by-word rather than organizing their input into meaningful groupings, but when encouraged to group reading in a meaningful way, they are able to comprehend at a level comparable to that of good readers (Cromer, 1970). Once individuals have become proficient in the recognition of single words, they must progress to the notion that words occur in groups with a certain sense of patterning sequence and meaning. If they do not, cautions Cromer, they may have overlearned word-by-word patterns of reading. These individuals can be instructed to change by artificially grouping words in a manner that is meaningful for them.

Parsing (grouping) sentences into meaningful phrases and clauses is an essential step in language comprehension. Parsin difficulty is a common reading problem (Kleiman et al, 1979). Early and recent theories regarding how readers code items of information suggest that phrases or segments of written material, chunks, are the perceptual units of spoken and written language. Chunking sentences facilitates free recall of information and promotes rapid memorization of prose passages. Therefore, preorganization of reading materials into meaningful word groupings might improve efficiency of reading as it has improved recall and memorization (Carver, 1970). Carver suggests that punctuation should be used to determine the boundaries between chunks of text and that clunked text should not be broken due to lack of space at right margins. Royer and Cable (1975) indicate that good readers may, in contrast to poor readers, organize what they read.

O'Shea and Sindelar (1983) determined that segmenting sentences assisted both low and high performance readers in comprehension as measured by a maze task. Segmentation of written discourse into meaningful units helps simplify the syntax of complex sentences. With units isolated, the reader is cued to the relationship among intrasentence phrases. They found that children who read slowly, but accurately, scored higher on segmented passages than on standard passages. There was no difference between standard and segmented passage performance for children who read with both high fluency and accuracy. Since segmentation aids young develop-

ing readers in comprehension, its use in the classroom would seem appropriate as a supplement to basic instruction. O'Shea and Sindelar segmented passages as follows: (a) subject and predicate of simple sentences were separated and the object was also separated from the predicate, (b) noun modifiers, if short, were linked with nouns, and verb modifiers with verbs, (c) clauses were set off and if long, broken into appropriate thought units. They indicated that an alternative to retyping passages would be to use vertical lines of underlining. Students could help in the preparation of these segmented passages.

Goldman, Hogaboam, Bell, and Perfetti (1980) looked at the length of input segments related to recoding, or the transforming of material from short term to long term memory; sentence boundaries serve as cues to the individual to recode. They found differences between reading and listening. Boundaries are less important in reading because discourse is under reader control, the individual can reread and backtrack to re-encode, whereas in listening the speaker controls input. The study indicated that skilled readers retain encoded discourse of more difficult length longer than younger and less skilled readers. The latter used sentence boundary as a recoding cue only when relatively few words in an easy text had to be read. Demands of word recognition over lengthier and more difficult text produce working memory overload, even within a sentence, for less skillful readers.

In order to help children understand that reading with expression means compensating for lack of prosodic cues in written text, Blum and Hoffman (1979), and Schreiber (1980) suggested drawing attention to the spacing between words as a kind of graphic device. While it only very occasionally provides evidence about phrasing, readers do observe white spaces between words, and through them can develop clarity about the function of spaces in defining written word boundaries. Explosure to meaningful print, they maintain, results in clarity about word space and skill in recognizing words.

There is also evidence in the literature to suggest that visually marking subject, predicate, and phrase boundaries should result in an improvement in children's reading comprehension. Weiss (1983) investigated two methods of text segmentation to test this hypothesis. The results support the theory that making the underlying oral phrase boundaries visible facilitates elementary school children's reading comprehension. Text segmentation along phrase boundaries was effective in helping the children comprehend text. Good, average, and poor readers, when reading material evaluated as "at or above grade level," did show improvement of their reading comprehension. Weiss suggests that the children's comprehension would have shown even greater improvements if they had been trained to use the phrase segments beforehand. There was no evidence to suggest that phrasing easy passages would hinder good readers' comprehension. Weiss recommends that textbooks be written using the syntactic and pausal phrase format.

Raban (1982) chose line-breaks, a feature of text display in books printed for young readers, as the focus for her research. Fluent reading requires that the reader discount line endings which occur at any point in syntax without this affecting their reading comprehension or fluency. Research has found this to be the case with readers aged ten years and up whose eye-movements have stabilized. Cromer (1970) supported the notion that one source of comprehension difficulty could be attributed to a difference in the way the word groupings are arranged in text. Raban felt there was a great deal of "impressionistic" evidence that line-breaks do cause difficulties to children when they are young and still learning to read. The difficulties, however, do not become apparent immediately, because children are mostly encountered sentences of less than one line in length; difficulties emerge as sentences increase in length. Teachers can be alerted to confusion possibly caused by line-breaks if children's reading is marked by various non-fluencies and self-corrections. In her study, Raban investigated children's reading of a text with line-breaks in every possible position, as frequently as possible within a Subject-Verb-Object-Adverbial sentence pattern. From the findings of her study, Raban concludes:

1. The solution to the problem of where to break the line in texts for young children is not straightforward. Research points to the value of line-breaks both within and between phrases. Line-breaks within a phrase cause less disruption of fluency when they occur towards the end rather than near the beginning of the sentence.
2. "And" should not occur at the beginning of a line. "And" and prepositions act as "signposts" in text.
3. More research is needed in the field, particularly to identify the hierarchy of elements of sentences like "and", so that publishers have alternatives with regard to line-breaking while preserving the integrity of sentence meaning.

The Raban research enhances the findings of Gutknecht et al (1982) and confirms the position of Flippo (1980, 1982). The effect of the location of ending punctuation and line breaks in text on intonation and resulting comprehension is a developmental process and effects the unsophisticated and/or low ability early childhood reader. However, the more able/mature/and developed reader is not so affected by location of ending punctuation and line-breaks.

Implications for Text Design

Goodman and Burke's miscue analysis (1972) gives insight into how children regress, and lookback to fix up inconsistencies produced while reading, and highlights childrens' use of syntactic and semantic features. Research information on how children are effected by text structure, such as the information presented in this paper, coupled with factors of intellect, language background and ability, physical and emotional stability, allow children to make the most of the events and situations that enhance the transfer of learning. Teachers and publishers should become more aware of the importance that punctuation, intonation, and phrase boundaries have in children's reading comprehension. If text segmentaiton or end of line punctuation is related to an improvement in developing children's reading comprehension, it might be worthwhile to redesign some texts. It might also be worth the time it takes teachers to redesign instructional strategies to work with children who are still unsophisticated readers on development of strategies to deal more effectively with phrasing, text segmentation, punctuation, and intonation.

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