Sentential Structure and the Perceptual Span in Normal Reading Development

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An eye–voice span paradigm was adopted to determine whether children use different aspects of sentence structure to facilitate decoding early in the course of reading development. Eighty-four Grade 1 and Grade 2 children, representing four levels of early reading competence, and 15 skilled adult subjects read from four textual conditions; materials varied in the extent to which the texts were semantically and/or syntactically constrained. The more precocious the young reader, the longer his reported span. The better readers' and the adults' advantage was greater the more linguistically constrained the reading material. These data support a continuous model of reading development and are compatible with an interactive definition of early reading behavior.

The interactive nature of skilled reading has been well illustrated in the fluent reader's response to the range of intra- and interword constraints that relate letters in words and words in meaningful prose (Lesgold & Perfetti, 1981; Lovett, 1981; Rumelhart, 1977). Within the past decade, considerable research has been reported documenting the extent to which skilled readers exploit higher-order aspects of textual structure to facilitate the fluent decoding and ready comprehension of connected text (cf. Levin & Addis, 1979). A limited amount of evidence also exists to suggest that while skilled readers may be more sensitive to higher-order textual constraints (e.g., syntax and semantics) than their less skilled peers, they are at the same time less dependent upon them to facilitate...
such decoding operations as word recognition, for instance (Perfetti & Roth, 1981; Stanovich, 1980).

The extent to which the beginning reader is able to capitalize upon such higher-order constraints and how this capacity and its use change with the development of reading skill are topics of considerable developmental interest. A perusal of existing reading models reveals the frequent assumption that beginning reading is a strictly bottom-up process—that is, that access to higher-order operations awaits the automatization of basic decoding skills and is, therefore, the sole preserve of the fluent reader. The assumption of a basic discontinuity between the early process and ultimate fluency is common to both top-down (e.g., Smith, 1971, 1973) and bottom-up (e.g., Gough, 1972; LaBerge & Samuels, 1974) treatments of skilled reading behavior.

Little attention has been directed to testing the developmental predictions of such models, however, and virtually no effort has been expended to assess their compatibility with existing developmental data. There is some evidence to suggest that early reading is not the totally bottom-up process it is often assumed to be. Through an analysis of oral reading errors, Weber (1970) and Biemiller (1970) have demonstrated that syntactic and contextual factors can override graphemic variables from the 1st year of reading experience. Although his paradigm does not permit a separate evaluation of semantic and syntactic features, Doehring's (1976) results also suggest that these combined constraints facilitate reading as early as Grade 1. While these investigations admittedly were designed to address different issues, they do provide some indication that higher-order constraints are influencing the beginning reader's behavior early in the acquisition process.

The scarcity of relevant developmental data may be at least partially attributed to the methodological problems inherent to studying reading behavior as a whole, whether in skilled readers or in young children. From this perspective, the eye-voice span procedure enjoys renewed status in modern research, having proven a sensitive tool with which to examine the linguistic structures to which the reader attends. The eye-voice span (EVS) is simply "the distance, usually measured in words, that the eyes are ahead of the voice" in oral reading (Gibson & Levin, 1975, p. 360). The procedure in its basic form requires the subject to read aloud from text projected on a screen. At some predetermined point, the text is removed from sight, leaving the subject to report as much of the "unread" text as possible. This simple and unobtrusive procedure provides a potential vantage point from which the processing units of ongo-