This paper reviews some of the recent models of selective attention and concludes that these models simplify and restrict the role of attention in reading and learning. It is maintained that the most critical problem of the models is that they do not acknowledge the important function of attention in the early stages of the reading process when meaning and importance ratings are first established. It is further suggested that reading and secondary task reaction times which have been used to measure attention, are inadequate as they cannot distinguish between different attention phases. A new model of how attention affects text comprehension is proposed. Finally, it is argued that to examine the complex effects of attention on reading and learning, novel research questions should be asked, and new ways to evaluate attention must be considered. More specifically, research on attention by cognitive and educational psychologists should utilize neuroscientific brain research methods, such as event-related potentials, and should integrate findings across research domains.

KEY WORDS: selective attention; reading; brain; salience.

INTRODUCTION

Crucial questions in both cognitive and educational research concern the type of information people learn when they read, and how the learning of certain ideas takes precedence over others. For more than a decade, investigators have reported that important information tends to be learned

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more readily than unimportant information, and they have hypothesized that the increased learning of important ideas is due to the allocation of extra attention to them (Anderson, 1982; Reynolds and Anderson, 1982; Reynolds, Standiford, and Anderson, 1979; Reynolds, Wade, Trathen, and Lapan, 1989; Shirey and Reynolds, 1988). This hypothesis is the basic premise of the Selective Attention Strategy (SAS)³ (Reynolds, 1992a). More specifically, the SAS identifies three steps in the processing and learning of textual information. The reader initially processes text elements at some minimal level and rates them for importance. Subsequently, the reader focuses attention (selectively) on the more important segments. Due to the allocation of the extra attention, these segments are learned better than the less important ones. The SAS has been represented as follows:

Importance→(+)->Attention→(+)->Learning

The signs indicate a direct, linear, and causal relation between importance and subsequent attention and between attention and subsequent learning (Reynolds, 1992a). Before the model can be evaluated, the measurement of attention and the definition of importance in the prose learning literature should be considered.

The conceptualization and measurement of attention in the prose learning literature has not changed in the last decade, in spite of the increasing number of studies that focus on attention outside the area. In the studies that have investigated the SAS, the total amount of attention subjects bring to a reading task has been considered to be a joint function of two independent measures: duration, reflected in reading times, and intensity or level of effort, reflected in secondary task reaction times (Anderson, 1982; Reynolds, 1980, 1992a; Reynolds, Shepard, Lapan, Kreek, and Goetz, 1990; Wade, Shraw, Buxton, and Hayes, 1993). The reading time measurement of attention duration is based on the notion that attention that is maintained for longer periods of time will result in slower reading rate. The measurement of attention intensity by secondary task reaction time is based on the assumption that cognitive capacity is limited. Because performance on the primary and secondary task may require the same limited resources, allocation to one task may reduce the availability for the other task (Richards and Casey, 1992). Thus, if subjects engaged in a task (e.g., reading) are asked to perform another task (e.g., respond to a tone that sounds intermittently), their response times to the secondary task reflect the intensity of the attention paid to the initial task.

³Originally SAS was called Selective Attention Hypothesis. Reynolds et al. (1989) renamed it in a somewhat expanded form to SAS.