Tracing symbol naming speed's unique contributions to reading disabilities over time

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ABSTRACT: The contributions of naming speed measured on both serial-list and various discrete-trial formats to several reading subskills were examined longitudinally to determine their impact independent of other reading-related skills on reading disabilities. Tests of symbol naming speed, phonological awareness, vocabulary, memory span and coding speed were given to 38 poor and average readers when they were in Grades 2, 3 and 4. Grade 4 poor readers were discriminated from moderately poor or good readers on serial-list and discrete-trial naming speed tests in all grades. In addition, phonological awareness and vocabulary, but not memory span or coding speed, discriminated groups. These variables in Grade 2 contributed unique variance to reading scores in Grade 4 in differing patterns. Hypotheses about the nature of the reading - naming speed relationship are discussed.

KEY WORDS: Phonemic awareness, Prediction of reading subskills, Reading disability, Symbol naming speed.

INTRODUCTION

Several studies in the last decade have indicated that speed of naming simple visual symbols and sensitivity to the phonemic constituents of words are not only correlated with reading skill, but also have variance related to reading independent of each other and of general verbal ability (e.g., Blachman 1984; Bowers & Swanson 1991; Mann 1984; Wagner & Torgesen 1987). Not well understood is the role played by each of these variables in specific reading subskills (e.g., nonword decoding, fluent word recognition, reading comprehension).

Furthermore, just how to understand the basis of the correlation between visual naming speed and reading has been controversial. Despite its contributing variance to reading independent of commonly used measures of phonemic awareness, many researchers argue that naming speed's relationship to reading depends on phonological coding skill. Wagner, Torgesen, Laughon, Simmons & Rosette (1993) suggest that naming speed may index a construct of efficiency in 'retrieval of phonological codes from a long-term store' and cite Baddeley (1986) that such efficiency may 'influence the degree to which phonological information is useful in decoding' (Wagner et al. 1993: p. 84). In an earlier paper, Torgesen, Wagner, Simmons & Laughon (1990) suggested that the incomplete specification of phonological units in long term memory might be the underlying difficulty behind poor verbal memory span,
slow articulation and slow and inefficient retrieval of names of visual symbols. Indeed, Spring & Perry (1983) reported a strong correlation between digit naming speed and verbal memory. In the Wagner et al. study (1993), however, tests of naming speed measured two factors related to word recognition accuracy independently of phonological awareness and verbal memory factors in kindergarten and Grade 2 samples. Memory and analytic phonological awareness were closely related factors, and rather distinct from the time to name symbols. A study by Ackerman & Dykman (1993) also underlined the independence of naming speed's relationship to word and nonword recognition from several measures which more clearly rely upon phonological code precision: phonemic awareness, verbal memory span, running memory, and articulation rate. Thus even though the articulation rate for highly familiar information (e.g., counting to ten repeatedly by memory) must limit the speed of naming familiar visual symbols, it is not the articulation component of the visual naming task that is responsible for its relationship to reading. Given the independence of the phonological and naming speed factors contributing to reading, the basis for the relationship between poor reading and difficulty retrieving symbol names quickly may lie elsewhere than in the imprecision of phonological codes.

One alternate conceptualization of the reading–naming speed relationship is that efficiency managing serial information (Stanovich 1981) is more pertinent to the relationship than time to retrieve symbol names per se. Data concerning this hypothesis has centered upon differential levels of correlation between reading and naming speed dependent upon the way naming speed is measured, whether by latency to name individual items or time to name a series of items. (See Wolf, 1991, for a review of this issue.) While serial naming tests almost invariably relate to reading achievement, tests of latency to name single symbols on discrete trials are inconsistently related. However, until recently, most studies have not used both discrete-trial and serial list measures in the same sample, and differing sample and stimuli characteristics may account for many of the inconsistent results of studies using only one of the measures. When latency for naming single items has failed to correlate strongly with reading skill, investigators (e.g., Stanovich 1981) have suggested that serial naming speed must be related to reading due to something other than the time to access phonological codes or identify symbols, perhaps assessing attentional processes pertinent to managing and coordinating serial information. In an attempt to specify more precisely how serial naming speed might be related to reading in the absence of a relationship with naming speed for isolated targets, Spring & Davis (1988) argue that the dimension of interest is the ability to overlap processing of serial information, such that material to the right of a target is partially processed at the same time the target is being identified. They suggest that unlike good readers, poor readers fail to partially process the next item on a serial list measure of naming speed, restricting themselves to naming the items as if they were isolated. Perhaps this processing style is related to poor readers'