Online Study of Word Spelling Production in Children’s Writing

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In the area of spelling, empirical findings largely come from analyses of spelling responses, mainly misspellings. By contrast, online studies of spelling production are rare, in adults as well as in children. Yet online examination of spelling production could provide decisive information about the cognitive processes underlying spelling production and spelling development in children. The first section of this chapter considers some issues regarding spelling management and spelling acquisition, the investigation of which requires online explorations of spelling production. In the second section, we report a temporal study whose purposes were to examine how children manage written spelling production and how the learning of word spelling affects spelling production. French-speaking fourth-graders were required to spell 48 words whose frequency and orthographic structure had been manipulated. Each word was to be spelled twice, before and after the children had been explicitly taught how to spell the words. Spelling latencies and spelling transcription times were recorded by means of a digital graphic tablet connected to a PC. The data were analyzed for the first spelling session, and then a comparison was made between the two spelling sessions. Results are discussed in the framework of a dual-route spelling model.

1 Introduction

We already know much about spelling skills, and the greatest part of this knowledge comes from off-line studies of spelling responses, mainly spelling errors (Frith, 1980; Rieben, Perfetti, & Fayol, 1997). Despite the growing amount of work in the domain, online studies of spelling production in adults (Bonin, Peereman, & Fayol, 2001; Glover & Brown, 1994; Kreiner, 1992, 1996) as well as in children (Rittle-Johnson & Siegler, 1999; Steffler, Varnhagen, Friesen, & Treiman, 1998) remain the exception. The reason is...
both methodological, the recording of writing activity is time-consuming, and theoretical, the temporal data in writing production are multidetermined and therefore puzzling to interpret (Foulin, 1995). Yet a more comprehensive understanding of the cognitive processes involved in spelling skills might be gained from online approaches. In the first section of this chapter, we consider some issues regarding spelling management and spelling acquisition, the investigation of which requires online explorations of spelling production. The second section reports a temporal analysis of spelling production in children, which we have carried out by the means of a digital tablet, to illustrate how the online study of spelling activity enlarges the understanding of spelling acquisition.

2 Spelling Production: Temporal Organization and Cognitive Management

The necessity of online study in spelling first arose with regard to skilled adult spellers. Although investigating spelling responses in adults is far from being fruitless (Holmes & Carruthers, 1998; Tainturier & Rapp, 2000), the very low rate of errors in good spellers requires an examination of the temporal features of spelling production in order to investigate linguistic and psycholinguistic variables which may influence spelling proficiency. For example, Glover and Brown (1994) have shown that spelling-production times in adults were affected by word phonographic consistency, whereas spelling accuracy was not. Likewise, Orliaguet and Boë (1993) found that the temporal organization of spelling production was influenced by the morphological structure of the word being spelled. Furthermore, temporal variations during spelling activity may be interpreted as reflecting variations in the amount of attentional resources devoted to spelling processing. The analysis of the time course of spelling production may thus shed light on the speller’s strategy, that is, how spelling processes are managed and attentional resources are allocated during spelling production (Alamargot & Chanquoy, 2001; Fayol, 1999). Analyses of the effects of word frequency and phonographic consistency effects on spelling production times revealed that two spelling procedures, addressing (lexical retrieving) and assembling (phonological encoding), are involved in combination in adult spelling (Bonin & Méot, 2002; Kreiner, 1992, 1996). Temporal variations in spelling activity also suggested that adult spellers make cognitive strategy choices while facing spelling constraints. For example, a problematic grapheme inside a word can be processed either during latency (i.e., before word transcription), or in parallel with the transcription of precedent letters, or even at the moment this grapheme is to be spelled (Orliaguet & Boë, 1993).

Online studies are particularly interesting with regard to the investigation of spelling development. Spelling acquisition is not only a matter of progressing in accuracy and orthographic knowledge, but also in efficacy and procedure choice. Spelling procedures are more effective in older children than in younger children, and older spellers are faster than younger spellers (Rittle-Johnson & Siegler, 1999; Steffler et al., 1998). When words are correctly spelled, only temporal data can shed light on gains in speed and automation that affect successive productions of the same word as spelling develops. Temporal data are also requisite for exploring the developing strategies, which underlie children’s progress in speed and accuracy. Beyond gains in general cognitive processing and handwriting speed,