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Brief Report

Is the go/no-go lexical decision task preferable to the yes/no task with developing readers?

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ABSTRACT

The lexical decision task is probably the most common laboratory visual word identification task together with the naming task. In the usual setup, participants need to press the "yes" button when the stimulus is a word and the "no" button when the stimulus is not a word. A number of studies have employed this task with developing readers; however, error rates and/or response times tend to be quite high. One way to make the task easier for young readers is by employing a go/no-go procedure: "If word, press 'yes'; if not, refrain from responding." Here we conducted a lexical decision experiment that systematically compared the yes/no and go/no-go variants of the lexical decision task with developing readers (second- and fourth-grade children). Results showed that (a) error rates for words and nonwords were much lower in the go/no-go task than in the yes/no task, (b) lexical decision times were substantially faster in the go/no-go task, and (c) there was less variability in the latency data of the go/no-go task for high-frequency words. Thus, the go/no-go lexical decision task is preferable to the "standard" yes/no task when conducting experiments with developing readers.

Introduction

Since its introduction by Rubenstein, Garfield, and Millikan (1970), the lexical decision task, together with the naming task, has become the most commonly used laboratory visual word identification task, and a myriad of experiments have shown that it provides relevant insights into the structure of the internal lexicon. As such, all recent mathematical/computational models of visual word

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Table 1
Percentages of error (across conditions) in published lexical decision experiments with the usual yes/no setup on developing readers (Grades 1–4).

Author(s)	Grade	Error rate for words (%)	Error rate for nonwords (%)
Pratarelli, Perry, and Galloway (1994)	4	18.2	17.5
Castles et al. (1999)	2	8.9	N/A
	4	7.7	N/A
Burani et al. (2002)	3	4.6	12.5
	4	4.1	10.1
Goikoetxea (2005)	1	45.5	N/A
Castles et al. (2007)	3	15.1	N/A
Duñabeitia and Vidal-Abarca (2008)	1	21.0	N/A
	2	18.0	N/A
	3	12.0	N/A
Acha and Perea (2008)	3	25.1	45.0
Casalis et al. (2009)	4	1.4	N/A
Ratcliff, Love, Thompson, and Opfer (in press)	3	8.1	13.7

Note. N/A, not available.

recognition have been designed to simulate lexical decision data (e.g., Coltheart, Rastle, Perry, Ziegler, & Langdon, 2001; Davis, 2010; Grainger & Jacobs, 1996; Ratcliff, Gomez, & McKoon, 2004), and researchers have developed large databases with lexical decision times for an ample subset of words (e.g., English Lexicon Project: Balota et al., 2007; French Lexicon Project: Ferrand et al., 2010). The usual setup in a lexical decision experiment is quite straightforward: Participants need to press the "yes" button when the stimulus is a word and the "no" button when the stimulus is not a word; response time (RT) and error rate are the dependent variables.

Not surprisingly, a number of studies have employed the yes/no lexical decision task with developing readers (e.g., Acha & Perea, 2008; Burani, Marcolini, & Stella, 2002; Casalis, Dusautoir, Colé, & Ducrot, 2009; Castles, Davis, Cavalot, & Forster, 2007; Castles, Davis, & Letcher, 1999; Laxon, Coltheart, & Keating, 1988). One common problem in these studies is that lexical decision times are much more elevated and show larger variability than the adult data (see Feldman, Rueckl, Pastizzo, Diliberto, & Vellutino, 2002). With skilled readers, accuracies in the lexical decision task are usually high, allowing researchers to analyze the RT data separately from the accuracy data. However, when the error rates are high, it is more difficult to make firm conclusions on the locus of an effect by analyzing the RT data (see Perea, Rosa, & Gómez, 2002). In fact, some of the above-cited studies examined only accuracy data (e.g., Laxon et al., 1988); note that analyzing only accuracy data is also not desirable because researchers lose information on the underlying cognitive processes under scrutiny (see Ratcliff, Perea, Colangelo, & Buchanan, 2004). As shown in Table 1, lexical decision experiments with the usual yes/no setup produced, in the vast majority of cases, high error rates for words and (when reported) for nonwords, especially for beginning readers.[1] Clearly, young readers have some difficulty in performing the yes/no lexical decision task.

The lexical decision task presumably involves selecting the correct unit in the lexicon ("lexical selection" stage) and then carrying out whatever decision-making processes are required to make sure that it is the appropriate lexical unit ("response decision" stage) (see Perea et al., 2002). One reason why the yes/no lexical decision task might be difficult for children is that they need to remember which button to push for "yes" and "no". This assignment is arbitrary, and it may produce some additional variability in the responses as a result of deciding what response to make. How can we minimize the response selection stage? One possibility is to instruct the participants to say aloud

[1] There were two studies in which error rates were quite low (Burani et al., 2002; Casalis et al., 2009). In Casalis and colleagues' (2009) study, the same set of 12 target words was repeated across sessions, and no information was provided on the error rates to nonwords. In Burani and colleagues' (2002) study, error rates for words were very low but were accompanied by rather long RTs (more than 2 s); when these same items were employed with adults, error rates for words and nonwords were 3.2% and 15.6%, respectively (Experiment 4). Error rates for adult skilled readers are typically much lower than those for young children (e.g., see Acha & Perea, 2008).