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Aphasic naming in Spanish: predictors and errors☆

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Abstract

Sixteen Spanish aphasic patients named drawings of objects on three occasions. Multiple regression analyses were carried out on the naming accuracy scores. For the patient group as a whole, naming was affected by visual complexity, object familiarity, age of acquisition, and word frequency. The combination of variables predicted naming accuracy in 15 of the 16 individual patients. Age of acquisition, word frequency, and object familiarity predicted performance in the greatest number of patients, while visual complexity, imageability, animacy, and length all affected performance in at least two patients. High proportions of semantic and phonological errors to particular objects were associated with objects having early learned names while high proportions of no-response errors were associated with low familiarity and low visual complexity. It is suggested that visual complexity and object familiarity affect the ease of object recognition while word frequency affects name retrieval. Age of acquisition may affect both stages, accounting for its influence in patients with a range of different patterns of disorder.

Keywords: Aphasia; Anomia; Naming; Age of acquisition; Word frequency; Familiarity

1. Introduction

Problems in word retrieval and production are common in aphasic patients. In a task like naming pictures of objects (confrontation naming), most patients will, however, be able to name some items correctly while failing on others. In addition, there is usually a degree of consistency concerning the particular items which a

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patient can or cannot name. Under such circumstances, some insights into the nature and causes of aphasic naming breakdown might be gleaned by examining which properties of the objects or their names predict success or failure, or the type of errors made to different items (Nickels, 1997; Williams, 1983). Such analyses can be performed at the level of groups of patients or individual cases.

Feyereisen, Van der Borght, and Seron (1988) analysed the naming performance of 18 French-speaking aphasic patients attempting to name 64 black-and-white line drawings of familiar objects. Included among Feyereisen et al.'s (1988) analyses were multiple regressions in which a number of properties of the pictures and their names were used as predictors of the accuracy with which items could be named by the group of aphasics as a whole. The dependent variable was a score out of 18 for each item (the number of patients able to name that item correctly). The predictor variables included age of acquisition and word frequency. Feyereisen et al. (1988) found that for their group as a whole, age of acquisition was the most powerful predictor of naming accuracy, while word frequency made a smaller but still significant contribution. Thus, the items that Feyereisen et al.'s (1988) patients were best able to name were those whose names are acquired early in childhood and encountered or used frequently in adulthood.

The age of acquisition measure used by Feyereisen et al. (1988) was based on adult estimates of the age at which children learn different object names. Such estimates have been shown to correlate well with objective data on vocabulary acquisition (Carroll & White, 1973; Gilhooly & Gilhooly, 1980; Morrison, Chappell, & Ellis, 1997). Rochford and Williams (1962) and Spreen and Benton (1967; cited in Spreen, 1968) had previously suggested that age of acquisition might affect naming accuracy, but neither of those studies had controlled other factors that correlate with age of acquisition, such as word frequency. Conversely, several studies including Butterworth, Howard, and McLoughlin (1984), Howard, Patterson, Franklin, Orchard-Lisle, and Morton (1984), Howes (1964), and Wepman, Bock, Jones, and Van Pelt (1956) had implicated word frequency as a predictor of aphasic naming but had failed to control age of acquisition. Among sets of object names, age of acquisition and word frequency typically correlate .3–.5 (Cuetos, Ellis, & Alvarez, 1999; Morrison et al., 1997), so a manipulation of one of these lexical properties is likely to be confounded by the other unless it is explicitly controlled.

Just because the performance of a group of patients is affected by age of acquisition, word frequency, or some other factor does not mean that every patient in the group is affected by that factor. For example, Howard et al. (1984) found a significant effect of word length on the naming performance of a group of aphasic patients but when the patients were analysed individually that effect was found to be significant for only half of the group. The application of the regression approach to analysing the effects of different object and word properties on naming accuracy at the level of single cases was pioneered by Nickels and Howard (1995). In the first of two studies, Nickels and Howard (1995) presented pictures of 104 familiar objects to 12 aphasic patients on five separate occasions. A response was counted as correct if the target name was produced at any time during the attempt at naming the item. Responses that deviated from the target by a single phoneme were also classed as correct. The mean number of correct responses to each item was then correlated with a range of predictor variables. Naming accuracy for the group of 12 patients correlated most highly with age of acquisition (−.518), but significant correlations were also observed with other factors such as familiarity, concreteness, number of phonemes, and imageability. The raw correlations between naming accuracy and Kucera and Francis (1967) word frequency and the visual complexity of the drawings were smaller and not significant.