Sex Differences in Verbal Skills: Use of Spelling-sound and Lexical Information

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An experiment is described in which possible sex differences in lexical and phonological skills were investigated. A spelling test was used which could not be done on a phonological basis alone and which entailed lexical access for good performance. Women were judged on the evidence for this task to have better lexical ability than men, but no difference was found on a task designed to tap knowledge and use of phonological information in the form of spelling-sound correspondences.

This study looks at the question of sex differences in the operation of spelling-sound rules. It is well established that on average girls are ahead of boys in acquiring language skills (Hutt, 1972) and there is some evidence that women keep the edge over men on language-based tasks such as spelling (Anastasi, 1958). Bradshaw, Gates and Nettleton (1976) have more recently produced evidence for sex differences in lexical decision tasks using right field and left field tachistoscopic presentation. Overall, female performance was somewhat better than that of males, suggesting superior lexical ability in women.

In contrast, it is not clear whether or not women are more dependent on phonological coding. Coltheart, Hull and Slater (1975) asked subjects to scan a prose passage, crossing all occurrences of the letter 'h'; miss rates were higher for women than for men for unpronounced 'h's, but there was effectively no sex difference for pronounced 'h's. Coltheart et al. concluded that women were more reliant on phonological coding. However, there have been failures to replicate this and related findings by these authors (Jorm, 1979; Smith & Groat, 1979; Hughes, Wilson-Derose & Kiely, 1980).

In any event there are considerable doubts about whether the letter cancellation paradigm involves mandatory phonological coding. Although this seemed to follow from Corcoran's (1966) finding that silent 'e's are missed more often than sounded 'e's, it has been observed (Frith, 1979) that this study failed to control for target letter position. Frith found that the silent - 'e' v. sounded - 'e' effect held only...
for terminal letter positions and it seems unlikely that subjects selectively process word endings phonologically. This finding has been confirmed by Smith and Groat (1979), and a tentative explanation implicates the differential predictability of certain word endings.

In an earlier study (Barber & Millar, 1981) we asked subjects to nominate which of two words containing a common letter sequence had the more typical English pronunciation for that letter sequence. Each pair included one 'regular' and one 'exception' word (e.g. 'haughty' v. 'laugh' for the letter sequence 'augh'), and subjects showed a strong tendency to choose the regular word ('haughty' in the example). Since subjects had to compare pronunciations it seems reasonable to infer that phonological coding was mandatory. Yet we found no sex difference on this task.

The present study tackles the question of sex differences in phonological coding with a further device aimed at exploiting phonological mechanisms, based on Baron and Strawson's (1976) phonological decision task. Baron and Strawson asked subjects to decide which of a collection of nonwords sounded like English words. A weakness of the performance measure they used is that it compounded errors on pseudohomophones (nonwords sounding like English words, e.g. 'fign', 'taim') and nonpseudohomophones (e.g. 'takken', 'twitter'). The latter may be characterized as being visually similar to an actual word and entailing the knowledge of letter-sound rules in order to be able to judge it correctly as not sounding the same as an English word (i.e. 'taken' and 'twitter' in the two examples). In contrast, the recognition of pseudohomophones could readily be done by use of visual analogy. Thus 'fign' could be judged as a pseudohomophone on the basis of its visual analogy with 'sign', and 'taim' by analogy with 'main'. The use of analogy plainly involves the use of lexical information, and separate assessment of the errors on these two kinds of material is therefore necessary.

Moreover, the visual similarity of the pseudohomophones in Baron and Strawson's study seems to have been less than that of their nonpseudohomophones. The subject could potentially adopt the effective but undesired strategy of deciding that those nonwords which most looked like words were the least likely to sound like words. The present version of the task therefore incorporated a further set of nonpseudohomophones which had comparable visual similarity to the pseudohomophones. This was considered effectively to force subjects to rely exclusively on a pronunciation strategy which entailed lexical access. It was considered important for the present task to avoid the criticism made of many information-processing tasks, like letter cancellation, used to investigate phonological coding in reading, that they may be done successfully without recourse to lexical access (Coltheart et al., 1979).

Entries in the internal lexicon include information about word meanings, their pronunciations, and spelling (Coltheart et al., 1977). Questions about the access code and procedures for gaining access have been discussed by Coltheart et al. (1977), among many. Individual differences in access procedures have been described by Baron and Strawson (1976) and, as noted above, sex differences in a lexical decision task have been reported by Bradshaw, Gates and Nettleton (1976). A wider view of individual and sex differences might usefully focus on the size of a person's lexicon, and the speed and efficiency with which lexical information can be accessed, as well as on the lexicon's more qualitative properties. There is of course no a priori reason why 'lexical ability', if it is to embrace such a range of skills, should be unitary; it is, for instance, entirely possible for someone to be quick at lexical decisions yet poor at spelling. A full study of those skills that might be bracketed as aspects of lexical ability would itself be justified. The