Letters

Dyslexia

The ingenious research reported by Rozin, Poritsky, and Sotsky under the title "American children with reading problems can easily learn to read English represented by Chinese characters" (26 Mar., p. 1264) opens a new means of experimental study of the still elusive defect underlying childhood dyslexia.

It has been claimed that dyslexia is uncommon in Japan. This would appear to support the thesis of the authors, since the Japanese generally use an ideographic script (kanji). Japanese can also, however, be written in a syllabary script (kana), which is used particularly in the early teaching of reading. Kuromaru and Okada (*1*) have pointed out that Japanese dyslexic children have greater difficulty learning the complex ideographic characters than they have learning the kana; but once having learned the characters, the children have much less difficulty reading a connected ideographic text. This also would appear to corroborate the thesis of Rozin *et al.* that the "blending" of phonetic elements presents special difficulties for the dyslexic.

Their view appears to be further supported by evidence which suggests that the processes of handling the complex visual patterns of ideographs and of blending smaller phonetic elements are handled differently by the nervous system. In a review of the literature on acquired reading disorders in the Japanese, Brown Beasley (*2*) has found that comprehension of the syllabary script is usually more severely affected than that of ideographs, but the reverse is occasionally seen: this adds evidence that the two processes have different neural mechanisms. In an especially interesting report Lyman, Kwan, and Chao (*3*) described a patient fluent both in his native Chinese and in English, who developed a left parieto-occipital tumor which led to a reading disorder. He could read English much better than the Chinese ideographic script.

Finally, it should be mentioned that in 1917 Hinshelwood (*4*), in his classic monograph on childhood dyslexia, quoted Bishop Harmon on the ideal therapy for this disorder: "These children must be taught on the plan of the Chinese. The Chinese script is a sign-script: each word has its own symbol. The idea is not conveyed by a string of letters in combination but by one particular . . . ." Harmon would no doubt have been pleased to know that over half a century later his suggestion was carried out so literally.

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References

1. S. Kuromaru and S. Okada, in *Proc. 7th Intern. Congr. Neurol.* (Societa Grafica Romana, Rome, 1961), vol. 2, p. 370.
2. B. Beasley, personal communication.
3. R. S. Lyman, S. T. Kwan, W. H. Chao, *Chin. Med. J.* **54**, 491 (1938).
4. J. Hinshelwood, *Congenital Word-Blindness* (Lewis, London, 1917), p. 102.

Rozin, Poritsky, and Sotsky suggest that the syllable might be suitable as a vehicle for introducing reading. This brings us around full circle to the method used by Noah Webster in his famous "Blue-Backed Speller" of nearly 150 years ago, on which several generations of Americans were brought up. Webster used nothing but syllables in the first few lessons, only later combining them into words.

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Rozin *et al.* have clearly demonstrated that children can be motivated to learn. Motivation was supplied in their experiment through the novelty of Chinese characters. There is no reason to suppose that, with these same children, a syllabaric method would serve as a learning system for written English. The authors tutored the children in English orthography with little or no success; was the reason for their failure that the children had unhappy associations with being taught English orthography? Where children have been deactivated by clumsy teaching, neither phonemic, syllabaric, nor whole-word methods will prove effective.

The data offered in the report partially support a whole-word method of teaching English, if anything. One Chinese character is one English word. Where is the evidence to suggest that the multiplicity of varied strokes, shapes, thicknesses, and their arrangement in the Chinese character is any easier to assimilate (character for word) than in the collection of risers, descenders, serifs, and alphabetic groupings found in the formation of English words?

The author's tentative recommendation of "some unit intermediate between the morpheme and phoneme—for example, the syllable" is not justified by their argument specifying two requirements for an efficient orthography. Their specifications that "it must be easy to learn and it must be productive in the sense that, after mastery, new words can be read without learning new symbols" are simplistic and ignore the purpose of reading. Of course an orthography must be easy to learn; but productivity is a far more complex concept than just orthography per se. To be meaningful the concept of "productivity" must include meaning, or reading becomes a pointless exercise. Sense must still be assimilated for each word, whether read by syllabaric, phonemic, or whole-word means. The authors implicitly comment on this in their report: "In spite of all these problems, all the children read the Chinese materials adequately. *Comprehension was clearly only partial,* but it should be emphasized that we made little attempt in the tutoring to stress this aspect of the task" [italics added].

The authors' reference to low illiteracy rates in Japan, where a syllabaric written language is used, is a red herring. The validity of intercultural comparisons of literacy rates turns on the style of recording statistics on a national level. Here are introduced so many variables as to make comparisons worthless. Even if the reported

statistics had value, then still overlooked would be the differing emphasis on education in the two cultures. Shape, form, design, or construction of written language is but one element in a total complex of motivation.

None of these remarks is meant to degrade the value of the authors' study in highlighting the inadequacy of current methods of teaching children to read.

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Brookes attempts to interpret the findings of Rozin *et al.* solely as effects of differential motivation. As stated in the report, we agree that the novelty of these materials may have contributed to our success in teaching them to children who may have "turned off" to regular reading instruction. Further, as has been pointed out to us by Brookes, the unitary appearance of Chinese symbols, in contrast to the sequence of visually discrete elements in English orthography, may also contribute to the superiority of the Chinese. However, we believe that the children's success with the Chinese material must in part be explained on cognitive grounds: Chinese orthography maps directly onto meaning, whereas in English orthography the relation of sign to meaning is mediated through the sound system. The results of our study are consistent with such an interpretation; when the mapping is directly onto meaning, there is no problem with acquisition beyond sheer memorization of the symbols. We duly noted that this memorization problem will rapidly become intrusive, so that a whole-word method is eventually unworkable. We suggested, finally, that the syllable, rather than the relatively abstract "phoneme," was the appropriate unit for introducing the child to the critical feature of our orthography—namely, that the mapping is through the sound system. Brookes argues that a change in unit will have no effect because the problem is simply motivational.

Preliminary results of current work by Gleitman and Rozin (*1*) suggest that Brookes is incorrect. In about 5 hours of instruction we have successfully taught 5-year-old inner-city children (i) a set of 21 syllables (such as *can, o, pen, er, wind*) and (ii) the general principle of combining them (as in *can o-pen-er, wind-o*). These children had had an opportunity to be "deactivated" by failure in reading, since they had previously been exposed for 8 months to a "phonic" method without discernible learning of any combinatorial principle, despite fairly intensive training in a charming and creatively managed kindergarten. The syllabary method works by separating the two conceptual problems for the child, rather than muddling them into one. First, we teach the child the fundamental fact about reading English—that orthography tracks the sound system—using readily accessible phonological units (syllables). We then show him that these can be combined to yield meaningful words. Much later we try to show him that the abstract phonological unit represented by the alphabetic sign is an efficient mnemonic for the inconveniently large (for English) set of syllables. It is fair to note that this work has been done with a simplified orthography, which is part English and part rebus, and that the number of subjects is so far small. Yet it seems safe to say that the syllabary approach—independent of admitted motivational issues—increases the speed of principled reading acquisition. Data on speech perception and production, which were cited in the report of Rozin *et al.*, also indicate that syllables are much easier to identify in the sound stream than "phonemes." This bolsters our contention that the syllable is a logical first step. We agree with Brookes that the cross-cultural evidence cited by Rozin *et al.* is debatable, but, taken together, such facts as the rapid success of the Cherokee syllabary (*2*), the low incidence of reading failure in Japan, and the historically frequent invention of syllabaries are suggestive.

Finally, we must comment on Brooke's contention that meaning is an issue in initial acquisition of reading. There is no reason to suppose that we have to teach the child to speak, that we have to teach him what words or sentences "mean," as part of the process of teaching him to read. The children give every evidence of knowing how to speak English and knowing what they mean when they speak. If a child can render print into spoken language, we assume very confidently that he will be able to understand his own speech when he does so with only a minor proviso: the heavy concentration on articulation in early stages of reading may cause some initial garble. In short, the tangled question of meaning, interesting and mysterious as it is, has been solved with great efficiency by the 5-year-old before he is introduced to the problem of learning to read.

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References

1. L. Gleitman, P. Rozin, M. Allen, J. M. Barch, B. Bressman, J .Buchanan, in preparation.
2. I. J. Gelb, *A Study of Writing* (Univ. of Chicago Press, Chicago, 1963).

Kentucky Health Care

Some unfortunate examples of assertive reporting are included in Bazell's article on the Office of Economic Opportunity's health care program in Floyd County, Kentucky (News and Comment, 30 Apr., p. 458). Bazell reports that "Over half the county's population of 34,000 falls below the poverty line"; "The OEO went into the health business during the Johnson administration because of the realization that poverty and ill health reenforce each other"; and "The poor people are afraid for their jobs, their food stamps, or whatever means of income they have."

What is the "poverty line"? Obviously it is different in different areas and at different times. According to my data a cash income of $3000 per year per family is affluence in Kentucky Appalachia.

I suggest that OEO went into the health business for more complicated reasons than are asserted, that the same political forces were operating that led to military bases and defense plants in some locations. In 1967 Kentucky had a vigorous professional Department of Health that could have regulated the Floyd County health program. The Kentucky Department of Mental Health has promoted, advised, and is regulating comprehensive care centers in all of Kentucky, Floyd County included.

If the poor people were "afraid for their jobs, their food stamps, or whatever means of income they have," I failed to find it out in the 3 years (1967–70) that I traveled throughout eastern Kentucky for the Department of Mental Health. I found the people of Kentucky Appalachia more shy and reserved than afraid. The many enrol-