

Dyslexia, orthography and brain

This is in response to a letter by Balasubrahmanyam¹ on how manifestation of dyslexia is influenced by orthography. A brain disorder with a genetic disposition, developmental dyslexia is a lifelong condition, which cannot be eradicated but can be compensated by special education. However, the manifestation of dyslexia, its variety and severity, is believed to be mediated through the kind of writing system one is exposed to. Surface dyslexia, for instance, is characterized by difficulties in reading/spelling irregular words (e.g. 'pint') and may only be seen in an opaque orthography, where the letter-sound correspondence (mapping) is not consistent.

Orthographies can be explained in terms of the level of representation and transparency. A written character represents, a morpheme in Chinese, a mora in Japanese Kana and a phoneme in English. Transparency refers to the consistency between character-sound relationship. Italian, Spanish and Devanagari, for example, are transparent writing systems compared to French and English. Orthographies also vary in terms of script layout. Arabic is written from right to left, while English is written left to right. As regards visuospatial organization, English is linear while Korean Hangul and Indian Devanagari are nonlinear, but visuospatially organized.

Though Indian languages belong to different families, all Indian scripts (except Urdu) have a common origin in 'Brahmi' and hence share the same salient features. The scripts have symbols for syllabic vowels, consonants that have an inbuilt 'a' sound, vowel diacritic marks (matras) for representing CV (consonant-vowel) combinations, ligatures (secondary forms of consonants) to denote consonant blends, and diacritic marks for muting the inherent vowel associated with consonant symbol. The Indian system of writing is highly scientific as the concepts of vowel, consonant and 'akshara' were developed even before the adoption of 'Brahmi'. The Indian writing system is neither alphabetic nor syllabic as 'akshara'² stands for orthographic syllable, which could visually be analysed into its constituent phonemes. Hence, Indian orthography is called alphasyllabary. It is highly transparent and visuospatially organized. As rightly pointed by Balasubrahmanyam, this provides a unique opportunity to validate and build new models on neurobiological basis of reading and dyslexia. Recently, there have been interests in the genetics of dyslexia³ in Indian languages. As regards orthography and reading in Indian languages, the National Brain Research Centre at Manesar has already initiated a series of fMRI studies focused

on reading in Devanagari⁴. In addition, cognitive and neurobiological mechanism of 'akshara' processing has been given importance in a recent research programme on cognitive science initiated by DST, New Delhi. We hope to see significant cutting-edge research on dyslexia and brain in Indian languages in the near future.

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PRAKASH PADAKANNAYA^{1,*}
NALLUR B. RAMACHANDRA²
NANDINI C. SINGH³

¹Department of Psychology, and

²Department of Zoology,

University of Mysore,

Mysore 570 006, India

³National Brain Research Centre,

NH-8, Nainwal Mode,

Manesar 122 050, India

*e-mail: prakashp99@yahoo.com

Need for Indian Education Service

A debate has begun recently regarding the need for a comprehensive reform in selection criteria of teachers in universities. At present there are 225 universities and under the present plan period 30 more (including 14 of world-class status) are to be opened. Hence there is an urgent need for the government to start an Indian Education Service (IES). If not, soon good teachers may not be available in the country. Today students are smart and progressive, while most teachers are found to be lagging behind in many aspects. Therefore, now UGC has directed that students too can monitor their teachers and grade them. This may give rise to protests from some quarters, but if refresher courses are being run for teach-

ers, it implies that they are not up-to-date with their subject.

Our higher education system is not geared to attracting talent. According to the NAAC report, about 66% of our universities and over 85% of PG colleges are below the minimum level of educational acceptability. It is an eye-opener to hear from the UGC Chairman that, 'Of the total of 225 universities and 14,000 PG colleges under UGC purview, only about 150 universities and 700 colleges are eligible to receive developmental grants and the rest do not even meet minimum academic requirements'. At present higher academic institutions, barring a few, do not contribute significantly towards creating a proper scientific

environment and culture. As pointed out earlier¹, a proper scientific environment is one which is free from bureaucratic formalities, dishonesty, false claims, sycophancy, drumbeating, etc. In spite of sufficient funds available, no proper allocation of budget or proper accountability exists giving rise to frustrations among budding academicians/scientists. According to Rao², a deteriorating condition of science teaching and research prevails in this country. This decline is common to many universities, but the movement of change must come from within the universities³. One of the main reasons for the decline over the years is less emphasis on research, and institutions which were intended to be research

centres do little or no research, with less encouragement towards interdisciplinary teaching and research.

There is not only a real hunger for quality education in India, but also a chronic shortage of good quality teachers⁴. Basically, a fundamental requirement for a university teacher is that (s)he be efficient in teaching, but also (s)he should be a good researcher. At times, promotions are given only on the basis of the former and the latter aspect is often neglected. There is no paucity of research funds, more important is proper projects and proper allocation of funds to genuine researchers. As pointed out by Mashelkar⁵, 'Teaching without research is of little use in the universities and what we need basically is a close association between all national labs with different universities which not only helps in teaching but also help us to create more quality research

scholars'. The acute shortage of qualified and dedicated teachers cannot be a real model or inspiration to the younger lot. In the name of selections and promotions; nepotism, regionalism, provincialism and casteism are more dominant than qualification and dedication of teachers. These 'isms' are spreading like cancer, the root cause being the interference by politicians. Appointments of politicians as Vice-Chancellors is causing great damage to the academic system. The present plan period is a 'knowledge investment plan' and the government is trying to make a big change in the higher education system. Simultaneously we should make the teaching profession more attractive and the problem needs to be addressed both professionally and psychologically, by giving teachers opportunities to enhance their knowledge by providing proper support systems. However, the

irony is that this profession is no longer given the due respect in the present society. The time has come when the government should start the IES, in order to promote ethical and moral values in science, and also help in building a national character.

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P. K. NAGAR

B 21/115-10A,
Batuk Dham Colony,
Kamachha,
Varanasi 221 010, India
e-mail: nagar_pk2001@yahoo.co.uk

Support fund for national researchers and knowledge workers

There is a dire need of a financial corpus dedicated to the welfare of the researchers, knowledge workers and intellectuals in the country. Researchers, thinkers and science enthusiasts, who are not supported by any regular research support grant, can be benefitted by the proceeds of the fund. The fund would also provide logistics and generate necessary infrastructure for creation of a common platform, for interaction of interested researchers and like-minded people.

The cultivation of genuine and innovative ideas and approaches is an important and indispensable step towards development of pioneering technologies for the advancement of the society and the nation. There is no dearth of intellectual talent in the country, and the need is to provide a state-funded support for its better utilization

in the economic and social upliftment of the country. There are several capable people in the unorganized sector who wish to contribute to science and research to achieve intellectual satisfaction. The support fund for national researchers and knowledge workers must function as an autonomous body and must be kept free from bureaucratic shackles and corrupt practices, which continue to ail most organizations and bodies in the organized and government sectors. The fund should be kept open to donations from private parties and organizations, besides an uninterrupted funding from the government, to meet its objectives. People of eminence and proven excellence must be entrusted with the management of the fund, so that the overall management is efficient, trans-

parent, and responsive to the ground realities of the problems faced by the researchers. The fund can also help to suitably patent and/or publish the significant findings of such freelance researchers. The creation of such a fund will encourage budding researchers to take up science, specially pure sciences as their career, and rejuvenate the entire scientific research scenario in the country.

KARTIKAY PANDEY

Dr Pandey's Laboratories and Research
Foundation,
537 Gha/84,
Behind Madiyaon Police Station,
Sitapur Road,
Lucknow 226 021, India
e-mail: drkartikaypandey@gmail.com

Challenges in marketing ayurvedic drugs in USA: possible remedies

In the recent issue of *JAMA* (2008, **300**, 915-923), an article about heavy-metal contamination in Indian-manufactured ayurvedic medicines, sold in the US via Internet marketing, was published by a group of scientists, who had earlier published a similar report in *JAMA* (2004,

292, 2868-2873). However, I must mention that the previous report was somewhat misleading, because there was no classification of herbal and herbomineral drugs and authors mentioned a high percentage of contaminated ayurvedic drugs sold in Boston, USA. However, this

time, the authors have properly classified the medicines as rasashastra (herbomineral) and non-rasashastra (herbal), which reflected actual picture of heavy-metal contamination in herbal products; the contamination is less than that in the previous report. It is well known that ayur-