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Individual differences – the British context

Gerald Matthews and K.V. Petrides open a series of articles on differential psychology.

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'Individual differences' seems an innocuous term, but the normalising of differential psychology is relatively recent in Britain. The brilliant but controversial figure of Hans Eysenck sparked polarising debates over questions such as the heritability of intelligence, the educational prospects of those low in 'IQ', and the reduction of personality to neural circuits. At the dawn of psychological science, Darwin's cousin Francis Galton was not only a Victorian genius but an enthusiast for eugenics. With the subsequent advance of neuroscience, many of the scientific arguments have lost their sting. It is now more remarkable to identify a trait that is not inherited than one that is. Popular controversies have derived more from social policy inferences than from the basic science: how much would the public care about IQ if the construct had not been embraced by professional educators? In fact, implications for policy have not gone away, but there is a mood of greater caution among both scientists and policymakers in applying findings from psychology in general.

In describing some of the key developments in British differential psychology, we will dwell antive scientific progress than on controversies. A longer piece than this might

dwell further on the colourful characters the field attracted (see Buchanan, 2010). However, the counterpoint is that, especially at the applied end of the field, much important, systematic work was conducted soberly, without undue fanfare. We will emphasise especially how some of the broad ideas that shaped the British contribution have proven foundational to much of contemporary psychology.

Beginnings – Galton and Spearman

Lacking psychological measurement, personality psychologists would have clinical observation and qualitative social constructivism, but little natural science. Modern psychometrics owes much to Galton's work on variance and correlation and its development by later British biostatisticians including Karl Pearson and R.A. Fisher. Indeed, the first verifiable psychometric laboratory in the world was set up as part of Francis Galton's Anthropometric Laboratory in South Kensington, London. Its lineal descendant, the Galton Laboratory, was established (as the Eugenics Record Office and Biometric Laboratory) at University College London in 1904, where it has survived as part of the Department of Genetics, Evolution and Environment. Galton was also instrumental in the foundation of the first formal, university-based, laboratory of psychology in Britain, inaugurated in 1898 at UCL.

A year earlier Charles Spearman had embarked on his doctoral research under the supervision of Wilhelm Wundt in Leipzig. However, the defining influence on Spearman was not Wundt's psychophysics, but Galton's psychometrics, as originally set out in his 1883 Inquiries into Human Faculty and its Development. Following a hiatus occasioned by military service, Spearman ended the controversy surrounding Galton's theories by providing conclusive positive proofs in his breathtaking 1904 paper on general intelligence. The paper complemented the contributions to psychometric testing of Alfred Binet, together with which it provided the foundation for the modern science of psychometrics. Spearman's work also solidified the idea of a unitary general intelligence that could be understood in relation to mental processes, laying the foundations both for the practical assessment of the general factor 'g' and, eventually, the modern cognitive psychology of ability. The 1904 paper also introduced factor analysis, the statistical technique that some would later use to attack the assumption of a unitary g.

In 1907 Charles Spearman was appointed Reader in Experimental Psychology at UCL, where he founded what has come to be known as the 'London School of Psychology'. A distinguished member of the school, Paul Kline, in 1986 became the first Professor of Psychometrics in Britain, at Exeter University. After Spearman's retirement in 1931 and the migration of his disciple R.B. Cattell, the influence of psychometrics in Britain started to wane, with a number of prominent labs and psychometricians assuming the mantle in North America.

The applied context for standardised testing

The years following World War I featured increasing interest in the applied use of psychometric tests, especially in occupational and educational contexts.

In 1920, the Civil Service introduced a psychological test paper for candidates for clerical posts in the service. By 1945, the service had its own research unit tasked with supplying intelligence tests for administrative, executive and clerical grades. In 1924 the Board of Education published the Hadow Report, which aimed to assess the utility of various tests for determining 'educable capacity' (academic aptitude). The report, while emphasising the unreliability of assessments of aptitude at age 11, broadly endorsed the use of intelligence tests in schools. The report also prefigured future controversies over personality assessment with the trenchant statement that 'tests of temperament and character, in their present state of development, are practically useless to teachers' [for assessing educable capacity].

The educational applications of testing were taken up by the Scottish School of Educational Research, following the 1925 arrival of Godfrey Thomson at the Moray House teacher training college in Edinburgh. Thomson was a notable critic of Spearman, preferring a notion of overlapping 'bonds' to the general intelligence factor g. As an educator, his concern was the selection of 11-year-olds for what was at that time the privilege of free secondary school education. One of Thomson's tests was used for what remains today the unique means of testing the entire population of a country on mental ability. In June 1932, almost all Scottish children born in 1921 were administered the test, which was named the Scottish Mental Survey. Remarkably, the original data from that survey, and a follow-up in 1947, were rediscovered in the mid-1990s. Researchers led by Ian Deary of the University of Edinburgh were able to locate original participants who were still alive, and secure data on their neurocognitive and medical functioning in old age. These studies provided a platform for the new field of 'cognitive epidemiology', which explores how cognitive ability influences health across a person's lifespan (see p.30, this issue).

London calling – the theories of Eysenck and Gray

The London School was to be revived by Hans Eysenck, who obtained his PhD from UCL in 1940, and became director of the Psychology Department of the University of London's Institute of Psychiatry, located at the Maudsley Hospital, in 1950. Eysenck made pivotal contributions across the spectrum of individual differences research, most famously through his work on both the psychometrics and the biological bases of personality, and to a much lesser extent intelligence. His personality work established the extraversion and neuroticism traits as central for the field. His arousal theory of personality, although often challenged, stimulated experimental studies that answered Cronbach's famous call for an integration of differential and experimental psychology. Eysenck's numerous articles and books on intelligence were arguably less original, but more controversial, in promoting Arthur Jensen's hereditarian view of intelligence, who was a postdoctoral researcher at the Institute from 1956 to 1958. Eysenck's critiques of psychoanalytic treatments also shook up clinical practice, and paved the way for modern evidence-based approaches.

We will see the influence of Eysenck's work across this special issue, particularly in the article by Alan Pickering and colleagues. Eysenck was also instrumental in founding the International Society for the Study of Individual Differences, and its journal, Personality and

Individual Differences. Much empirical research duly followed, across Europe and North America. In Britain, especially notable contributions were made to psychophysiology by Tony Gale, to social psychology by Adrian Furnham, to behaviour genetics by Lindon Eaves and David Fulker, to abnormal personality by Gordon Claridge, and to an emerging cognitive neuroscience of personality by Hans Eysenck's son, Michael.

Many of Eysenck's basic assumptions about personality were shared by another major figure, Jeffrey Gray. He obtained his PhD from the Institute of Psychiatry in 1964. After lecturing at the University of Oxford, he took over from Eysenck as Chair of Psychology at the Institute in 1983. Gray's work featured a more overt focus on animal models of emotion and motivation as the basis for understanding human personality. His theory of traits, now known as reinforcement sensitivity theory (RST), emerged as a worthy competitor to Eysenck's arousal theory during the 1970s (e.g. Gray, 1987). Gray also addressed the 'hard problem' of consciousness in typically original style
in his book published in the year of his death, 2004. Again, we will see the influence of Gray across this special issue, particularly in the next article, which notes that work on RST continues in Britain, led by Philip Corr and Alan Pickering. However, the theory has now attained international status, guiding work on personality neuroscience worldwide.

Applied differential psychology in contemporary Britain

It would be remiss to omit the British contribution to the assessment of individual differences in applied psychology. We are returning here to the world of civil service testing and the Scottish School of Educational Research. Numerous tests and scales developed by British psychologists have been used in occupational, educational and clinical psychology, but we will briefly dwell on two more general social trends: the retreat from aptitude testing in schools, and the increasing acceptance and regulation of the use of individual difference measures in organisational psychology.

In education, standardised testing tends to go in and out of fashion. The high-water mark in Britain may have been the use of intelligence tests as part of the eleven-plus examination that was widely used from the 1940s to the 1960s to allocate children into the sector of secondary school education deemed appropriate for them. Recent interest in the possible role of emotional intelligence in the classroom echoes this early work. Concerns about social fairness and differing maturational trends of children undermined the acceptability of the eleven-plus. Twenty-first century concerns with standardised testing focus more on educational attainment (reflecting teachers' as well as students' skills) than on basic aptitude testing, although disentangling aptitude from attainment remains a thorny assessment issue.

By contrast, the use of standardised tests in occupational selection procedures has been common in Britain since the 1980s. Peter Saville's Occupational Personality Questionnaire was notable as an instrument developed specifically for the organisational context. In the early 1990s, the British Psychological Society began to study standards for applied
road remit that led eventually to the current BPS Committee on Test Standards.

A new growth area for testing is the measurement of subjective well-being in Britain, the subject of a recent working paper from the Office of National Statistics.

Vindication

Differential psychology has always faced two kinds of challenge. The first is how to maintain a focus on the whole person as a foundational element for basic and applied psychology. The second is how
to differentiate the multiple and separable characteristics that make up the whole. As Cooper (1998) discusses, the dimensional models promoted by Eysenck, Cattell and others capture the substantive ways in which people differ, thereby encapsulating the discipline's most significant and lasting scientific contributions, including g, neuroticism, and extraversion. Dimensional models do not preclude a focus on the person. One of Hans Eysenck's most successful books was entitled Psychology Is about People (1972). How many psychologists these days would be able, or indeed dare, to write about the whole person?

In past times, differential psychology may have appeared from the outside to be a ghetto inhabited by fanatic number-crunchers, evangelical hereditarians and gentlemen-eccentrics. Such a view was always a caricature, but vindication has arrived via the permeation of the core ideas of the British researchers across the spectrum of the theoretical and applied disciplines of psychology. Differential psychology not only stands independently as its own approach, but also as a foundational element for all applied branches of psychology, including educational, occupational, clinical and counselling psychology.

At the same time, the international nature of the field makes it difficult to identify a uniquely 'British' differential psychology, at least in contemporary research. Indeed, the leading British researchers had an international outlook. Spearman was a student of Wundt, Eysenck was familiar with Continental schools of thought on personality, and Gray was influenced by the neo-Pavlovian psychology of the Soviet Union. We can point to the historical influence of the London School in promoting the importance of rigorous psychometrics, and the legitimacy of biological models of personality and ability. Both propositions had been fiercely challenged in the past, but neither is now controversial within mainstream psychological science.

Several more specific themes have been prominent in (though not unique to) Britain. It is hard to imagine psychology without the psychometrics of Galton and Spearman. Some social psychologists of the 1980s would routinely dismiss the brain as an irrelevance; the growth of social neuroscience illustrates the retreat of such a view. Similarly, few domains of psychology have not been profoundly influenced by behavioural and molecular genetics. Indeed, the Social, Genetic & Developmental Psychiatry Centre at the Institute of Psychiatry continues to be a world-leading centre of research. Within differential psychology itself, the trait approach associated with Eysenck and Cattell is the dominant paradigm, though not all-consuming. Standardised assessments remain central to educational, and organisational psychology. Dimensional models of abnormality increasingly feature in clinical psychology, and are highlighted in DSM-5.

We might also see a certain parsimony in the British perspective, not least in the preference for a unitary g-factor over a multiplicity of cognitive abilities. The personality theories of Eysenck and Gray are based on simple, readily testable propositions about the relationships between traits and gross features of the brain. In the spirit of British empiricism, the theory rarely strays too far from empirical observations. Whether this theoretical stance is sufficient to capture the complexities of individual differences is open to debate. It does lend itself to practical application through its support for standardised testing in applied settings. Indeed, the universalist and achievement-oriented nature of Anglo-Saxon culture may be conducive to a focus on measurable, objective criteria, such as test performance.

Popular ambivalence over intelligence testing raises the question of whether the theoretical contributions of the London School have made as much of a contribution to general welfare as they might. Certainly, its proponents have shown little fear of controversy and even public opprobrium. Nevertheless, we can assert with confidence that the contributions of British differential psychologists will continue to influence future theory and practice. Other articles in this special issue will give you a flavour of how.

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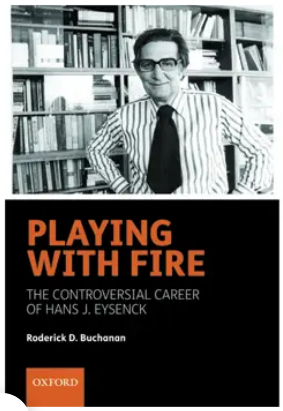

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05 September 2010

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