LONDON'S GLOBAL UNIVERSITY

UCL

London Conference on Intelligence 2015

Prof Charles Spearman, UCL

1863 – 1945

London Conference on Intelligence 2015

Friday 8 May

2 pm *Meeting speakers*
3:50 Welcome and Introduction. J Thompson
4:00 By their words ye shall know them. MA Woodley of Menie, HBF Fernandes, AJ Figueredo, G Meisenberg
4:30 Evolution versus culture in international intelligence differences. H Rindermann
5:00 *Tea*
5:30 Plenary discussion with previous speakers
6:15 Guided London walk (12 minutes) to The Marquis Cornwallis, 31 Marchmont Street, London WC1N 1AP for your choice of pub drinks and gastro-pub food.

Saturday 9 May

9:30 Spearman's Hypothesis: Hypothesis or Law? M van den Hoek, J te Nijenhuis
10:00 Androgen Levels and K theory. E Dutton
10:30 Race and sex differences in occupational achievement. H Nyborg
11:00 *Coffee*
11:30 Spearman's hypothesis tested on group differences in personality. J te Nijenhuis
12:00 Admixture in the Americas. J Fuerst, E Kirkegaard
12:30 Meta-analysis of Roma intelligence. D Jurasek, J te Nijenhuis, J Cvorovic
1:00 Plenary discussion with previous speakers
1:30 *Lunch break*
2:30 Darwin's "Altruistic Words" Versus *Wordsum* "Easy Words" and "Hard Words". AJ Figueredo, HBF Fernandes, M Woodley of Menie, G Madison
3:00 General and domain-related effects of prenatal methylmercury exposure. F Debes.
3:30 In chimpanzees, more g-loaded cognitive abilities are more heritable, evolvable, and exhibit more inter-individual variability. H Fernandes, MA Woodley of Menie, W Hopkins.
4:00 *Tea*
4:30 Intelligence is correlated with higher non-verbal ability. K Kura, D Templar
5:00 Hormones and Nobel Prizes. D van der Linden, E Dutton, T Wicaksono
5:30 Plenary session with previous speakers
6:00 Pre-dinner pub drinks: The Grafton Arms, 72 Grafton Way London W1T 5DU (5 mins away, and very close to the dinner location
7:30 Speaker's Dinner: Ask Italian, 48 Grafton Way, LondonW1T 5DZ. (4 minutes away). Non-speakers welcome at their own cost.

Sunday 10 May

9:00 The efficacy of early childhood interventions in improving cognitive outcomes. A Sabisky
9:30 Does intelligence explain over-representation of liberals and leftists in US academia? N Carl
10:00 Well, colour me stupid! Secular declines and a Jensen effect on color acuity. MA Woodley of Menie, HBF Fernandes.
10:30 *Coffee*

11:00 Plenary session with previous speakers.
11:30 Communicating our work to the public. J Thompson
11:45 Planning for next year: inviting the public; date, day of week, conference content, location.
12:30 Close of conference
Farewell Lunch and drinks at The Marquis Cornwallis.

Does intelligence explain the over representation of liberals and leftists in American academia?

Noah Carl, Department of Sociology, Oxford University, United Kingdom.

It is well known that individuals with so-called liberal or leftist views are over represented in American academia. By bringing together data on American academics, the general population and a high-IQ population, the present study investigates how much of this overrepresentation can be explained by intelligence. It finds that intelligence can account for most or all of the disparity between academics and the general population on the issues of abortion, homosexuality and traditional gender roles. By contrast, it finds that intelligence cannot account for any of the disparity between academics and the general population on the issue of income inequality. But for methodological reasons, this finding is tentative. Furthermore, the paper finds that intelligence accounts for less than half of the disparity between academics and the general population on liberal versus conservative ideology, and on Democrat versus Republican identity. Overall, the findings of this study suggest that intelligence explains some but not all of the overrepresentation of liberals and leftists in American academia.

Population differences in androgen levels: A test of the Differential K theory

Edward Dutton, Department of Anthropology, University of Oulu, Finland

Life History Theory allows the categorization of species along a continuum ranging from fast (r) to slow (K) reproductive strategies. A fast LH strategy is characterized by having large numbers of offspring, but providing relatively little parental care. It tends to be observed in unstable ecologies in which it is beneficial to produce many offspring in order to ensure that at least some survive the relatively unpredictable dangers, such as pathogens and predators, which lead to high mortality rates (Ellis, Figueredo, Brumbach, & Schlomer, 2009). Slow LH strategists have smaller numbers of offspring, but provide relatively high levels of parental care. They also tend to mature more slowly and live longer than fast LH strategists. A slow LH strategy tends to be observed in more stable ecologies.

J. Philippe Rushton's Differential-*K* Theory (Rushton, 1995) applies this model to differences races, in other words human sub-species evolved to different environments. Rushton's theory predicts that levels of male hormones, i.e., androgen, differ across three large ethnic groups with Sub-Saharan Africans having the highest levels, East Asians the lowest, and Caucasians (Europeans, North Africans and South Asians) being intermediate. Rushton examined a number of hormone indicators in this regard, most notably average penis length. This provoked a great deal of controversy, with accusations that the sources of his penis data was unreliable and similar allegations were levelled when Lynn (2013) published further data on race differences in penis length. Clearly, Rushton's argument can be tested be examining race differences in more androgen measures. If these are in the expected direction and correlate then Rushton's argument is strengthened and, specifically, the reliability of the penis data is validated.

In this study, therefore, we examined 6 national level indicators of androgen: (1) CAG repeats on the AR gene. (2) Androgenic hair (3) Prostate cancer incidence. (4) Sex frequency. (5) Number of sex partners and (6) Penile length. We drew upon data sets allowing us to compare national differences on these measures. We divided the nations up into the three main racial groups, based on the dominant ethnic group in any given nation. We found that the measures correlated in the expected direction, thus evidencing the reliability of the penis datasets presented by Rushton and later by Lynn. In addition, tests of the three ethnic groups showed that, compared to Caucasians, East Asians consistently showed signs of lower androgen level in each indicator. Comparisons involving Sub-Saharan Africans were mixed as this group displayed signs of having the highest androgen levels on some indicators (CAG repeats of the AR gene, penile length), but not on others (androgenic hair, prostate cancer incidence,). We argued that the findings in the unexpected direction can likely be explained by differences in diet and cold adaptation. A diet higher in fat is associated with prostate cancer while a hot environment may select against excessive hairiness. Overall, the present findings partially validate Differential *K* Theory.

The more *g*-loaded, the more heritable, evolvable, and phenotypically variable: Homology with humans in chimpanzee cognitive abilities

Heitor B. F. Fernandes, Departments of Psychology and Genetics, Federal University of Rio Grande do Sul, Brazil
Michael A. Woodley of Menie, Department of Psychology, Technische Universität Chemnitz, Chemnitz, Germany; Center Leo Apostel for Interdisciplinary Studies, Vrije Universiteit Brussel, Belgium
William D. Hopkins, Neuroscience Institute and Language Research Center, Georgia State University, Atlanta, Georgia, USA; Division of Developmental and Cognitive Neuroscience, Yerkes National Primate Research Center, Atlanta, Georgia, USA

Expanding on a recent study that identified a heritable general intelligence factor (*g*) among individual chimpanzees from a battery of cognitive tasks, we hypothesized that the more *g*-loaded cognitive abilities would also be more heritable in addition to presenting greater additive genetic in variance and interindividual phenotypic variability. This pattern was confirmed with multiple analytical approaches, and is comparable to that found in humans, indicating fundamental homology. Finally, tool use presented the highest heritability, the largest amount of additive genetic variance and phenotypic variance, consistent with previous findings indicating that it is associated with high interspecies variance and has evolved rapidly in comparative primate studies.

Relative Frequencies of *Ngram*-Tracked Historical (AD 1850-2000) Anglophone Usage of Darwin's (1871) Group-Selected "Altruistic Words" Versus *Wordsum* "Easy Words" (*s.e*) and "Hard Words" (*g.h*)

Aurelio José Figueredo, Department of Psychology, University of Arizona, Arizona, USA
Heitor Barcellos Ferreira Fernandes, Departments of Psychology and Genetics, Federal University of Rio Grande do Sul, Brazil
Michael Anthony Woodley of Menie, Department of Psychology, Technische Universität Chemnitz, Chemnitz, Germany; Center Leo Apostel for Interdisciplinary Studies, Vrije Universiteit Brussel, Belgium
Guy Madison, Department of Psychology, Umeå University, Umeå Sweden

Following predictions originally made by Darwin (1871), Woodley & Figueredo (2013) proposed a multilevel selection model in which "eminence", being a relatively rare combination of high *g* and altruism, was selected *for* in the process of inter-group competition and selected *against* in the concurrent process of in inter-individual competition. There should be associations at the aggregate level between higher levels of cognitive ability and behavioural dispositions that are "altruistic". No such relation is evident at the individual level, as reflected by the small correlations between *g* and *K*, with the latter indicating a "slower" and generally more prosocial life history strategy. Further, the multilevel selection model implies that any temporal trends over historical time showing aggregate changes in cognitive ability should predict the temporal trajectories of any historical trends manifested in aggregate group-selected altruism. To test these predictions, we used Google *Ngram* to track the relative frequencies of word-usage from 1850-2000 in the Anglophone literature of a sampling of 10 words used by Darwin (1871) to describe altruistic dispositions as lexical indicators of that tendency. An *unconditional* growth curve multilevel regression model showed that the use of these words declined significantly over the specified historical period, even when controlling for word age, changing literacy rates, and the cognitive load of each individual word. We then constructed two separate unit-weighted factor scales from the subsets of *Wordsum* items identified as "hard" − theoretically indicating heritable general mental ability (*g.h*) − and "easy" − theoretically indicating environmentally-influenced specialized mental abilities (*s.e*) − that in previous work, were observed to be trending historically in opposite directions since AD 1850, consistent with predictions from the co-occurence model. *Unconditional* growth curve multilevel regression models also confirmed that these two factor scales collectively increased or decreased significantly over the specified time period exactly as had their individual components. Next, a *conditional* growth curve multilevel regression model showed that the use of "altruistic" words was significantly *disfavoured* by higher levels of *s.e*, which had been *increasing* over time, but significantly *favoured* by higher levels of *g.h*, which had been *decreasing* over time. The use of "altruistic" words was significantly disfavoured by the item difficulty of each word, and this effect had statistically significant and contrary interactions with *s.e* and *g.h*. Even when statistically controlled for these effects, the residual temporal trajectory of the use of "altruistic" words was still significantly negative, indicating that these predictors only account for half of the systematic variance of the observed declines in aggregate altruistic dispositions over time. These findings support the predictions of the multilevel selection model in documenting specific temporal associations between the general and specialized components of human mental ability consistent with multi-level selection.

The effects of methylmercury on general intelligence in young adults and children

Debes Fróði, Psychologpraxis, Denmark

Presented is an SEM-analysis of an examination of a birth cohort from the Faroe Islands at age 22 years. The research question is if prenatal exposure to methylmercury, from the mother's diet, originating from the accumulation of methylmercury in the marine food chain, has an adverse effect on the development of the nervous system of the subjects. We have found a slight but significant negative effect on the general factor of intelligence at age 22 years. The work is in progress. The same birth cohort has previously been examined at age 7 years and at age 14 years. In the papers reporting those results, a multiple single test approach was used as is common in clinical neuropsychology. Structural equation modeling was only applied with a first-order factor at age 14 years. The next project will be to reanalyze those data, creating instead a general factor of intelligence from the tests administered at those two ages, and test the effect of methylmercury on the *g*-factors.

Admixture in the Americas

John Fuerst, Independent Resaercher, USA
Emil O. W. Kirkegaard, Department of Linguistics, Aarhus University, Aarhus, Denmark.

We review studies from across the Americas examining the association between (1) genomic racial admixture and educational/socio-economic outcomes, (2) socially defined ethno-racial identity and cognitive ability and (3) genomic race and cognitive ability. We find that, within nations, continental ethno-racial identity, genomic racial admixture, and genomic race is associated with cognitive ability and educational/socio-economic outcomes in the way predicted by the global hereditarian hypothesis; specifically African, Amerindian, and Oceanian ethnicity and ancestry is negatively associated with outcomes relative to European (and East Asian) ancestry. We conducted novel analyses regarding the association between regional and national genomic racial admixture, cognitive ability, and socioeconomic well-being. We find that regional and national European admixture is fairly consistently positively associated with cognitive outcomes; and that the association between color and cognitive ability on the national level is mediated by genomic admixture. We find that the association between regional European admixture and national socio-economic outcomes is more complex. Finally, we show that genomic admixture weighted SNP-based cognitive scores strongly correlate with national cognitive ability scores.

A Meta-analysis of Roma Intelligence: an update

Dalibor Jurášek, Center for Cognitive Science, Comenius University in Bratislava, Slovakia
Jan te Nijenhuis, Work and Organizational Psychology, University of Amsterdam, the Netherlands
Jelena Čvorović, Institute of Ethnography, Serbian Academy of Sciences and Arts, Belgrade, Serbia

The Roma are the only major European ethnic group the average IQ of which is unknown. Although there is a substantial amount of research on this topic, most of it consists of Eastern European studies in various languages and sources hard to obtain. To date, this body of literature has not been brought together in a comprehensive manner, nor is it known to the international scientific community. For example, Lynn and Vanhanen (2012) estimate the IQs of many ethnic groups, but their estimate of Roma IQ is based on only one study. A partial review of the Czech and Slovak literature was conducted by Bakalář (2004), but does not include newer studies and studies from other countries. Our meta-analysis aims to unite the existing literature on Roma intelligence and draw statistical conclusions.

We conducted an extensive search to include texts in English, German, French, Dutch, Hungarian, Romanian, Slovak, Czech, Serbo-croatian, and Bulgarian. Our search methods included electronic search, manual search, and consultation with experts in the field. The search has yielded more than 60 articles with 43 usable samples. Data analysis is in progress.

We will present an estimate of the overall Roma IQ, showing that the Roma are the group with the lowest IQ in Europe. We will compare IQs of different Roma sub-populations (normal schools, special schools, delinquents, orphanages). We will show that the Roma are possibly the only group in the world for which there is no Flynn effect.

We will also take a look at the often stated criticism that there is a substantial language bias against the Roma in IQ tests. We will show that such a bias is unlikely, as there is no substantial difference between Roma verbal and performance IQ scores. We will present tests of Spearman's hypothesis for the Roma. Finally, we will show support for the cumulative deficit hypothesis: the older Roma are, the lower their IQ scores become. We will also deal with the methodological limitations of our data.

Intelligence is correlated with higher non-verbal ability compared with verbal ability

Kenya Kura, Department of Psychology, Gifu Shotoku Gakuen University, Japan.
Donald I. Templer, Department of Psychology, Alliant International University, Fresno, CA, USA

The purpose of the present study was to determine the relationship between national intelligence, geographic latitude, and the relative strength of verbal and non-verbal intelligence. Non-verbal intelligence was conceptualized as those cognitive skills that East Asians are stronger in, when compared to Whites and males to females. By subtracting reading scores from mathematics scores in various data sets such as PISA, we created a "mathematical dominance" scale. Our meta-analysis revealed that it was correlated with higher intelligence ($r = .332$, $p < .0001$) and with latitude ($r = .345$, $p < .0001$). Theoretical and practical implications are suggested.

Spearman's hypothesis tested on group differences in personality.

Jan te Nijenhuis, Work and Organizational Psychology, University of Amsterdam, The Netherlands

Many studies have been conducted on differences in mean intelligence test scores between ethnic groups. Spearman's hypothesis states that the group differences on the subtests of IQ batteries can best be explained in terms of differences in the complexity of the tasks, that is, the demands they make on the general factor of mental ability, the *g* factor. So, large differences on subtests with high g loadings and small differences on subtests with low g loadings. In a review of many studies Jensen (1998) reports a correlation of .63 between subtests' *g* loadings and mean group differences on those subtests for Blacks and Whites. Recent meta-analyses by te Nijenhuis and co-workers also show strong confirmations for Jews and Amerindians. Spearman's hypothesis has also been confirmed at the item level comparing Libyans to various other groups.
Many studies have also been conducted on differences in mean scores on the various scales of personality questionnaires between ethnic groups. Research of the last decade has clearly shown that at the top of a hierarchical personality model there is a General Factor of Personality, the equivalent of the *g* factor in intelligence. We tested Spearman's hypothesis for group differences in personality: can the group differences on the scales of a personality questionnaire be explained in terms of the GFP-loadedness of the scales? So, large group differences on scales with high GFP loadings and small differences on scales with low GFP loadings.
In our work in progress we tested Spearman's hypothesis on several datasets, for instance comparing Blacks and Whites, and comparing Dutch and third world immigrants. In some comparisons Spearman's hypothesis is confirmed, but in other cases there is no confirmation.

Race and sex differences in intelligence and occupational achievement

Helmuth Nyborg, Department of Psychology, Aarhus University, Aarhus, Denmark (emeritus)

Representative data for 15+ million 12-17 years old adolescents living in the US in 1997 are used to illustrate race and sex differences in general intelligence. As expected, races ranked themselves white>Hispanic>blacks. Female IQ began to trail male IQ by 3.6 to 7.03 points, after age 16. Classical distribution theory is used to establish Male/Female probabilities and ratios at the low and high end of the IQ distribution. Male/Female ratios at IQ 145 predict high-level female occupational achievement fairly well. Speculations are offered to explain the origin of sex and race differences, as well as their physiological basi

Evolution vs. culture as background factors for international intelligence differences

Heiner Rindermann, Department of Psychology, Chemnitz University of Technology, Germany

Why are international differences in cognitive test results large and stable? This talk examines the contributions of two paradigmatic background factors: evolution (as indicated by cranial capacity, skin brightness, genetic distances, haplogroups, and consanguinity) and culture (education, rationality, thinking and meritocracy weighted religions).

The efficacy of early childhood interventions in improving cognitive outcomes

Andrew Sabisky, Institute for Education, University of London, London, UK

Recent policy proposals in the US and UK focus on the importance of early childhood intervention (ECI) as a potentially important avenue for improving cognitive outcomes. This paper evaluates the credibility of these claims from a variety of angles, reviewing the consequences of severe but specific deprivation in the understudied hearing children of deaf parents, while also reviewing the existing literature on ECI. It is argued that many of the claims in favour of ECI cannot be supported and that programs specifically aimed at boosting academic achievement in older children may show more promise.

Spearman's hypothesis: Hypothesis or Law?

Michael van den Hoek, Work and Organizational Psychology, University of Amsterdam, the Netherlands
Jan te Nijenhuis, Work and Organizational Psychology, University of Amsterdam, the Netherlands

Originally Spearman's hypothesis posits that group differences between Blacks and Whites are mostly explained by differences in general intelligence, or *g* (Spearman, 1927). This finding has consistently been confirmed (e.g. Naglieri & Jensen, 1987; Nyborg & Jensen, 2000; Rushton & Jensen, 2003). In our studies we tested Spearman's hypothesis on the intelligence differences between several groups, as well as on the differences between regions and countries, to see if these differences are due to differences in *g* or possibly due to other variables (te Nijenhuis & van den Hoek, 2015).

Using the method of correlated vectors we meta-analytically tested Spearman's hypothesis on 1) Hispanics, 2) Amerindians, 3) Northeast Asians and Black and White Prisoners, and 4) several different ethnic groups using non-verbal and culture-reduced tests. Furthermore, we also tested Spearman's hypothesis 5) between regions in the U.S., Portugal, Spain, Italy, and India, 6) between Libya and several other countries using the items of the Raven's, and 7) between many countries using achievement test data.

We found strong confirmation of Spearman's hypothesis for Hispanics, Amerindians, and when using non-traditional intelligence tests. The study of Spearman's hypothesis for the differences between Libya and several other countries using item scores found substantial correlations between *d* and *g*.

However, for the differences in intelligence between regions within countries, we did not find a confirmation of Spearman's hypothesis for any of the countries in question. Nor did we find a confirmation of the hypothesis between countries.

There only seemed to be two exceptions to this law-like phenomena for ethnic groups: Northeast Asians and Black and White prisoners. While the data on these groups were limited, they did not show a strong correlation between *d* and *g* for entire tests, but showed some substantial correlations on the performance and verbal scales.

National-level indicators of male hormones (androgen) relate to the global distribution of number of scientific publications and Nobel Prizes

Dimitri van der Linden, Department of Psychology, Erasmus University Rotterdam, The Netherlands
Edward Dutton, Department of Anthropology, University of Oulu, Finland
Tri Wicaksono, Department of Psychology, Erasmus University Rotterdam, The Netherlands

There are country-level differences in the number of scientific publications produced and the number of science Nobel laureates. Factors such as general development of a country and its average intelligence may partly explain such differences. We hypothesized, however, that male hormones (androgen) may also contribute to scientific activity and the number of science Nobel prizes obtained. At the country level, we tested this hypothesis by examining, on the one hand, the national (per capita) number of citable scientific publications in Scopus and the number of Nobel prizes, and on the other hand, a range of national-level indicators of androgen, namely, 1) the number of CAG-repeats in the AR gene (a gene related to sensitivity for testosterone), 2) androgenic hair, 3) prostate cancer incidence, 4) the D2:D4 finger digit ratio, 5) penile length, and 6) libido (e.g., sex frequency). In addition, we took into account national estimates of IQ and Gross Domestic Product (GDP). Results showed that the vast majority of androgen indicators were either directly related to national-level scientific publications/Nobel prizes, or otherwise showed a relationship with them in those countries in which the average national intelligence was relatively high (e.g., IQ > 90). Even after controlling for GDP, many of the relations between scientific measures and androgen indicators remained intact. Overall, the present findings are the first to directly support the notion that at the national level, once a sufficient level of intelligence is present, androgen may further contribute to scientific activity and the odds of winning a science Nobel Prize.

By their words ye shall know them: Evidence of genetic selection against general intelligence and concurrent environmental enrichment in vocabulary usage since the mid 19th century

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Heitor B. F. Fernandes, Departments of Psychology and Genetics, Federal University of Rio Grande do Sul, Brazil
Aurelio José Figueredo, Department of Psychology, University of Arizona, Arizona, USA
Gerhard Meisenberg, Department of Biochemistry, Ross University School of Medicine, Dominica

It has been theorized that declines in general intelligence (*g*) due to negative selection and the Flynn effect co-occur, with the effects of the latter being concentrated on less-heritable non-*g* sources of intelligence variance. Evidence for this comes from the observation that 19th Century populations were more intellectually productive, and also exhibited faster reaction times than modern ones, suggesting higher *g*. This co-occurrence model is tested via examination of historical changes in the utilization frequencies of words from the highly *g*-loaded WORDSUM test across 5.9 million texts spanning 1850 to 2005. Consistent with predictions, words with higher difficulties (δ parameters from Item Response Theory) and stronger negative correlations between pass rates and fertility declined in use over time whereas less difficult and less strongly selected words, increased in use over time, consistent with a Flynn effect stemming in part from the vocabulary enriching effects of increases in population literacy. These findings persisted when explicitly controlled for word age, changing literacy rates and temporal autocorrelation. These trends constitute compelling evidence for the co-occurrence model.

Well, color me stupid! Secular declines and a Jensen effect on color acuity

Michael A. Woodley of Menie, Department of Psychology, Technische Universität Chemnitz, Chemnitz, Germany; Center Leo Apostel for Interdisciplinary Studies, Vrije Universiteit Brussel, Belgium
Heitor B. F. Fernandes, Departments of Psychology and Genetics, Federal University of Rio Grande do Sul, Brazil

Spearman's Other Hypothesis predicts that the common factor variance among sensory discrimination measures is identical to general intelligence. The co-occurrence model predicts that low-complexity physiological intelligence indicators reliably measure g across cohorts, and should therefore decline with time due to genetic selection and mutation accumulation. As strong relations exist between general sensory discrimination and *g*, it is predicted that such measures should show evidence of secular declines. This is tested using *N*-weighted temporal regression of square-root Total Error Scores (√TES), obtained from four Western normative samples collected in the 1980's, 90's and 2000's (combined *N*=753) evaluated using the Farnsworth-Munsell 100-Hue color acuity test (*g* loading=.65). A significant temporal β value of .66 was found (controlling for national IQ), suggesting a decline in color acuity equating to a reduction in *g* of -4.5 points per decade. Analysis of the subset of the cohorts aged 20-29 years, in which color acuity is maximized, reveals a larger anti-Flynn effect (β=.89, *N*=199, -8.7 points per decade). Also consistent with the Other Hypothesis is the finding that 100-Hue acuity-IQ correlations are associated with the Jensen effect. The aggregate vector correlation across two studies is .63 (*N*=932.5).