

THE INCREASE OF INTELLIGENCE IN SUDAN 1964 - 2006

PERSONALITY AND INDIVIDUAL DIFFERENCES

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ARTICLE INFO

Article history:

Received 6th March 2008

Received in revised form 16th May 2008

Accepted 20th May 2008

Available online 26th June 2008

Key-works:

Flynn effect

Intelligence

Draw-a-man

Sudan

ABSTRACT

Results are reported for mean IQs on the Draw-a-Man Test for 4 – 10 years olds in Sudan in 1964 and 1006. There was a gain of 12.2 IQ points over the 42 years, representing 2.9 IQ points a decade.

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1. Introduction

Secular increases in IQs were reported in the United State in the 1940s by Wheeler I. R. (1942), Smith S. (1942) and Tudenham R. D. (1948). Shortly afterwards similar IQ increases were reported in Scotland (Scottish Council for Research in Education, 1949) and in England (Cattell R. B., 1950). Further work documenting this phenomenon has been published for a number of other countries by Lynn R. and Hampson S. I. (1986), Flynn J. R. (1987), after whom the increases have been named the “Flynn effect”. Virtually all these IQ increases have been reported in economically developed nations. There have, however, been three reports of IQ increases in the economically undeveloped nations of Kenya, Brazil and Dominica. In Kenya an IQ increase of 14 IQ points from 1984 to 1998 (10.00 IQ points a decade),

based on samples of 7 years olds measured by the Colored Progressive Matrices, was reported by Daley T. C., Whaley S. F., Sigman M. D., Espinosa M. P. and Neuman C. (2003). In Dominica, an IQ increase of 18 points (5.1 IQ points decade), in cohorts both in 1948 and 1983, measured by the Standard Progressive Matrices (SPM), has been reported by Meisenberg G., Lawless F., Lambert F. and Newton A. (2005). In Brazil an IQ increase of 17 IQ points from 1930 to 2002 (2.4 IQ points a decade), based on sample of 7 – 11 years olds measured by the Draw – a – Man Test, was reported by Colom R., Flores–Mendoza C. F. and Abad F. J. (2007).

In this paper we make a further contribution to the issue of IQ increases in economically undeveloped nations by presenting data for an IQ increase in Sudan.

2. Method

The study examines an increase of IQ in Sudan between the years 1964 and 2006 measured by the Draw – a Man Test. This test was constructed in the United States by Goodenough F. I. (1926) and consists of drawing a man and is scored for the presence or absence of 51 items such as eyes, eyebrows, ears, arms, legs, elbows and so forth. The rationale of the test is that intellectual development will be reflected in the details given in drawings of the human figure. The reliability estimates (test-retest) range from 0.60 to 0.91 (Scott, 1981). Recently, the test-retest reliability was estimated at 0.63 and the inter-rater agreement reliability was estimated as a value of 0.98 (Margues S. I. et al., 2002).

There is good evidence for the validity of the Draw-a-Man Test. Harris D. B. (1963) reported correlations ranging between 0.38 and 0.77 with the WISC and between 0.26 and 0.92 with the Standard-Binet, Aikman K. G., Belter R. W. and Finch A. J. (1992) found a correlation of 0.48 between the Draw-a-Man Test scores and the Wechsler IQ. Abell S. C., Brisen P. D. V. and Waitz I. S. (1996) reported a correlation of 0.50 with the WISC-R IQ and a correlation of 0.37 with the Standard-Biner IQ.

Draw-a Man Test was standardized in Sudan in 1964 by Badri M. B. (1965a). Badri M. B. (1965b), Badri M. B. (1966), and Badri M. B. and Dennis W. (1964) on a representative sample of 1345 school children aged 4 – 10 years, comprising boys and girls, from rural and urban areas and in pre-schools and primary schools. The test has

been re-standardized in Sudan in 2006 on a similar representative sample of the same size (Abdelwhid S. B., 2006; Khaleefa O. H., Abdelwahid S. B. & Abdulradi F., 2008). The results of this new standardization are only available in unpublished reports in Arabic and are summarized here.

3. Results

Both the 1964 and the 2006 standardizations were scored using the American norms given by Goodenough F. I. (1926). The mean IQs of the sample were 83.45 in 1964 and 95.64 in 2006. The standard deviation of the 1964 sample was not reported but of the 2006 sample is 10.09. The IQ gain is 12.19 IQ points over the 42 years, representing 2.90 IQ points a decade.

4 Discussion

The IQ gain in Sudan is closely similar, although slightly greater than the gain on the Draw-a-Man Test of 2.4 IQ points a decade in Brazil from 1930 to 2002 reported by Colom R. et al. (2007). These gains are lower than the 5 IQ points per decade on the Standard Progressive Matrices (SPM) in Dominica reported by Meisenberg G. et al. (2005). They are also much lower than the 10 IQ points per decade increase on the Colored Progressive Matrices in Kenya reported by Daley T. C. et al. (2003). These differences are not surprising since tests of different abilities show different rates of increase. On the basis of the present limited evidence, it can reasonably be concluded that IQ increases in economically undeveloped nations have been increasing during the last half century or so at about the same rate as the IQ increases in the economically developed nations. However, several studies have shown that the secular IQ gains in some of the economically developed nations have recently ceased or even gone into reverse, e.g. in Norway (Sundet J. M., Barlaug D. G. and Torjussen T. M., 2004), Australia (Cotton S. M. et al., 2005), Denmark (Teasdale T. W. & Owen I., 2008) and Britain (Shayer M., 2007). It may be that the IQs in the economically developing nations will catch up with those in economically developed nations in the decades that lie ahead. Only time – and further research – will tell.

References

1. Abdelwahid S. B. (2006). A replication of the Draw-a-Man Test: *The increase of intelligence 1964-2006 in Khartoum State (in Arabic)*. Unpublished master thesis, Sudan: Omdurman Islamic University.
2. Abell S. C. Brisen P. D. V. & Waitz I. S. (1996). Intellectual evaluations of children using human figure drawings: An empirical investigation of two methods. *Journal of Clinical psychology, 52, 67 – 74*.
3. Aikman K. G. Belter R. W. & Finch A. I. (1992). Human figure drawings: Validity in assessing intellectual level and academic achievement. *Journal of clinical Psychological 48, 114 – 120*.
4. Badri M. B. (1965a). influence of modernization on Goodenough quotiens of quotient of culturally deprived Sudanese children. *Journal of Psychology, 20, 931 – 932*.
5. Badri M. B. (1965b). The use of finger drawings in measuring the Goodenough quotient of culturally deprived Sudanese children. *Journal of Psychology, 59, 333 – 334*.
6. Badri M. B. (1966). *The psychology of children's drawings (in Arabic)*. Amman: Dar Al-Furgan.
7. Badri M. B. & Dennis W. (1964). Human fingers drawings in relation to modernization in Sudan. *Journal of Psychology, 58, 421 – 425*.
8. Cattell R. B. (1950). The fate of national intelligence: Tests of a thirteen years prediction. *Eugenic Review, 42, 136 – 148*.
9. Colom S. M., Flores-Mendoza C. E. & Abad F. J. (2007). Generational changes on the Draw-a-Man Test: A comparison of Brazilian urban and rural children tested in 1930, 2002 and 2004. *Journal of Biosocial Science, 39, 79 – 89*.
10. Cotton S. M., Kiely P. M. Crewther D. P., Thomson B., Laycock R. & Crewther S. G. (2005). A normative and reliability study for the Raven's Colored Progressive Matrices for primary school aged children in Australia. *Personality and Individual Differences, 39, 647 – 660*.

11. Daley T, C., Whaley S. F., Sigman M. D., Espinosa M. P. & Neuman C. (2003). IQ on the rise: The Flynn effect in rural Kenya children. *Psychological Science*, *14*, 215 – 219.
12. Flynn J. R. (1984). The mean IQ of Americans: massive gains 1932 to 1978. *Psychological Bulletin*, *95*, 29 – 51.
13. Flynn J. R. (1987). Massive IQ gains in 14 nations: What IQ tests really measure. *Psychological Bulletin*, *101*, 171 – 191.
14. Goodenough F. I. (1926). *The measurement of intelligence by drawings*. New York: World Books.
15. Harris D. B. (1963). *Children's Drawing as measures of intellectual maturity*. New York: Harcourt, Brace & World.
16. Khaleefa O. M., Abdelwahid S. B. & Abdulradi F. (2008). *The increase of national intelligence in Sudan (in Arabic)*. Unpublished manuscript, Sudan: University of Khartoum.
17. Lynn R. & Hampson S. I. (1986). The rise of national intelligence: evidence from Britain, Japan and the USA. *Personality and Individual Differences*, *7*, 23 – 32.
18. Marques S. I., Pasian S. R., Franco M. A. P., Panoso I. R., Viana A. B. & Oliveira D. A. (2002). Fidedignidade do sistema Goodenough de avaliacao cognitiva: Uma visao do contexto natual. *Estudos de Psicologia*, *7*, 57 – 64.
19. Meisenberg G., Lawless F. Lambert F. & Newton A. (2005). The Flynn effect in the Caribbean: generational change in test performance in Dominica. *Mankind Quarterly*, *46*, 29 – 70.
20. Scott I. H. (1981). Measuring intelligence with the Goodenough-Harris Draeing Test. *Psychological Bulletin*, *89*, 483 – 505.
21. Scottish Council for Research in Education (1949). *The Trend of Scottish Intelligence*. London: University of London Press.
22. Shayer M. (2007). 30 years on a large anti-‘Flynn effect’? The Piagetian test Volume é Heaviness norms 1975 – 2003. *British Journal of Educational Psychology*, *77*, 25 – 42.

23. Smith S. (1942). Language and non-verbal test performance of racial groups in Honolulu before and after a fourteen years interval. *Journal of General Psychology*, 26, 51 – 93.
24. Sundel J. M., Barlaug D. G. & Torjussen T. M. (2004). The end of the Flynn effect? A study of secular trends in mean intelligence test scores of Norwegian conscripts during half a century. *Intelligence*, 32, 349 -362.
25. Teasdale T. W. & Owen L. (2008). Secular declines in cognitive test scores: a reversal of the Flynn effect. *Intelligence*, 36, 121 – 126.
26. Tuddenham R. D. (1948). Soldier intelligence in world wars I and II. *American Psychologist*, 3, 54 – 56.
27. Wheeler I. R. (1942). A comparative study of the intelligence of East Tennessee mountain children. *Journal of Educational Psychology*, 33, 321 – 334.