Intelligence of the Pygmies

Richard Lynn[1]
University of Ulster, Coleraine, Northern Ireland

The intelligence of the Biaka and Babinga Pygmies and of Negroids living in the same region of the Central African Republic is examined with four tests of cognitive abilities. The Pygmies scored lower than the Negroids on all tests by an average of 14 IQ points. In relation to a European IQ of 100, the IQ of the Pygmies is estimated at approximately 53.

Key Words: Pygmies; Intelligence.

Little is known of the intelligence of the Pygmies. In a compilation of over 500 studies of the intelligence of different peoples and races worldwide, it was only possible to find one study of the intelligence of the Pygmies (Lynn, 2006). This was an early study carried out by Woodworth (1910) using the Sequin Form Board test, which consists of a set of blocks of various shapes that have to be fitted into the appropriate holes. Woodworth found that Pygmies performed much worse than other peoples including Eskimos, Native Americans, and Filipinos, but he did not have a comparison group of Negroids, and he did not quantify the abilities of any of these peoples. The objective of this paper is to present better data on the intelligence of the Pygmies.

There are two populations of Pygmies. These are the Mbuti who live as hunter-gatherers in the forests of eastern Zaire, and the Biaka and Babinga who live approximately 1,000 miles to the west in the south of the Central African Republic, the eastern part of Cameroon, and the northern part of the People's Republic of the Congo. The two populations are genetically isolated. The Mbuti Pygmies are the purest and are thought to number somewhere between 30,000 and 60,000. They average around 4' 7" (140 cm) in height. Pygmy children up to the age of puberty have normal height, but when they become adolescents they do

[1] Correspondence by email to: lynnr540@aol.com

not have the growth spurt of other peoples.

The Biaka and Babinga Pygmies are more interbred with Negroids. Most of them are hunter-gatherers. Typically they live in small groups of around 30 and move from place to place. Some of them have adopted a settled existence and work as farmers. They have made little progress in the domestication of either animals or plants. At the close of the twentieth century they were thought to number around 100,000 to 200,000.

Method and Results

The results of cognitive tests from which the intelligence of the Pygmies can be calculated are given by Berry et al. (1986). They report the results of cognitive tests administered to Biaka and Babinga Pygmies and to Negroids living in the same region of the Central African Republic. Some of the Pygmies were hunter-gatherers, while others were settled in villages and worked as laborers for Negroid farmers.

The Pygmies and Negroids were given four cognitive tests that can be regarded as tests of intelligence. These are (1) *Verbal Fluency*: naming the largest number of plants, parts of the body, and people known. One minute was allowed for each task, and the score was the number of items named. Verbal fluency is a well established measure of intelligence and was part of the first intelligence test constructed by Binet and is represented in the American Stanford-Binet. It was one of the six major factors of intelligence in Thurstone's (1938) model. (2) *Block Design*: assembling a number of colored blocks (cubes) to match designs. This is a well known measure of intelligence and is one of the subtests in the Wechsler tests. (3) *Draw-a-Person*: Originally devised as the Draw-a-Man test by Goodenough (1926), this test has been used in many studies throughout the world. The test usually involves drawing a man and woman with pencil and paper and is scored for the richness of the detail, but in this study the task was to draw these in sand with a stick. (4) *African Embedded Figures Test (AEFT)*: consisting of identifying simple figures embedded in more complex figures. This test is identified by Carroll (1993, p.339) in his

taxonomy of intelligence as a measure of the Closure Flexibility factor.

The results of the study are shown in Table 1. The first column identifies the tests followed by the numbers of Pygmies tested, and in the next row the Pygmy deficits: the extent to which the Pygmies scored lower than the Negroids, expressed in IQ points. It is not possible to give the scores as IQs in relation to American, British or any other norms, because the tests were adapted for use with these peoples. There are a total of 16 Pygmy deficit scores for which the average is 13.875 IQ points. The average IQ of African Negroids is approximately 67 (Lynn, 2006). It can therefore be concluded that the average IQ of the Pygmies is approximately 53.

Table 1 Pygmy deficit scores, compared with Negroids, in IQ points on four cognitive tests.

Test: Number	Men	Women	Boys	Girls
Verbal Fluency: N	121	70	87	125
Pygmy deficit	16	13	22	8
Block Design: N	100	48	25	26
Pygmy deficit	30	5	15	27
DAP: N	87	49	22	27
Pygmy deficit	22	10	15	11
AEFT: N	125	70	32	33
Pygmy deficit	8	4	14	2

Discussion

The results confirm Woodworth's (1910) early conclusion that the Pygmies have a low level of intelligence. This is consistent with their life-style and history, which suggest that the Pygmies' intelligence is lower than that of Negroids in sub-Saharan Africa. Most Negroids have made the transition from hunter-gatherers to settled farmers at one or another time during the last four thousand years,

many millennia after the beginnings of agriculture in the Middle East and Egypt (Neumann, 2003), while most of the Pygmies retain a primitive hunter-gatherer existence. Diamond (1997, p.380) notes that the hunter-gatherer Pygmies are "without crops or livestock." Furthermore, the Pygmies "were formally widespread through the equatorial forests until displaced and isolated by the arrival of black farmers" (Diamond, 1997, p.380). When in the twentieth century a number of Pygmies worked for Negroid farmers, the Pygmies "are always the lower caste", being the farmers' "hereditary servants" according to Cavalli-Sforza, Menozzi, & Piazza (1994, p. 178). The term "hereditary servants" appears to be a euphemism for slaves. The displacement and enslavement of Pygmies by Negroids suggest that the Negroids are more intelligent, consistent with the general principle that the more intelligent peoples have typically defeated, displaced and enslaved the less intelligent, e.g. Europeans have defeated and displaced indigenous peoples in the Americas, Australia and New Zealand, and Europeans and South Asians have frequently enslaved Africans but not vice versa.

The result that Pygmies have an IQ significantly lower than that of Negroids and estimated at approximately 53 shows that it is quite possible for peoples with this level of intelligence to survive as hunter-gatherers and farm laborers. An IQ of 53 is regarded as mentally retarded in economically developed countries and it has sometimes been asserted that it would be impossible for peoples with an average IQ at this level to survive in sub-Saharan Africa and therefore that the tests cannot give a valid measure of their ability. Contrary to this argument, an adult with an IQ of 53 has about the same mental ability as an average present-day nine-year-old European. These should not have too much difficulty surviving in the benign climate of equatorial Africa. They could certainly gather plant and insect foods and could learn simple hunting skills. They would be quite capable of performing unskilled work on farms of the kind that European nine year olds did for many centuries, as well as other unskilled jobs such as chimney sweeping until the

second half of the nineteenth century, when child labor became outlawed in most European countries and education became compulsory.

It would seem the Pygmies' short stature and, apparently, their low IQ would put them at a selective disadvantage, and hence it is an interesting question why they have evolved these characteristics. A number of anthropologists have discussed this problem and it is generally accepted that the Pygmies' small stature is a result of genetic adaptation, but there has been no consensus on which genes were selected or on the nature of the selective forces. Hypotheses that have been proposed include adaptations to food limitation, thermoregulation, mobility in the forest, and short lifespan (Diamond, 1991). Reduced release of IGF-1 from the liver in response to growth hormone has been proposed as one reason for short stature in African Pygmies (Perry & Dominy, 2009). A useful contribution to this question has recently been made by Lopez Herraez et al. (2009). They report that both Biaka and Mbuti Pygmies have characteristic variations in genes involved in the iodide-dependent thyroid hormone pathway. These genes are TRIP4 in Mbuti Pygmies and IYD in Biaka Pygmies. The authors propose that these genetic variants were selected as adaptations to the iodine deficient diet of tropical forests. They further suggest that short stature in these Pygmy groups may have arisen as a consequence of genetic alterations in the thyroid hormone pathway.

Thus, it seems likely that short stature was not selected for directly in the ancestors of Pygmy groups, but arose as an indirect consequence of selection in response to an iodine-deficient diet. Since different genes in the thyroid hormone pathway show signals of selection in Mbuti and Biaka Pygmies, this suggests that short stature arose independently in the ancestors of these two populations and not in a common ancestral population. They argue that this theory is supported by the fact that most Pygmy-like groups around the world live in tropical forests, and hence are likely to have iodine-deficient diets. It is likely that independent adaptations to an iodine-deficient diet have contributed to

the convergent evolution of short stature in Pygmy-like groups around the world. Thus, Efe Pygmies have a significantly lower frequency of goiter (caused by iodine deficiency) than Lese Bantu farmers (9.4% compared with 42.9%), who live in close proximity to one another in the iodine-deficient Ituri Forest and share similar diets. Moreover, the frequency of goiter in Efe women living in Bantu villages was similar to that of Efe women living in the forest, and the frequency of goiter in offspring with an Efe mother and a Lese father was intermediate between that of Efe and Lese. These observations suggest that the Efe Pygmies have adapted genetically to an iodine-deficient diet.

This thesis can likely be extended to explain the low IQ of the Pygmies as a further consequence of their small stature. As the Pygmies evolved their small stature because of its adaptive advantage, they will have evolved commensurately small heads and small brains. These are responsible for their low IQ, because it has been shown by Vernon et al. (2000) that brain size is correlated with IQ at r = 0.4, and they adduce much evidence that this association is causal. Although a low IQ would put the Pygmies at a selective disadvantage, this has apparently been more than compensated for by the selective advantage of small stature in iodine-deficient rain forests.

References

Berry, J. W., van de Koppell, J.M., Annis, R.C. et al.
(1986) On the Edge of the Forest: Cultural Adaptation and Cognitive Development in Central Africa. Berwyn: Swets North America.

Carroll, J. B.
(1993) Human Cognitive Abilities. Cambridge: Cambridge University Press.

Cavalli-Sforza, L. L., Menozzi, P., & Piazza, A.
(1994) The History and Geography of Human Genes. Princeton, NJ: Princeton University Press.

Diamond, J.
(1991) "Anthropology. Why are pygmies small?" *Nature* 354:111–112.

Diamond, J.
(1997) Guns, Germs and Steel. New York; Random House.

Goodenough, F. L.
(1926) The Measurement of Intelligence by Drawings. New York: World Books.

Lopez Herraez, D., Bauchet, M., Tang, K., Theunert, C., Pugach, I. et al.
(2009) "Genetic variation and recent positive selection in worldwide human populations: Evidence from nearly 1 million SNPs". *PLoS ONE* 4(11): e7888.

Lynn, R.
(2006) *Race Differences in Intelligence: An Evolutionary Analysis.* Augusta, GA: Washington Summit Publishers.

Neumann, K.
"The late emergence of agriculture in Sub-Saharan Africa: archaeobotanical evidence and ecological considerations." In K. Neumann, A. Butler & S. Kahlheber (Eds): *Food, Fuel and Fields. Progress in African Archaeobotany.* Cologne: Heinrich Barth Institute.

Perry, G.H. & Dominy, N.J.
"Evolution of the human pygmy phenotype." *Trends in Ecology and Evolution* 24: 218-225.

Thurstone, L.L.
(1938) "Primary mental abilities." *Psychometric Monographs, No 1.*

Vernon, P.A., Wickett, J.C., Bazana, P.G. & Stelmack, R.M.
(2000) "The neuropsychology and neurophysiology of human intelligence." In R. J. Sternberg (Ed) Handbook of Intelligence. Cambridge, UK: Cambridge University Press.

Woodworth, R. S.
(1910) "Race differences in mental traits." *Science* 31: 171–186.