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Differences in intelligence between ethnic minorities and Han in China

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ABSTRACT

This paper summarizes 22 studies of the IQs of 28 non-Han ethnic minorities compared with the Han in the People's Republic of China. The Han obtained higher average IQs than all of the non-Han ethnic minorities.

Contents

1. Introduction

In a number of multiethnic countries there are differences in the average intelligence of different ethnic populations (Lynn, 2006, 2008). In this paper we review studies of the IQs of twenty eight of the 55 officially recognised non-Han ethnic minorities, compared with the Han, in the People's Republic of China. The Han are the majority comprising 91.6% of the population in the 2000 census, with the non-Han ethnic minorities comprising the remaining 8.4%. The Han appear to have a higher average IQ than the non-Han ethnic minorities, since it has been reported that across thirty-one regions of China the percentage of Han in the population is significantly associated ($r = .59$) with the average IQ of the region (Lynn & Cheng, 2013). However, this study does not give any information on the IQs of the individual ethnic minorities.

2. Intelligence of ethnic minorities and Han

This review of studies of the IQs of non-Han ethnic minorities compared with the Han was carried out thoroughly through the China National Knowledge Infrastructure (CNKI) search engine. This produced 22 studies, all published in Chinese, for 28 ethnic minorities. The results are summarized in Table 1. This gives for each study the numbers of ethnic minorities and Han, the ages of the samples, the tests, the

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Table 1
Studies of the IQs of ethnic minorities and Han in China.

	Ethnic minority	Ns Minority/Han	Age	Test	Minority IQ Mean and SD	Han IQ Mean and SD	*d*	Reference
1	Tibetan	30/30	9	RSPM	16.07 ± 5.59	23.53 ± 8.66	1.05***	Zhao, Tong, and
		30/30	11		21.10 ± 10.25	33.97 ± 9.15	1.34***	Wan (1988)
		30/30	13		31.33 ± 11.25	38.07 ± 8.49	.68*	
		30/30	15		40.52 ± 6.81	46.67 ± 6.04	.96***	
2	Hui	30/30	9	RSPM	21.92 ± 9.93	24.71 ± 8.31	.31	Zhao et al. (1988)
		30/30	11		30.87 ± 8.25	30.72 ± 11.58	−.02	
		30/30	13		38.63 ± 7.24	39.24 ± 9.15	.07	
		30/30	15		41.71 ± 6.50	44.70 ± 7.95	.41	
3	Dongxiang	30/30	9	RSPM	22.40 ± 9.94	24.71 ± 8.31	.25	Zhao et al. (1988)
		30/30	11		30.38 ± 9.78	30.72 ± 11.58	.03	
		30/30	13		36.12 ± 8.67	39.24 ± 9.15	.35	
		30/30	15		43.12 ± 6.80	44.70 ± 7.95	.21	
4	Tibetan	15/15	7	Verbal reasoning	0.94 ± 1.52	3.14 ± 1.71	1.36**	Zhao, Wan, and
		15/15	8		1.59 ± 1.69	4.19 ± 1.84	1.47**	Ma (1989)
		15/15	9		3.97 ± 1.65	5.29 ± 1.70	.79*	
5	Dongxiang	15/15	7	Verbal reasoning	1.49 ± 1.70	3.48 ± 2.09	1.05**	Zhao et al. (1989)
		15/15	8		2.03 ± 1.56	3.66 ± 2.20	.87*	
		15/15	9		4.54 ± 1.36	5.69 ± 2.18	.65	
6	Baoan (Bonan)	15/15	7	Verbal reasoning	2.13 ± 2.32	2.60 ± 1.62	.24	Zhao et al. (1989)
		15/15	8		3.92 ± 1.99	3.60 ± 1.05	−.21	
		15/15	9		5.09 ± 1.33	4.69 ± 0.96	−.35	
7	Yugur	15/15	7	Verbal reasoning	1.98 ± 1.78	3.25 ± 1.64	.74*	Zhao et al. (1989)
		15/15	8		3.39 ± 2.01	4.28 ± 1.57	.50	
		15/15	9		4.58 ± 1.30	5.40 ± 1.41	.61	
8	Hasake (Kazakh)	15/15	7	Verbal reasoning	1.37 ± 1.83	3.23 ± 1.61	1.08**	Zhao et al. (1989)
		15/15	8		1.92 ± 1.94	3.82 ± 1.72	1.04**	
		15/15	9		3.93 ± 1.92	5.36 ± 1.81	.77*	
9	Dongxiang	20/20	9	Verbal reasoning	6.42 ± 3.56	10.60 ± 2.69	1.34*	Yang and Liu (1992)
		20/20	10		8.80 ± 5.15	15.20 ± 2.86	1.60*	
		20/20	11		11.60 ± 3.24	12.40 ± 4.10	.22	
		20/20	12		13.70 ± 3.28	15.67 ± 3.28	.60	
10	Mongol	1481/3214	5–14	CRT	96.32 ± 11.18	101.59 ± 12.16	.45**	Na & O (1994)
11	Mongol	150/151	5–6	C-WPPSI	94.9 ± 11.1	99.1 ± 13.5	.43**	Yang and Gong (1994)
12	Miao	46/29	7–11	Wechsler	95.09 ± 10.08	104.14 ± 15.19	.72**	Cheng et al. (1995)
13	Tujia	129/29	7–11	Wechsler	100.70 ± 14.24	104.14 ± 15.19	.23*	Cheng et al. (1995)
14	Hui	1025/7344	5	RSPM	15.7 ± 4.8	17.5 ± 4.7	.38#	Ji, O, and Sunuodula (1995)
			6		15.9 ± 4.4	20.5 ± 7.8	.75	
			7		23.3 ± 9.0	26.7 ± 10.6	.35	
			8		30.5 ± 12.0	33.2 ± 11.9	.23	
			9		37.0 ± 11.9	38.7 ± 11.6	.14	
			10		41.4 ± 11.0	44.6 ± 11.0	.29	
			11		46.4 ± 9.6	48.7 ± 10.1	.23	
			12		47.9 ± 11.1	51.6 ± 10.4	.34	
			13		51.1 ± 13.1	55.0 ± 6.2	.40	
			14		51.5 ± 10.9	55.0 ± 9.7	.34	
			15		54.4 ± 8.7	56.4 ± 8.3	.24	
			16		57.7 ± 8.1	57.9 ± 8.6	.02	
15	Hasake	1728/7344	7	RSPM	18.5 ± 5.3	26.7 ± 10.6	1.03**	Ji et al. (1995)
			8		21.4 ± 7.9	33.2 ± 11.9	1.19**	
			9		24.0 ± 10.0	38.7 ± 11.6	1.36**	
			10		27.4 ± 12.3	44.6 ± 11.0	1.48**	
			11		31.5 ± 12.4	48.7 ± 10.1	1.53**	
			12		37.8 ± 13.5	51.6 ± 10.4	1.15**	
			13		33.2 ± 14.4	55.0 ± 6.2	2.12**	
			14		42.0 ± 12.5	55.0 ± 9.7	1.17**	
			15		42.2 ± 11.3	56.4 ± 8.3	1.45**	
			16		44.0 ± 11.0	57.9 ± 8.6	1.42**	
16	Kyrgyz	360/7344	7	RSPM	18.5 ± 6.1	26.7 ± 10.6	.98**	Ji et al. (1995)
			8		17.9 ± 4.4	33.2 ± 11.9	1.88**	
			9		26.7 ± 12.1	38.7 ± 11.6	1.01**	
			10		31.3 ± 10.9	44.6 ± 11.0	1.21**	
			11		33.1 ± 12.7	48.7 ± 10.1	1.37**	
			12		35.6 ± 11.1	51.6 ± 10.4	1.49**	
			13		38.9 ± 12.9	55.0 ± 6.2	1.69**	
			14		38.8 ± 14.8	55.0 ± 9.7	1.32**	
			15		42.3 ± 13.7	56.4 ± 8.3	1.28**	

(continued on next page)

Table 1 (*continued*)

	Ethnic minority	Ns Minority/Han	Age	Test	Minority IQ Mean and SD	Han IQ Mean and SD	*d*	Reference
			16		45.2 ± 10.4	57.9 ± 8.6	1.34**	
17	Mongol	1224/7344	7	RSPM	19.6 ± 7.7	26.7 ± 10.6	.78**	Ji et al. (1995)
			8		23.7 ± 10.0	33.2 ± 11.9	.87**	
			9		27.3 ± 12.3	38.7 ± 11.6	1.11**	
			10		31.3 ± 12.4	44.6 ± 11.0	1.19**	
			11		35.4 ± 14.6	48.7 ± 10.1	1.08**	
			12		35.9 ± 13.3	51.6 ± 10.4	1.32**	
			13		37.7 ± 14.2	55.0 ± 6.2	1.79**	
			14		43.9 ± 11.8	55.0 ± 9.7	1.03**	
			15		45.5 ± 11.0	56.4 ± 8.3	1.19**	
			16		46.1 ± 11.6	57.9 ± 8.6	1.17**	
18	Uyghur	3132/7344	5	RSPM	15.5 ± 3.9	17.5 ± 4.7	.47*	Ji et al. (1995)
			6		17.7 ± 4.2	20.5 ± 7.8	.47*	
			7		18.7 ± 7.4	26.7 ± 10.6	.89**	
			8		21.2 ± 7.2	33.2 ± 11.9	1.26**	
			9		25.7 ± 11.1	38.7 ± 11.6	1.15**	
			10		29.9 ± 12.1	44.6 ± 11.0	1.27**	
			11		35.0 ± 11.8	48.7 ± 10.1	1.25**	
			12		38.3 ± 11.8	51.6 ± 10.4	1.22**	
			13		41.1 ± 13.2	55.0 ± 6.2	1.43**	
			14		44.8 ± 11.4	55.0 ± 9.7	.97**	
			15		46.9 ± 11.6	56.4 ± 8.3	.95**	
			16		49.0 ± 10.6	57.9 ± 8.6	.93**	
19	Xibo (Xibe)	432/7344	5	RSPM	18.4 ± 4.1	17.5 ± 4.7	−.20#	Ji et al. (1995)
			6		24.3 ± 6.4	20.5 ± 7.8	−.54	
			7		23.8 ± 9.9	26.7 ± 10.6	.28	
			8		22.1 ± 7.9	33.2 ± 11.9	1.12	
			9		35.3 ± 13.6	38.7 ± 11.6	.27	
			10		34.3 ± 14.6	44.6 ± 11.0	.80	
			11		45.4 ± 11.6	48.7 ± 10.1	.30	
			12		44.0 ± 12.1	51.6 ± 10.4	.68	
			13		47.9 ± 11.9	55.0 ± 6.2	.78	
			14		52.6 ± 10.1	55.0 ± 9.7	.24	
			15		53.2 ± 0.7	56.4 ± 8.3	.71	
			16		53.9 ± 9.7	57.9 ± 8.6	.44	
20	Tibetan	40/40	12–13	RSPM	38.7 ± 7.5	45.3 ± 8.2	.84**	Lu, Fu, Kong, and Wang (1995)
		40/40	16–17		46.6 ± 8.7	51.7 ± 9.5	.56*	
		40/40	10–21		51.9 ± 7.3	54.7 ± 8.7	.35*	
21	Li	31/31	7	RSPM	15.27 ± 5.46	15.50 ± 4.34	.05	Yang, Yuan, and Liang (1995)
		31/33	8		19.35 ± 7.57	16.59 ± 8.0	−.35	
		31/31	9		19.35 ± 8.13	20.05 ± 8.82	−.14	
		30/32	10		29.27 ± 10.94	24.80 ± 9.54	−.44	
		31/31	11		33.21 ± 15.18	32.07 ± 8.0	−.10	
		46/33	12		37.25 ± 13.63	42.39 ± 11.47	.41	
		32/45	13		39.52 ± 11.72	49.57 ± 9.14	.96**	
		37/32	14		44.52 ± 15.68	52.31 ± 9.25	.62*	
		31/32	15		48.51 ± 8.75	53.01 ± 9.36	.50	
		30/31	16		50.0 ± 10.49	54.02 ± 9.25	.23	
22	Dai	30/30	13	CRT	93.5 ± 16.57	89.47 ± 10.16	−.30#	Tao and Zuo (1998)
		30/30	13		93.5 ± 16.57	105.83 ± 10.5	.91	
		30/30	15		94.23 ± 19.28	87.5 ± 10.84	−.45	
		30/30	15		94.23 ± 19.28	109.9 ± 9.31	1.10	
23	Naxi (Nakhi)	30/30	13	CRT	91.23 ± 10.54	94.9 ± 11.41	.33#	Tao and Zuo (1998)
		30/30	13		91.23 ± 10.54	105.83 ± 10.5	1.39	
		30/30	15		96.0 ± 13.14	94.47 ± 12.35	−.12	
		30/30	15		96.0 ± 13.14	109.9 ± 9.31	1.24	
24	Blang	30/22	7–9	Mental rotationØ	3.32 ± 0.68	7.81 ± 2.55	2.78***	Lin, Zhang, Ding, and Fu (2002)
				Speed of figure matching by second	18.50 ± 8.13	8.79 ± 3.38	1.69***	
25	Jino	30/22	7–9	Mental rotation	3.78 ± 1.39	7.81 ± 2.55	2.05***	Lin et al. (2002)
				Speed of figure matching by second	20.08 ± 6.45	8.79 ± 3.38	2.30***	
26	Hasake	Boys 179/92	5–12	Draw a Man	77. 97 ± 11. 92	80. 85 ± 10. 98	.23*	Hashan et al. (2003)
		Girls 166/90			80. 96 ± 11. 65	87. 88 ± 9. 80	.63*	
27	Hui	Boys 44/92	5–12	Draw a Man	74. 86 ± 11. 13	80. 85 ± 10. 98	.54*	Hashan et al. (2003)
		Girls 59/90			80. 59 ± 12. 34	87. 88 ± 9. 80	.66*	
28	Uyghur	Boys 131/92	5–12	Draw a Man	65. 28 ± 9. 23	80. 85 ± 10. 98	1.54*	Hashan et al. (2003)
		Girls 166/90			68. 55 ± 9. 46	87. 88 ± 9. 80	1.07*	

Table 1 (*continued*)

	Ethnic minority	Ns Minority/Han	Age	Test	Minority IQ Mean and SD	Han IQ Mean and SD	*d*	Reference
29	Naxi	107/90	3	Wechsler	2.16 ± 2.40	3.42 ± 3.80	.41#	Li and Su (2005)
			4		5.61 ± 4.85	10.62 ± 4.26	1.10	
			5		10.98 ± 4.81	12.15 ± 7.38	0.19	
30	Daur	30/30	12	RSPM	31.10 ± 10.15	36. 93 ± 9.15	.60*	Yu, 2008
		30/30	14		37.96 ± 10.81	49.04 ± 5.82	1.33**	
		30/30	16		48.13 ± 6.03	40.06 ± 5.82	−1.36**	
31	Mongol	30/30	12	RSPM	30.05 ± 9.25	35.45 ± 10.13	.56*	Yu, 2008
		30/30	14		38.20 ± 8.32	41.02 ± 9.75	.31	
		30/30	16		48.34 ± 6.21	48.64 ± 6.73	.06	
32	Ewenki	30/30	12	RSPM	28.25 ± 9.33	35.45 ± 10.13	.74*	Yu (2008)
		30/30	14		35.82 ± 8.82	41.02 ± 9.75	.56*	
		30/30	16		45.04 ± 5.93	48.64 ± 6.73	.57*	
33	Yi	825/1162	12–25	Arithmetic time spent by second	217.4 ± 69.7	205.7 ± 64.0	.18**	Chen, Guan, Xiao, Liu, and Miao (2011)
				Verbal reasoning time spent by second	120.9 ± 30.0	115.2 ± 29.0	.19**	
34	Hani	311/1162	12–25	Arithmetic time spent by second	216.6 ± 68.1	205.7 ± 64.0	.16*	Chen et al. (2011)
				Verbal reasoning time spent by second	130.0 ± 33.4	115.2 ± 29.0	.47**	
35	Naxi	129/1162	12–25	Arithmetic time spent by second	203.5 ± 57.3	205.7 ± 64.0	−.04	Chen et al. (2011)
				Verbal reasoning time spent by second	109.2 ± 20.9	115.2 ± 29.0	−.24**	
36	Wa (Va)	129/1162	12–25	Arithmetic time spent by second	231.8 ± 75.3	205.7 ± 64.0	.37**	Chen et al. (2011)
				Verbal reasoning time spent by second	147.6 ± 41.5	115.2 ± 29.0	.92**	
37	Dai	102/1162	12–25	Arithmetic time spent by second	205.1 ± 72.8	205.7 ± 64.0	−.01	Chen et al. (2011)
				Verbal reasoning time spent by second	123.9 ± 32.5	115.2 ± 29.0	.28**	

Note: Statistical significance differences between of ethnic minorities and Han. C-WPPSI = Chinese revision of the Wechsler Preschool and Primary Scale of Intelligence. CRT = Combined items from the Raven's Standard Progressive Matrices and the Coloured Progressive Matrices. RSPM = Raven's Standard Progressive Matrices. # = No significant tests were reported between the groups in the study. Ø = The testing tools were designed based on Shepard and Metzler (1971) study.
Statistical significance levels between ethnic minorities and Han.
* < .05.
** < .01.
*** < .001.

ethnic minority IQ, the Han IQ, the *d* (the IQ difference between the ethnic minorities and the Han in standard deviation units), and the reference.

The ethnic minorities are widely dispersed in the northwest, the west, the southwest and the south of China, but have no significant presence in the east (Lynn & Cheng, 2013). The geographical locations of the ethnic minorities are given in Table 2, together with their Greenwich IQs defined by Rindermann, Ngoc, and Baumeister (2013) as population IQs in relation to a British IQ of 100 (SD 15). These Greenwich IQs are calculated as the IQ of the ethnic minorities plus the IQ of 105.9 of the Han derived for 11 studies given in Lynn and Vanhanen (2012). This table also gives the results of seven studies that have reported higher IQs in Han than in ethnic minorities but have not reported means and standard deviation for the two groups and for which it is only possible to give "Han higher". Also shown are the population sizes given in the 2000 Population Census published by the National Bureau Statistics of China.

Descriptions are given below of the studies in Table 2 for which no IQs are entered but only "Han higher" or, for row 46, "Same".

Row 3. Xia (2000) carried out a study of the mathematics ability of Buyi and Han school students in three locations: Luodian (with Buyi 56.3% and 30% Han), Xingyi (15.48% Buyi and 81.58% Han) and Guiyang (5.8% Buyi and 86.2% Han) in Guizhou Province. The results were that the scores in the three locations were significantly associated with the percentages of Han, being highest in Guiyang, intermediate in Xingyi, and lowest in Luodian.

Row 16. Wang, Wang, Liu, Ma, and Liu (1995) carried out a study of 212 Hezhen and Han children aged 6–16 in two townships in Tongjiang city, Heilongjiang province, using the Chinese version of the Wechsler test and the Draw a Man test. The prevalence rates of intellectual retardation using the Wechsler test of the Hezhen and Han were 2% and 0.9% respectively, suggesting a lower average IQ in the Hezhen. On the Draw a Man test 81% the Hezhen children had a mental age below their chronological age indicating a lower average IQ.

Row 19. Gu, Sun, and Zhang (2005) carried out a study of the IQs of 516 Han and 169 Korean grade 3 children in Liaoning Province using the Wechsler test. The results showed that Han children had significantly higher scores than Korean children.

Row 32. Xia, Wu, Chen, and Cheng (1989) carried out a study of the IQ of 39 She and 50 Han school students aged 17 years using the Wechsler test and reported that the Han had a significantly higher IQ than the She.

Table 2
Locations, population sizes and Greenwich IQs of ethnic minorities in China.

	Ethnic minorities	Location	Population size[a]	Greenwich IQ	Reference
1	Baoan (Bonan)	Gansu and Qinghai Provinces	16,505	101.1	Zhao et al. (1989)
2	Blang	Yunnan Province	91,882	Han faster[b]	Lin et al. (2002)
3	Buyi (Buyei)	Guizhou, Yunnan, and Sichuan Provinces	2,971,460	Han higher	Xia (2000)
4	Dai	Xishuangbanna Dai Autonomous Prefecture and the Dehong Dai and Jingpo Autonomous Prefecture in south Yunnan	1,158,989	93.9	Tao and Zuo (1998)
5	Dai			Han faster[b]	Chen et al. (2011)
6	Daur	Mainly in the Morin Dawa Daur Autonomous Banner, Inner Mongolia Autonomous Region.	132,394	97.4	Yu (2008)
7	Dongxiang	Linxia Hui Autonomous Prefecture and surrounding areas of Gansu Province.	513,805	99.8	Zhao et al. (1988)
8	Dongxiang			86.4	Zhao et al. (1989)
9	Dongxiang			99.0	Yang and Liu (1992)
10	Dongxiang			Mean 95.1	
11	Evenki (formerly known as Tungus)	Mainly in Inner Mongolia Autonomous Region and Heilongjiang Province	30,505	96.5	Yu (2008)
12	Hasake	Xinjiang Uyghur Autonomous Region and the Aksai Kazakh Autonomous County in Gansu Province	1,420,458	99.4	Hashan et al. (2003)
13	Hasake			91.4	Zhao et al. (1989)
14	Hasake			Mean 95.4	
15	Hani	Yunnan Province	1,439,673	Han faster[b]	Chen et al. (2011)
16	Hezhen	Mainly in Heilongjiang Province	4640	Han higher	Wang et al. (1995)
17	Hui	Mainly in Ningxia Autonomous Region	9,816,802	103.1	Zhao et al. (1988)
18	Jino	Xishuangbanna in Yunnan Province	20,899	Han faster[b]	Lin et al. (2002)
19	Korean	Yanbian Korean Autonomous Prefecture in Jilin Province	1,923,842	Han higher	Gu et al. (2005)
20	Kyrgyz	Kizilsu in Kirghiz Autonomous Prefecture, Xinjiang Uyghur Autonomous Region	160,823	85.6	Ji et al. (1995)
21	Li	Hainan Province	1,247,814	103.3	Yang et al. (1995)
22	Miao	Provinces of Guizhou, Hunan, Yunnan, Sichuan, Guangxi, Hainan, Guangdong, and Hubei	8,940,116	95.1	Cheng et al. (1995)
23	Mongol	Inner Mongolia Autonomous Region	5,813,947	99.2	Na and O (1994)
24	Mongol			99.5	Yang and Gong (1994)
25	Mongol			88.2	Ji et al. (1995)
26	Mongol			93.8	Yu (2008)
27	Mongol			Mean 95.2	
28	Naxi (Nakhi)	Northwest part of Yunnan Province and southwest part of Sichuan Province.	308,839	93.6	Tao and Zuo (1998)
29	Naxi			97.5	Li and Su (2005)
30	Naxi			Naxi faster[b]	Chen et al. (2011)
31	Naxi			Mean 95.6	
32	She	Mainly in Fujian Province, also in Zhejiang, Anhui, Jiangxi and Guangdong Provinces	709,592	Han higher	Xia et al. (1989)
33	Tibetan	Tibet Autonomous Region	5,416,021	90.9	Zhao et al. (1988)
34	Tibetan			87.9	Zhao et al. (1989)
35	Tibetan			97.1	Lu et al. (1995)
36	Tibetan			Mean 92.0	
37	Tujia	Hunan, Hubei and Guizhou Provinces	8,028,133	102.5	Cheng et al. (1995)
38	Uyghur	Xinjiang Uyghur Autonomous Region	8,399,393	86.4	Hashan et al. (2003)
39	Wa (Va)	Ximeng Va Autonomous County in Yunnan Province	396,610	Han faster[b]	Chen et al. (2011)
40	Xibo (Xibe)	Xinjiang Uyghur Autonomous Region	188,824	99.8	Ji et al. (1995)
41	Yao	Guangxi, Hunan, Guangdong, Yunnan and Guizhou Provinces	2,637,421	Han higher	Liu and Wu (1988)
42	Yi	Sichuan,Guangxi, Yunnan and Guizhou Provinces	7,762,286	Han faster[b]	Chen et al. (2011)
43	Yugur	Yugur Autonomous County in Gansu Province	13,719	96.7	Zhao et al. (1989)
44	Zhuang	Guangxi Zhuang Autonomous Region, and Yunnan, Guangdong and Guizhou Provinces	16,178,811	Han higher	Chen and Yu (1988)
45	Zhuang			Han higher	Liang and Huang (1988)
46	Zhuang			Same	Liu and Wu (1988)

[a] Based on the 2000 Population Census. National Bureau Statistics of China (China NBS Database — *Quarterly Data*).
[b] Values were time spent for the mental ability tests.

Row 41. Liu and Wu (1988) carried out a study of the IQs of a sample of 232 Han, Zhuang and Yao in Baise city. The results were that there was no significant difference in IQs between Zhuang and the Yao, but the Han obtained a significantly higher IQ than the Yao.

Row 44. Chen and Yu (1988) carried out a study of intelligence using Raven's Standard Progressive Matrices of 79 Zhuang and 79 Han in Liuzhou city in the Guangxi Zhuang Autonomous Region and reported that the Zhuang had larger numbers in the low IQ group than

the Han (33% vs 26%) indicating a lower average IQ in the Zhuang.

Row 45. Liang and Huang (1988) carried out a study of intelligence using Raven's Standard Progressive Matrices of 87 Zhuang and 87 Han in Nanning. The Han had larger numbers in the high IQ group than the Zhuang (24% vs 14%) and smaller numbers in the low IQ group than the Zhuang (21% vs 31%) indicating a lower average IQ in the Zhuang.

Row 46. Liu and Wu (1988) carried out a study of the IQs of a sample of 232 Han, Zhuang and Yao in Baise city. The results were that the scores of Han were higher than Zhuang, but there was no significant difference in IQs between the Zhuang and the Han.

3. Discussion

The results contain four significant points of interest. First, the IQs of all the 28 ethnic minorities have lower average Greenwich IQs than the Han IQ of 105.9 given in Lynn and Vanhanen (2012). This confirms the results that across thirty-one regions of China the percentage of Han in the population is significantly associated with the average IQ of the region (Lynn & Cheng, 2013).

Second, there is considerable variation in the IQs of the ethnic minorities ranging from highs of 103.3 for the Li and 103.1 for the Hui to lows of 85.6 for the Kyrgyz and 86.4 for the Uyghur.

Third, the low IQs obtained by the Kyrgyz and Uyghur are more easily understood. Both are in Xinjiang in the far west of China bordering Kyrgyzstan and Kazakhstan. The low Kyrgyz IQ of 85.7 is consistent with the IQ of 74.4 for Kyrgyzstan derived from 2009 PISA scores given by Lynn and Vanhanen (2012) and approximately the same as the IQ of 84.7 for Kazakhstan derived from 2009 PISA scores given by Lynn and Vanhanen (2012) and closely similar to the IQ of 82.2 of Kazakhs in Kazakhstan obtained by Grigoriev and Lynn (in press). The low IQ of these peoples of central Asia confirms the work of Luria (1979) carried out in the early 1930s in which he concluded that their IQs are lower than those of European Russians.

Fourth, the low IQs of these central Asian peoples present a problem for the explanation of the evolution of racial differences in intelligence. The widely accepted theory for this is Lynn's (1991, 2006) cold winters theory that higher intelligence evolved in peoples in northern environments as adaptations to the greater cognitive demands of survival in colder winters. This theory has been supported by studies showing that population IQs are significantly correlated with low winter temperatures at −.66 for 129 countries, i.e. the negative correlation shows that there is a tendency for the populations of higher IQ countries to have lower winter temperatures (Templer & Arikawa, 2006) This has been confirmed at −.746 for 143 countries (Meisenberg & Woodley, 2013). The cold winters theory of the evolution of intelligence encounters a problem with the low IQs of the central Asian peoples because these peoples experience very low winter temperatures. Templer and Arikawa (2006) give data for average winter temperatures for 129 countries including −15 °C for Kazakhstan and −10 °C for Kyrgyzstan and Tajikistan, compared with around zero for northern and central Europe (e.g. −3 °C for Germany, −1 for Belgium, 2 °C for France and Britain), and −3 °C for China and Japan. There are also very low winter temperatures in Xinjiang in the west of China. To handle this anomaly for the cold winters theory, Miller (2014, under review) and Lynn (2006) have proposed that new alleles for enhanced intelligence must have appeared as genetic mutations in some populations but failed to appear in others or, if they did appear, failed to spread throughout the populations. The present results showing the low IQs of Kyrgyz (85.7) and Uyghur (86.4) in Xinjiang in the west of China bordering Kyrgyzstan and Kazakhstan confirm this anomaly for the cold winters theory of the evolution of population differences in intelligence and strengthen further the hypothesis of the appearance of new alleles for enhanced intelligence that appeared as genetic mutations in some populations but failed to appear or failed to spread in others including central Asia.

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