Submitted: 12th of August 2014
Published: 20th of August 2014
DOI: 10.26775/ODP.2014.08.20
ISSN: 2446-3884

The Canadian IQ calculated from the standardization of the WAIS IV

Edward Dutton* Richard Lynn†

Open Differential Psychology

Abstract

The Canadian standardization sample of the WAIS IV obtained a Full Scale IQ 104.5 in relation to 100 for the American standardization sample, giving Canada a British (Greenwich) IQ of 102.5.

Keywords: WAIS IV, Full Scale IQ, Canada, Intelligence, Jensen Effect.

1 Introduction

A research programme to collect the IQs of every nation in the world was initiated by Lynn (1978). In their most recent collation of studies of intelligence in different countries, Lynn & Vanhanen (2012) have shown that national IQs are significantly correlated with educational attainment, economic development, public health, per capita income, and a number of other political and sociological phenomena. In these studies, the national IQs have been given in relation to a British mean of 100, with a standard deviation of 15, and are designated as Greenwich IQs. In this compilation Lynn & Vanhanen (2012) give an IQ of 100.4 for Canada, based on school tests, such as PISA, which strongly correlate with IQ (Rindermann, 2008). This estimate is suboptimal because they introduce relatively arbitrary controls, such as for the Flynn Effect, which has now gone into reverse in various Western countries and may well have done in Canada (see Dutton & Lynn 2013). A better estimate of Canadian IQ is likely to be the unadjusted Scholastic Achievement score which Lynn & Vanhanen (2012, pp. 19-30) give to every country by combining TIMSS, PISA, and various other national assessments that involve large samples and strongly correlate with IQ. On this basis, Canada's IQ is estimated to be 102.7. In addition, Canada's score on PISA creative problem solving converts into an IQ score of 101.4 In this communication, we add to this research programme by calculating a Greenwich IQ for Canada based on the results of WAIS (Wechsler Adult Intelligence Scale) IV.

2 Method and Results

The American WAIS IV was standardised on a sample of 2200 aged between 16 and 90 years in 2006 (Wechsler, 2008a). The Canadian WAIS IV was standardised on a sample of 681 aged between 16 and 90 years. The sample was representative of the population in terms of sex, age, education, ethnicity, and geographical location, being drawn from all the major regions (apart from the sparsely populated Nunavat, Northwest Territory and Yukon) given in the Canadian 2006 census. With those aged 16 to 19, parental educational data were employed (Wechsler, 2008b, p. 42).

Of this sample, 681 were used to calculate the Full Scale IQ. The sample was 688 but the LN and FW subtests were not given to those over 65. The full results are given in Table 1. The American and Canadian

*University of Oulu, Finland. Corresponding author, Email: ecdutton@hotmail.com
†University of Ulster, UK

Table 1: Mean Performance of Canadian WAIS IV Samples Scored on US Norms

Subtest/ Process/ Composite Score	Canada			U.S.			Group Mean Comparison			
	Mean	*SD*	*N*	Mean	*SD*	*N*	Difference	*t* value	*p* value	Standard Difference[a]
BD	10.8	2.9	688	10.0	3.1	2200	.72	5.47	<.01	.24
SI	10.7	2.6	688	10.0	2.9	2200	.66	5.27	<.01	.23
DS	11.0	2.8	682	10.0	3.0	2200	.93	7.13	<.01	.31
MR	10.7	3.0	688	10.1	3.1	2200	.62	4.60	<.01	.20
VC	10.8	2.8	688	10.0	3.0	2200	.78	6.06	<.01	.26
AR	10.9	2.9	688	10.0	3.0	2200	.86	6.70	<.01	.29
SS	10.4	2.8	687	10.0	3.1	2200	.33	2.49	.01	.11
VP	10.7	3.0	688	10.0	3.1	2200	.69	5.17	<.01	.22
IN	10.5	3.0	688	10.0	3.1	2200	.42	3.13	<.01	.14
CD	10.5	2.9	688	10.0	3.0	2200	.52	3.99	<.01	.17
LN	10.7	2.9	570	10.0	3.0	1800	.69	4.78	<.01	.23
FW	10.7	2.9	570	10.1	3.1	1800	.63	4.32	<.01	.21
CO	10.7	2.5	688	10.0	3.1	2200	.63	4.89	<.01	.21
CA	10.2	2.8	565	10.0	3.0	1800	.18	1.25	.21	.06
PCm	10.1	2.7	687	10.0	3.1	2200	.10	.75	.46	.03
BDN	10.9	2.8	687	10.1	3.1	2200	.82	6.19	<.01	.27
DSF	10.5	2.8	688	10.0	3.0	2200	.54	4.13	<.01	.18
DSB	10.9	3.0	683	10.1	3.0	2200	.78	5.98	<.01	.26
DSS	10.9	2.8	687	10.0	3.0	2200	.91	6.99	<.01	.31
VCI	103.4	13.6	688	100.0	15.0	2200	3.44	5.37	<.01	.23
PRI	103.9	13.9	688	100.0	15.0	2200	3.90	6.05	<.01	.26
WMI	105.0	13.7	682	100.0	15.0	2200	5.03	7.82	<.01	.34
PSI	102.3	13.9	687	100.0	15.0	2200	2.28	3.54	<.01	.15
FSIQ	104.5	13.4	681	100.0	15.0	2200	4.51	7.02	<.01	.31

standardisation samples were then matched in terms of (Canadian) education, ethnicity and sex to give two matched samples of 488 (aged 16 to 69) and 101 (aged 70 - 90) which were 92 % white and 8 % 'Asian.' This reduced the Canadian advantage to 2.1 points. This reduction is expected based on racial composition data because Northeast Asians have a significantly higher average IQ than African Americans or Hispanics, of whom there are more in the USA than Canada. In 2006, 2.9 % of the Canadian population were black while it was 12 % in the USA. As of 2011, there are 1.2 % Hispanic Canadians as against 17 % in the USA as of 2010.

Further, such a difference would mean that the difference between the UK and Canada is likely to be partly due to the relatively high percentage of Northeast Asians in the Canadian population, as the standard Northeast Asian IQ is 105 (Lynn & Vanhanen, 2012). According to 2006 census figures, 16.2 % of Canadians are 'visible minorities' (non-white). In 2006, over half of the Asian category (54 %) was Northeast Asian, meaning they made up 5.1 % of Canadians. They are only around 1 % of those in the UK according the 2011 census. However, it should be emphasized that matching on educational attainment can bias the results because it can inadvertently control for g (as this predicts educational attainment). So, we cannot be sure that the differences are entirely a racial matter.

In addition, the g-loadings for the tests on the Canadian WAIS IV, though not published in the manual, were obtained from McFarland (2013) and can be seen in the attached data file (Supplementary Material). The Jensen Effect refers to the correlation between g-loadings and the magnitude of group differences. Using MCV, the Jensen Effect was calculated. This was found to be 0.83. The P was 1e-04. As such, we have a Jensen Effect between the two substantially white populations: that in the USA and that in Canada and we can be relatively sure that the IQ difference between the two populations is caused by differences in g rather than aspects of the IQ test that do not measure g. The results can be seen in Figure 1.

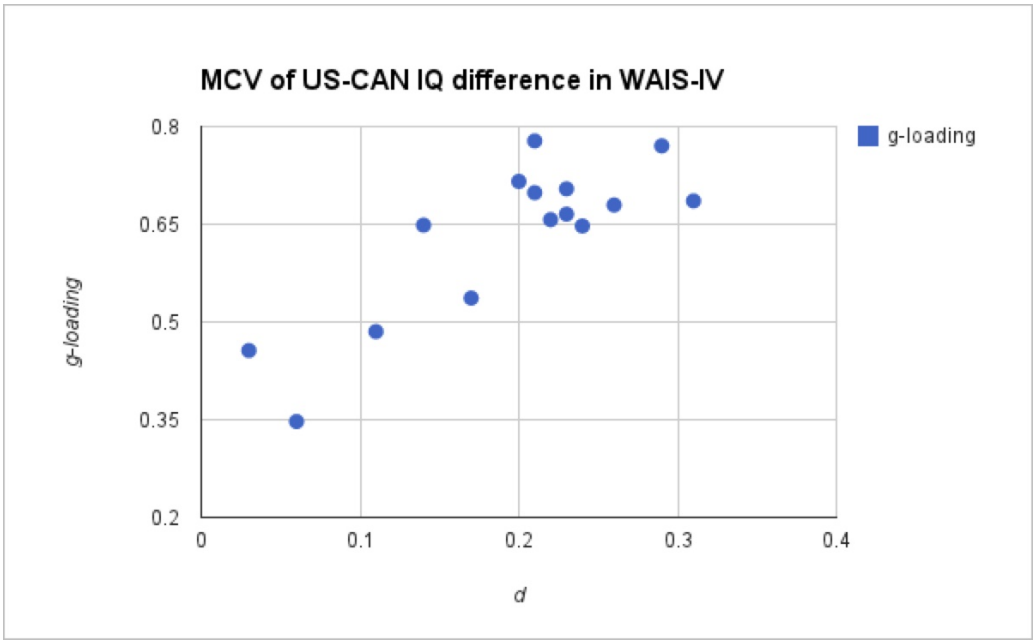

Figure 1: MCV of US-Canadian IQ Difference on WAIS IV

3 Discussion

The present study giving an IQ of 104.5 for Canada in relation to an American IQ of 100 can be converted to a Greenwich IQ of 102.5, because the American IQ is 2 IQ points lower than the British IQ (Lynn & Vanhanen, 2012). The result confirms Lynn & Vanhanen (2012)'s finding that Canada has a slightly higher IQ than does the UK. Many studies have shown that migration is predicted by intelligence and that migrants tend to be more intelligent than those who stay behind (see Dutton & Lynn 2014). For the same reason, it is likely that the IQ of whites in Canada is slightly higher than that of whites in the UK and Canada's result partly reflects this. Unfortunately, this is difficult to confirm as the WAIS IV does not give a break down of IQ scores long racial lines.

Acknowledgements

We would like to thank Dr. Jessie Miller, of Pearson in Toronto, and the various peer-reviewers on the OpenPsych Forum, especially Emil Kirkegaard for calculating the Jensen Effect.

References

Dutton, E., & Lynn, R. (2013). A negative flynn effect in finland, 1997–2009. *Intelligence*, *41*(6), 817–820. doi: 10.1016/j.intell.2013.05.008

Dutton, E., & Lynn, R. (2014). Regional differences in intelligence and their social and economic correlates in finland. *Mankind Quarterly*, *54*(3), 447–456. doi: 10.46469/mq.2014.54.3.10

Lynn, R. (1978). *Ethnic and racial differences in intelligence: International comparisons* (In R. T. Osborne, C. E. Noble and N. Weyl ed.). New York: Academic Press. (Human variation: The biopsychology of age, race, and sex)

Lynn, R., & Vanhanen, T. (2012). *Intelligence: A unifying construct for the social sciences*. London: Ulster Institute for Social Research.

McFarland, D. J. (2013). Modeling individual subtests of the WAIS IV with multiple latent factors. *PLoS One*, *8*(9), e74980. doi: 10.1371/journal.pone.0074980

Rindermann, H. (2008). Relevance of education and intelligence at the national level for the economic welfare of people. *Intelligence*, *36*(2), 127–142. doi: 10.1016/j.intell.2007.02.002

Wechsler, D. (2008a). *Wechsler adult intelligence scale, iv*. San Antonio, TX: Pearson.

Wechsler, D. (2008b). *Wechsler adult intelligence scale, iv*. Canadian Manual. Toronto: Pearson.