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Assessing the intellectual ability of asylum seekers

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Abstract

The European Union has seen an increased number of asylum seekers and economic migrants over the past few years. There will be request to assess some of these individuals to see if they have an intellectual disability (ID). If this is to be done using the current internationally recognized definitions of ID, we will need to be confident that the IQ tests we have available are able to accurately measure the IQs of people from developing countries. The literature showing substantial differences in the mean measured IQs of different countries is considered. It is found that, although there are numerous problems with these studies, the overall conclusion that there are substantial differences in mean measured IQ is sound. However, what is not clear is whether there are large differences in true intellectual ability between different countries, how predictive IQ scores are of an individual from a developing country ability to cope, and whether or not an individual's IQ would increase if they go from a developing country to a developed one. Because of these uncertainties, it is suggested that a diagnosis of ID should not be dependent on an IQ cut-off point when assessing people from developing countries.

Keywords: national IQs, test error, intellectual disability

Introduction

Two thousand and fifteen and Two thousand and sixteen has seen increased arrivals in the EU and the UK, of asylum seekers from areas of conflict such as Afghanistan and Syria as well as economic migrants from Sub-Saharan Africa. It is inevitable that UK and other EU psychologists will be asked to assess some of these individuals to see if they have an ID. This therefore raises the question as to how this assessment should be done.

There is general agreement among the internationally recognized definition of ID (AAIDD-11, DSM-V and ICD-11) and the latest British Psychological Society (BPS) guidance on the assessment and diagnosis of adults with intellectual disability (BPS 2015), that a diagnosis of ID requires three criteria to be met:

- There should be a significant limitation in intellectual functioning.
- There should be a significant limitation in adaptive behavior.
- That these disabilities are apparent in childhood, before the age of 18.

Therefore having a significant reduction in intellectual ability is a necessary though not sufficient criterion for being diagnosed with ID. According to the current definitions, it is also necessary to demonstrate that the individual has a significantly low level of adaptive behavior. However, historically the emphasis has been on low intellectual ability (cf. Whitaker 2013) and anecdotal evidence suggests service providers often still put more emphasis on the significant reduction in intellectual ability part of the definition than the adaptive behavior part.

A significant reduced level of intellectual ability is defined as having measured IQ below about 70, or 75, if one allows a five-point margin of error in the measurement of low IQ. This use of a measured IQ 70/75 cut-off point in the diagnosis of ID has been challenged (Whitaker 2008a, 2013, 2015a, 2015b; Webb and Whitaker 2012) on the grounds that when used in the low range, commonly used IQ tests are not as accurate as is normally assumed. This paper will consider an additional issue that occurs when using western standardized IQ tests on ethnic groups from developing countries. That is that there seems to be large differences in the mean measured IQs of the populations of different countries, making it unclear what a measured IQ score tells us about an individual from a developing country.

Differences in mean national intellectual ability

Over the past 15 or so years there have been a number of books and academic papers, suggesting that there are very large differences between the average measured IQs of different countries and ethnic groups. The main references are three books by Lynn and Vanhanen (2002, 2006, 2012a) but also see Buj (1981), Gelade (2008), Hunt and Wittmann (2008), Lynn and Harvey (2008), Lynn and Vanhanen (2012b), Rindermann (2013), and Whetzel and McDaniel (2006).

Lynn and Vanhanen (2002, 2006, 2012a) searched the literature for studies in which IQ tests had been given to people in as many different countries as they could as well as using international studies of educational achievement, which was taken as a proxy for intellectual ability. From this, Lynn and Vanhanen (2012a) were able to obtain estimates of the mean measured national IQ of 192 nations, either from studies that had been done in that country or by estimating it from the measured IQs of similar neighboring countries. These mean measured national IQs go from Singapore at 106.9 to Niger with a mean of 61.9, a range of 45 IQ points or three standard deviations. Most relevant for the current paper on asylum seekers and economic migrants to the EU and UK, the estimated mean national measured IQs for Afghanistan, Syria, and Ethiopia[1] were 75.0, 81.6, and 68.5, respectively. If these estimates are accurate and if IQ in these countries is normally distributed with a standard deviation of 15, then one would expect that the percentage of the population who had a measured IQ below 70 to be about 16, 11, and 54%, for Afghanistan, Syria, and Ethiopia, respectively, which is much greater than the

two to three percent that occurs in developed countries. Whether or not asylum seekers to the EU and UK are a random sample of individual from their countries of origin is not known, it is possible that they are more intellectually able but nonetheless may still have significantly lower mean measured IQs than the native populations of the EU and UK.

Should Lynn and Vanhanen's results be taken seriously?

Clearly the topic of national IQs is very controversial because of the implication that people of different races have different IQs and it would be nice to be able to dismiss Lynn and Vanhanen's work as politically motivated and their studies as unsound. However, although their work has clear shortcomings, it cannot be simply dismissed out of hand for the following reasons:

First, in spite of being a very controversial area of psychology, which one would expect to come in for detailed scrutiny and criticism by others, the core finding that there are large differences in mean national measured IQs has not been successfully refuted. Flynn (2013), Mackintosh (2011) and Hunt and Wittmann (2008) are all highly critical of Lynn and Vanhanen's (2006, 2012b) assertion that the cause of the national IQ difference is genetic in origin (see below) but accept that such differences do exist.

Second, other independent studies have also produced a wide range of estimated mean national measured IQs, though not as low as Lynn and Vanhanen (2002, 2006, 2012a)'s estimates for sub-Saharan African countries. Using international data from the Program of International Studies Assessment, Hunt and Wittmann (2008) found similar variations in the mean measured IQ of 32 mainly developed countries. Wicherts, Dolan and van der Maas (2010) produced their own estimate of the mean measured IQ in sub-Saharan Africa using more explicit inclusion and exclusion criteria and accessed more African journals than Lynn and Vanhanen. They concluded that the mean national IQ for sub-Saharan Africa is 81, rather than the less than 70 suggested by Lynn and Vanhanen.

Third, the estimates of national IQs correlate significantly and often highly, with other national demographic, economic, and health variables. For example, per capita income, between $r = .59$ and $r = .79$ (Lynn and Vanhanen 2012a), log per capita income, between .80 and .63 (Hunt and Wittmann 2008); adult literacy, between $r = .75$ and $r = .63$, (Lynn and Vanhanen 2012a), tertiary education, between $r = .82$ and $r = .77$ (Lynn and Vanhanen 2012a); educational achievement $r = .91$ (Lynn and Meisenberg 2010) and .63 (Jones and Potrafke 2014), infant mortality rate $r = -.71$ (Lynn and Vanhanen 2012a); and incidence of parasitic-borne infections diseases, between $r = .76$ and $r = .82$ (Eppig *et al*. 2010). If the estimates of national IQs were subject to significant chance error, then this would reduce the correlation with other variables. This therefore suggests that mean national measured IQ and these other variables have common causal factors, though it does not preclude the possibility that there is systematic error in assessments, for example, all assessments used in sub-Saharan Africa could be too low by 25 IQ points.

Fourth, although some of the very low mean national measured IQs, in the 60s and 70s, may seem very surprising, they are actually similar to the mean measured IQs that would be found in developed countries such as the UK or US in the early twentieth-century, had the populations of these countries been given modern IQ tests. This is the Flynn effect, discussed below.

This is not to say that Lynn and Vanhanen (2002, 2006, 2012a)'s studies are not without problems, which undoubtedly they have. It has been pointed out by a number of authors (Ervik 2003, Hunt and Sternberg 2006, Hunt and Carlson 2007, Hunt and Wittmann 2008), that there are obvious methodological problems with using tests that were standardized in the developed world on individuals in developing countries. Lynn and Vanhanen have also been criticized on methodological grounds for not having clear inclusion and exclusion criteria (Wicherts, Dolan, Carlson *et al.* 2010b), not giving correct information about the studies they cite (Hunt 2010), using studies in which the samples of individuals given tests were often poor, small, and apparently unrepresentative of the national population as a whole (Volken 2003, Wicherts, Dolan, Carlson *et al.* 2010) and for making estimates of the national IQs of countries for which there was no IQ data, on the basis of IQ data of neighboring countries, which must be subject to error (Volken 2003). Nonetheless, given the weight of evidence it seems likely that there are large differences between the mean measured IQs of different countries. What is not certain is the exact degree of these differences and whether they are differences in true intellectual ability or simply measured IQ.

Why do these differences in mean national measured IQ occur?

The short answer to the question as to why these differences in measured national IQ occur is that we do not know. There have been a number of tentative explanations, which can be grouped into the following broad categories: genetic, environmental, and test error/bias. These different explanations have different implications for what the test scores would mean for individuals from different ethnic groups.

Genetic causes of national IQ differences

The idea that the ethnic differences in IQ scores are largely genetically determined has been put forward by a number of authors over the years (Jensen 1969, Herrnstein and Murray 1994, Lynn and Vanhanen 2002, 2006, 2012a, Rushton and Jensen 2005). It has further been suggested that, over evolutionary time, the people of northern Europe and northern Asia have had to cope with environments that have favored higher intellectual ability, such as cold temperature (Lynn 2006, 2012b, Lynn and Vanhanen 2012a) and/or an environment that is different from the one in which humans first evolved (Kanazawa 2008), causing higher intelligence to evolve. There is some supporting evidence of these hypotheses, Lynn and Vanhanen (2012b) reviewed the relationship between national measured IQ and temperature and suggest there is a clear negative relationship between current winter temperatures, temperatures during the ice age and current national IQs. Similarly, Kanazawa (2008) showed there was a relationship between mean national IQ and distance from central Africa where humans first evolved. However, this is a long way from proof of an evolutionary and genetic cause of the differences in measured IQ as there are other environmental explanations that equally fit these findings. For example, Eppig *et al*. (2010) found that there was a correlation between $r = .76$ and $r = .82$, between mean national measured IQ and incidence of parasitic-borne infections diseases, suggesting that low measured IQ may be due to disease, which in turn may be a function of climate. So at the moment we do not know if these differences in national measured IQs have any genetic cause. However, if there is a substantial genetic cause then, even if the environments of developing countries were brought up to the standards of developed countries, one would still expect there to be differences in mean national intellectual abilities. It would

also follow that individuals living in developed counties who belonged to ethnic groups with lower genetically determined intellectual ability, on average to have more difficulty coping with the intellectual demands of a western environment.

Environmental causes of national IQ differences

An individual's true intellectual ability is a function of both his/her genetic potentials and environmental nurture. Whether or not an individual, or for that matter a nation, reaches their full potential will depend on having optimal environmental nurture; a number of environmental factors have been proposed as being important:

The Flynn effect

This is the phenomenon whereby the intellectual ability of the population as a whole, at least in industrialized countries, seems to have gone up over about the last 100 years. In a now classic paper, Flynn (1984) found that the longer it was since the test was standardized, the higher the IQ it measured, the rate of increase being about three points per decade. These results have been consistently confirmed (Flynn 1987, Teasdale and Owen 1989, 2000, Truscott and Frank 2001, Sundet *et al*. 2004, Colom *et al*. 2005, Nijenhuis and van der Flier 2007). The evidence for the Flynn effect is therefore strong and demonstrates that the population as a whole has either become more intelligent, and/or has got better at doing IQ tests. It also seems likely that, if as the evidence suggests, the Flynn effect has occurred for the past 100 years at about three points per decade in developed countries, then the average IQ 100 years ago, on today's standards, would be 70, the point at which we now regard individuals as meeting the intellectual criteria for having an ID. It is also similar to the mean measured IQs found in many developing countries today. This therefore raises the intriguing question as to whether the same factors that caused the measured IQ to be low in developed countries a 100 years ago are also causing developing countries to have low measured IQs today. Space does not permit a full review of the possible causes of the Flynn effect, so only the most obvious ones will be considered. Some of these work primarily via physiological processes and some by more psychological means.

Physiological causes

There are a number of physical factors that may affect either the intellectual development of an individual and/or his/her state at the time of taking an IQ test, the most obvious ones being diet and physical health.

Diet

The quality of diet varies both across time and across place, so it may well be a cause of both the differences in national IQ and the Flynn effect. A number of authors (for example Ashem and Janes 1978, Lynn 1990, 2009, Martorell 1998, Sigman and Whaley 1998) have suggested that an improved diet with a range of foods containing necessary vitamins and minerals will increase IQ or the lack of this will decrease it (Bergen 2008). However, Sigman and Whaley (1998) note that with most of the studies it is difficult to draw firm conclusions as to causality, as there may be confounding factors, e.g. children with poor diets may also have low birth weights, less intelligent parents, and poor schooling. Assuming that the relationship is causal,

Martorell (1998) suggests that nutrition may have two ways in which it will affect IQ: first, poor nutrition in the uterus and in childhood will affect development of the nervous system, secondly poor nutrition at the time they take the test will affect performance on the assessment. Therefore, it may be the case that if an individual's IQ is assessed after a recent history of poor nutrition they would score less than they would following a period of good nutrition.

Health and disease

As with diet, disease could have both a permanent effect on cognitive development and/or a temporary reduced cognitive performance when an individual is being assessed. In developed countries there has been a considerable reduction in the incidents of infectious diseases with the increase in vaccinations, more hygienic conditions, and improved health care to treat and eliminate disease if it does occur. It is therefore quite credible that the reduction of disease is one of the causes of the Flynn effect, at least in the first half of the twentieth-century. Differential prevalence of disease may also be one of the reasons for the difference in national IQs. Disease is more prevalent in developing countries and health care is less available. As noted above, Eppig *et al*. (2010) found that the incidence of parasitic-borne infectious diseases in countries correlated relatively highly (between $r = -.76$ and $r = -.82$) with mean national measured IQs. Again there is the issue as to what extent poor health early in life will affect IQ later in life and to what extent bringing somebody from a country with endemic disease and poor health care to one with far less disease and good health care will have on his/her future intellectual ability. An IQ assessment done when somebody is suffering from an illness may well not predict what that individual's measured IQ will be when he/she are healthy, let alone their true intellectual ability.

Psychological causes

There are a number of broadly psychological causes that have been put forward to explain the Flynn effect that would equally well cause the current differences in mean national measured IQs. The most obvious one, education, will be considered here.

Education

In developed countries, there has been a substantial increase in both the amount of time children spend in education and in their overall educational achievements. In England, at the beginning of the twentieth-century all children had some education at primary level, the amount of education increased over time so that now most people will continue in education until the age of 18 and about 40% will gain a higher education qualification. There is also a wealth of evidence demonstrating that educational achievement is highly correlated with measured IQ within countries (for e.g. Baker *et al*. 2015, Deary *et al*. 2007, Wechsler 2003, Wechsler *et al*. 2008, see Mackintosh 2011 for a review). There is therefore a clear link between IQ and education. However, there is still a debate as to causality. To what extent are people achieving more educationally because they are more intelligent and/or to what extent are they more intelligent because they are having more education. The situation is very similar with regard to the relationship between education at a national level and mean measured national IQ. In reviewing previous studies, Lynn and Vanhanen (2012a) reported a range of positive correlations going between $r = .74$ for adult literacy (Meisenberg 2009) and $r = .92$, for the achievement in maths

(Lynn and Mikk 2007). There is a large range in the quality and quantity of education received in different countries (see UNESCO institute for statistics: http://data.uis.unesco.org) with many African countries having education in class sizes of up to 50 in very poor conditions with badly paid teachers and shared textbooks. There is, therefore, a clear possibility that one reason why some countries have relatively low mean national measured IQs is because of a lack of education. The IQs of people from these countries could therefore be improved by either improving education in those countries or by individuals moving to developed countries where they would be exposed to a western educational system. However, there is no definitive proof that this is the direction of causality. We do not know to what degree the lower educational attainment of many countries is as a result of a lower intellectual ability or whether their lower mean measured IQ is as a result of the poor education they received. We also do not know to what extent an individual's intellectual ability would be further developed if they moved to a country where there was a substantially better education system.

Test bias and error

It is not clear if the tests are measuring the same things in individuals from developing countries as they are in people in developed countries. It is possible individuals in developed countries have gradually got better at doing IQ tests specifically because of direct or indirect experience of being tested. It is also possible that western standardized IQ tests do not measure the same things or not measure them to the same extent when used with individuals from developing countries.

Difference in specific ability to do IQ tests

A possible reason for the differences in mean measured IQ over time and ethnic groups could be because some groups are simply better at doing IQ tests specifically. The obvious criticism of the studies cited by Lynn and Vanhanen (2012a) is that the tests used were biased against people from developing countries (See Hunt and Sternberg 2006, Hunt and Wittmann 2008). This seems quite obvious for the two internationally recognized gold standard tests, the WISC and the WAIS (and their subsequent editions), which test knowledge of both language and culture, measuring vocabulary, general knowledge, and cultural/social norms of behavior. However, out of the 459 assessment studies listed in Appendix 1 of Lynn and Vanhanen (2012a)'s book only 44 used any Wechsler tests of any sort or edition. The tests that were used the most were the Raven's Standard Progressive Matrices (146 times) and Raven's Coloured Progressive Matrices (89 times), both of which appear not to require the individual to understand a western language, or be aware of western culture and would seem to be culturally fair. The same applies to the next most commonly used test the Cattell Culturally Fair test (CF) (24 times). However, the cultural fairness of these tests may be superficial as they may well have been subject to a very large Flynn effect in developing countries. The degree to which the Raven's tests have been subject to a Flynn effect is not entirely clear. Lynn and Vanhanen (2012a) say that it is about two points per decade, which is less than the three points per decade that is allowed for in other tests. However, Flynn (2007) states that the Raven's tests have been subjected to much greater gain in scores in developed countries than most other tests at about five points per decade. One possible reason for the Flynn effect is that people in developed countries have become better at doing tests. This may have occurred as tests were gradually used more frequently from the beginning to the mid-twentieth century, giving people more practice in doing tests. Flynn (2007) suggests that, although this may have been responsible for the effect up un-

til the mid twentieth-century, it is not likely to be the cause after that. Nonetheless, it may well still account for some of the differences between national IQs. There is, however, another possible reason for increased test sophistication in developed countries as suggested by Whitaker (2015c), that the Flynn effect occurs not due to direct practice on IQ tests but rather due to real-life practice using abstract reasoning such as occurring on computer games, adapting to constantly changing technology and an increase in technically demanding jobs. Hence people have become better at doing IQ tests due to a generalized practice effect. Therefore, it is clearly possible that a substantial part of the Flynn effect in developed countries is due to increased test sophistication rather than an increase of true intellectual ability. If this is the case then modern IQ tests will probably substantially underestimate the true intellectual ability of people in developing countries, who have not had as much exposure of either being tested directly and/or being required to deal with abstract real-life problems. To what extent the tests would still predict an individual's ability to cope with an intellectually demanding western world, either soon after arriving or after being exposed to the environment for some years is unknown.

Lack of reliability, validity, and measurement invariance

A key factor in the development of IQ tests is to ensure that they are valid and reliable, that is that they measure what they claim to measure accurately. Modern tests are checked for both validity and reliability when they are standardized so that, it at least appears, to be clear that they are measuring what they claim to be measuring (see Whitaker 2013). However, there is the possibility that when the tests are used on groups other than those they where standardized on, they will not be measuring the same thing or as accurately. Here again there is largely a lack of evidence showing that the tests are both valid and reliable across ethnic groups.

Reliability

There are no studies that the author is aware of that have specifically looked at how reliable IQ tests are when used in different ethnic groups. However, recent work has suggested that when tests are used in the low range they are not as accurate as they are in the average range (see Whitaker 2013 for review). As the tests will be used in the low range when used on groups whose mean measured IQ is in the 70s, it is likely that the reliability of the tests will be compromised, quite apart from other possible cultural specific factors that may affect accuracy. Therefore, it cannot be assumed that the tests are accurate when used on different ethnic groups.

Validity/measurement invariance

This is a question of what the tests accurately measure and what they predict about an individual being assessed. The question of whether tests measure the same thing in different groups that may differ in time (as in the Flynn effect), or in cultural background, is that of measurement invariance (Lubke *et al*. 2003). Wicherts *et al*. (2004) investigated if measurement invariance could be assumed in the Flynn effect that is whether tests used at one time are measuring the same thing as the same test used at another time. They looked at five different tests using multi group confirmatory factor analysis to detect what the tests were measuring and failed to find sufficient evidence for measurement invariance over time even though the same tests were being given to the same ethnic groups. What is notable about these studies is that some

of these were done over a relatively short period of 10 years, where one would not expect a great deal of difference between the way people dealt with intellectual type problems. Although the current author is not aware of any studies that have looked at measurement invariance across very different ethnic groups, there would seem to be much greater difference between say a rural African village and London or New York than the same ethnic group separated by a period of 10–60 years. Therefore, one should not assume measurement invariance across ethnic groups.

The issue of what the tests predict about the individual being assessed is particularly important when they are being used to diagnose intellectual disability, as there is an implicit assumption that people with lower IQs would cope less well with the demands of their environment. There are studies showing a strong relationship between measured IQ and various other variables associated with success in life such as education (Mackintosh 2011), earnings (Herrnstein and Murray 1994), and social class (Herrnstein and Murray 1994) and to a lesser extent adaptive behavior (see Whitaker 2013 for review). There are also strong correlations between national measured IQ and some of these variables at a national level (Lynn and Vanhanen 2002, 2006, 2012a). There is some tentative evidence to suggest that there is a relationship between the mean national measured IQ of country of origin and work performance of individuals from these countries when they come to a developed country. Jones and Schneider (2010) found a correlation between Lynn and Vanhanen (2006)'s national IQs of immigrants to the US and how much they get paid. Also Vinogradov and Kolvereid (2010) looked at the relationship between Lynn and Vanhanen (2002)'s mean national measured IQs and being self-employed among immigrants to Norway and found that there is a positive relationship. National IQ was found to be significantly and positively related to the chances of being self-employed; (r = .49) however, the self-employment was also related to length of time an individual had been a resident in Norway and the importance of national IQ in self-employment decreased the longer the individual had been a resident. There are two implications of this study for this paper: First, as self-employment is related to national IQ, this would seem to be some real-world evidence that national IQ predicts ability to perform intellectually in western countries. Second, as this relationship declines with time the individual has been a resident in Norway this could suggest that one effect of residency is to increase intellectual ability. This again raises the question as to how much the intellectual ability of an individual will change when they are exposed to the environment of a developed country. However, neither of these studies provide evidence as to the relationship between mean measured national IQ and an ability to cope sufficiently in a western country to provide one's self with a minimally acceptable quality of life. Although there is a lack of hard evidence on this point it is notable that, first, most people with a measured IQ below 70 in sub-Saharan Africa do cope in their own countries, at least at a basic level for that country, so may well be able to cope with basic tasks in developed countries that are largely not intellectually loaded (Whitaker 2013). Second, Jensen (1998) has noted that when black and white children in special classes in the US, with measured IQs less than 70, are compared in social and play activities the white children seem to look and act less effectively than the black children with equivalent low measured IQs. This suggests that a low IQ is not as predictive of an ability to cope socially in black children as it is in white children.

Can exposure to a western environment increase IQ?

As suggested above, there are theoretical reasons to suppose that if an individual comes to a developed country from a developing country, his/her measured IQ and true intellectual ability will increase. Both the individual's health and diet may improve, they may be exposed to a more scientific/logical way of thinking (Flynn 2007) and they may get a better education. The evidence for whether this happens or does not happen is very scant. As noted above, Vinogradov and Kolvereid (2010) found that the relationship between national IQ and chances of being self-employed lessened over time suggesting that the IQs of immigrants may be increasing but this is only one possible reason for these findings. A further study by Meisenberg *et al*. (2005) found that individuals who had moved away from Dominica (say to the USA) and come back to Dominica had a higher IQ than those who had not moved at all. The implication of this is that exposure to the environment of a developed country increased their IQ; however, there is also the possibility that it was individuals with higher IQs who move away in the first place. So, as with much of what has been discussed in this paper, we do not know if exposure to a western environment would increase intellectual ability or under what condition this could occur, for example, is there a critical age by which exposure has to take place, does the individual have to be personally willing to accept a western way of thinking logically and scenically, or have to be motivated to cope with new intellectual challenges.

What we know

(1) That there probably are differences in mean measured IQ between different countries and different ethnic groups. However, we do not know the magnitude of these differences.
(2) There is also quite good evidence for the Flynn effect showing that in industrialized countries there has been an increase in the mean measured IQ of the population as a whole over the last 100 or so years of about 30 IQ points. However, there is still a debate as to whether this is an increase in true intellectual ability as well as measured IQ, and as to what the causes of the increased IQ are.

What we do not know

(1) What the exact mean measured national IQs are for different countries. Currently, the evidence is of poor quality and at times contradictory as well as lacking consistency in how the studies were done between different countries.
(2) Why there are differences between mean measured national IQs. There are many theories to account for both the Flynn effect and/or difference in mean measured national IQ, though none with strong evidence.
(3) Whether there is any difference in true intellectual ability between ethnic groups or at least genetic potential of intelligence. It is still unclear to what extent the Flynn effect is due to a genuine increase in true intellectual ability or to an increased ability to do IQ tests. The same applies to the difference between the measured IQs of different ethnic groups. If these differences are substantially due to specific ability to do IQ tests, then people with low scores from sub Saharan Africa, for example, may have considerably greater true intellectual abilities than measured IQs and be able to cope with the intellectual demands of a western environment considerably better than would be predicted from their measured IQ scores.

(4) Following from this, we do not know how predictive a low IQ score is of an individual's ability to cope at a basic level in a developed country if they have come from a developing country.
(5) Whether measured IQ and or true intellectual ability will change when an individual comes from a developing country to the west. There is tentative evidence that intellectual ability can increase when somebody comes to live in a developed country from a developing one and there is also some evidence as to what sort of environmental factors could cause this change; however, we do not know how these environmental factors may have their effect or if there is a critical age at which they need to be in effect, and what that age is.

A further issue that should be mentioned is that of the other assessed diagnostic criteria for having ID, that of having a significant reduction in adaptive behavior. Currently, the AAIDD definition requires that this be demonstrated by having a measured level of adaptive behavior below a set cut-off point. Although, compared with the measurement of intellectual ability there is very little in the literature on the measurement of adaptive behavior, what there is suggests that the level of accuracy of adaptive behavior scales is considerably less than of IQ tests (cf. Whitaker 2013). The current author is also not aware of any studies in which adaptive behavior scales have been given to individuals from a range of different counties which would have enabled national levels of adaptive behavior to be compared internationally; however, logic suggests that the type of skills one would need in order to cope in a rural sub-Saharan community would be very different from those assessed in current western standardized adaptive behavior scales as being important for coping in developed counties. Therefore, it is likely that the adaptive behavior part of the definition of ID is equally problematic to that of intellectual ability, when it comes to applying it to individuals from developing countries.

Implications

If a modern western standardized IQ test were to be used on an individual who has recently arrived from a developing country, there would be a lot we do not know about the meaning of the test results. We do not know to what extent it reflects true intellectual ability, what the measured IQ would be in a few months or years time, or how well the individual will be able to cope with the intellectual demands of a western environment either when tested or in the future. From this, it clearly follows that we should not use an IQ cut-off point of 70 or 75 in making a diagnosis of ID and that if IQ tests are to be used at all this should be done with a great deal of caution.

Concerns have been raised about the use of IQ cut-off points as a diagnostic criterion for ID for the native population of developed countries due to the lack of accuracy of IQ tests in the low range. Whitaker (2008b, 2013) and Webb and Whitaker (2012) have suggested that rather than having an IQ cut-off point, one should establish whether the individual is failing to cope with the intellectual demands of his/her environment, that is, whether they provide themselves with a minimally acceptable quality of life. Hare (2016) has suggested that we should put more emphasis on syndromes leading to low intellectual ability and their associated behavioral phenotypes, which he suggests are apparent in 65 to 80 percent of cases. However, although more recent versions of the current internationally recognized diagnostic criteria for ID (DSM-5, ICD-10/11, AAIDD-11) and the BPS (2015) criteria in the UK acknowledge that there are problems with the use of IQ tests in the low range they currently still require a measured IQ below 70 or 75. Many of these diagnostic criteria are relatively recent and so are not likely to change in the

next decade. This presents a problem for the people charged with making the diagnosis, particularly when being asked to assess a person from a developing country. The current author is a clinical psychologist in ID and so has had to consider the practical day-to-day issues when being asked to make a diagnosis of a person newly arrived in the UK from a developing country and who is suspected of having an ID.

There would seem to be merit in finding more about any syndromes the individual may have that may have caused a low IQ as suggested by Hare (2016), however, although this may give some further insight into why the person may be presenting the behaviors they are, having a syndrome does not necessarily mean that the individual is not able to cope intellectually. Furthermore, although Hare (2016) has suggested that in up to 80% of individuals with ID there is an organic cause, others have suggested that it is much less than this (cf. Whitaker 2013).

Whitaker (2013)'s suggestion that clinical judgment should be used more may also have merit. Although the recent BPS guidelines on the diagnosis of ID in adults puts more emphasis on clinical judgment than earlier versions, the current guidelines still seems to suggest that clinical judgment should be confined to situations where measured IQ fall within five points of the IQ cut-off score of 70. However, the IQ 70 cut-off point is not totally explicit, Whitaker (2015a) in reviewing the 2015 guidance has noted that the wording is sufficiently ambiguous, so that, clinicians who are aware of the poor accuracy of measures of IQ can use clinical judgment over a greater range of measured IQs and adaptive behavior scores. This would seem to be particularly relevant when assessing individuals newly arrived from developing countries and may be the way forward. The key questions in making a diagnosis of ID in somebody from a developing country therefore should first not be "does the individual have a measured IQ below 70?" but rather: "Is this individual able to cope?" that is, are they providing themselves and any dependents with a quality of life that society would deem of minimum acceptable standard? Although an assessment of adaptive behavior may be used here, ultimately this is a question of judgment. Secondly, if an individual were failing to cope, one would need to ask if this is primarily in intellectually loaded tasks such as understanding and reasoning. Thirdly, if one can get information as to how his/her abilities compared with other individuals from the same linguistic and cultural background, one could make a judgment as to whether they would have been regarded as having an ID within their own community. However, it may well be the case that after getting as much information as possible it is still not clear whether an individual should be regarded as having an ID. In such cases the best course of action may be to consider whether a diagnosis would be in the individual's best interests, which may well be dependent on what services are available locally. It may also be wise not to make a definitive diagnosis but rather a provisional one, which explicitly accepts that a lot may not be known about the individual being assessed and/or how they may be after being in a developed country for some time. These are only initial suggestions; there clearly is a need for a wider debate.

Note

[1] Ethiopia is chosen as an example of a relatively large and well-developed sub-Saharan African country.

References

1. Ashem, B. and Janes, M. D.. 1978. Deleterious effects of chronic undernutrition on cognitive ability. *Journal of Child Psychology and Psychiatry*, 19, 23–31. 10.1111/jcpp.1978.19.issue-1 [PubMed] [CrossRef] [Google Scholar]

2. Baker, D. P., Eslinger, P. J., Benavides, M., Peters, E., Dieckmann, N. F. and Leon, J.. 2015. The cognitive impact of the education revolution: A possible cause of the Flynn Effect on population IQ. *Intelligence*, 49, 144–158. 10.1016/j.intell.2015.01.003 [CrossRef] [Google Scholar]

3. Bergen, D. C. 2008. Effects of poverty on cognitive function: A hidden neurologic epidemic. *Neurology*, 71, 447–451. 10.1212/01.wnl.0000324420.03960.36 [PubMed] [CrossRef] [Google Scholar]

4. BPS . 2015. *Guidance on the assessment and diagnosis of intellectual disabilities in adulthood*. Leicester: The British Psychological Society. [Google Scholar]

5. Buj, V. 1981. Average IQ values in various European courtiers. *Personality and Individual Differences*, 2, 168–169. 10.1016/0191-8869(81)90013-1 [CrossRef] [Google Scholar]

6. Colom, R., Lluis-Frot, J. M. and Andre's-Pueyo, A.. 2005. The generational intelligence gains are caused by decreasing variance in the lower half of the distribution: Supporting evidence for the nutrition hypothesis. *Intelligence*, 33, 83–91. 10.1016/j.intell.2004.07.010 [CrossRef] [Google Scholar]

7. Deary, I. J., Strand, S., Smith, P. and Fernandes, C.. 2007. Intelligence and educational achievement. *Intelligence*, 35, 13–21. 10.1016/j.intell.2006.02.001 [CrossRef] [Google Scholar]

8. Eppig, C., Fincher, C. L. and Thornhill, R.. 2010. Parasite prevalence and the worldwide distribution of cognitive ability. *Proceedings of the Royal Society B: Biological Sciences*, 277, 3801–3808. 10.1098/rspb.2010.0973 [PMC free article] [PubMed] [CrossRef] [Google Scholar] Retracted

9. Ervik, A. O. (2003). Review of IQ and the wealth of nations. *The Economic Journal*, 113, F406–F408. 10.1111/ecoj.2003.113.issue-488 [CrossRef] [Google Scholar]

10. Flynn, J. R. 1984. The mean IQ of Americans: Massive gains 1932–1978. *Psychological Bulletin*, 95, 29–51. 10.1037/0033-2909.95.1.29 [CrossRef] [Google Scholar]

11. Flynn, J. R. 1987. Massive IQ gains in 14 nations: What IQ tests really measure. *Psychological Bulletin*, 101, 171–191. 10.1037/0033-2909.101.2.171 [CrossRef] [Google Scholar]

12. Flynn, J. R. 2007. *What is Intelligence: Beyond the Flynn effect*. Cambridge: Cambridge University Press. 10.1017/CBO9780511605253 [CrossRef] [Google Scholar]

13. Flynn, J. R. 2013. *Intelligence and human progress: The story of what was hidden in our genes*. Oxford: Academic Press. [Google Scholar]

14. Gelade, G. A. 2008. The geography of IQ. *Intelligence*, 36, 495–501. 10.1016/j.intell.2008.01.004 [CrossRef] [Google Scholar]

15. Hare, D. J. 2016. Beyond IQ: The case for a new conceptualization of intellectual disabilities. *Bulletin of the Faculty of People with Intellectual Disabilities*, 14, 12–18. [Google Scholar]

16. Herrnstein, R. J. and Murray, C.. 1994. *The bell curve: intelligence and class structure in American life*. New York: Free Press. [Google Scholar]

17. Hunt, E. 2010. The rights and responsibilities implied by academic freedom. *Personality and Individual Differences , 49*, 264–271. [Google Scholar]

18. Hunt, E. B. and Carlson, J. S.. 2007. Considerations relation to the study of group differences in intelligence. *Perspectives on Psychological Science*, 2, 194–213. 10.1111/j.1745-6916.2007.00037.x [PubMed] [CrossRef] [Google Scholar]

19. Hunt, E. and Sternberg, R. J.. 2006. Sorry wrong number: An analysis of a study of a correlation between skin color and IQ. *Intelligence*, 34, 131–137. 10.1016/j.intell.2005.04.004 [CrossRef] [Google Scholar]

20. Hunt, E. and Wittmann, W.. 2008. National intelligence and national prosperity. *Intelligence*, 36, 1–9. 10.1016/j.intell.2006.11.002 [CrossRef] [Google Scholar]

21. Jensen, A. R. 1969. How much can we boost IQ and scholastic achievement? *Harvard Educational Review*, 39, 1–123. 10.17763/haer.39.1.l3u15956627424k7 [CrossRef] [Google Scholar]

22. Jensen, A. R. 1998. *The g Factor: The science of mental ability*. Westport, CT: Praeger. [Google Scholar]

23. Jones, G. and Potrafke, N.. 2014. Human capital and national institutional quality: Are TIMSS, PISA, and national average IQ robust predictors? *Intelligence*, 46, 148–155. 10.1016/j.intell.2014.05.011 [CrossRef] [Google Scholar]

24. Jones, G. and Schneider, W. J.. 2010. IQ in the production function: Evidence from immigrant earnings. *Economic Inquiry*, 48, 743–755. [Google Scholar]

25. Kanazawa, S. 2008. Temperature and evolutionary novelty as forces behind the evolution of general intelligence. *Intelligence*, 36, 99–108. 10.1016/j.intell.2007.04.001 [CrossRef] [Google Scholar]

26. Lubke, G. H., Dolan, C. V., Kelderan, H. and Mellenbergh, G. J.. 2003. On the relationship between sources of within- and between-group differences and measurement invariance in the common factor model. *Intelligence*, 31, 543–566. 10.1016/S0160-2896(03)00051-5 [CrossRef] [Google Scholar]

27. Lynn, R. 1990. The role of nutrition in secular increases in intelligence. *Personality and Individual Differences*, 11, 273–285. 10.1016/0191-8869(90)90241-I [CrossRef] [Google Scholar]

28. Lynn, R. 2006. *Race differences in intelligence: An evolutionary analysis*. Augusta, GA: Washington Summit Books. [Google Scholar]

29. Lynn, R. 2009. What has caused the Flynn effect? Secular increase in the developmental Quotient of infants. *Intelligence*, 37, 16–24. 10.1016/j.intell.2008.07.008 [CrossRef] [Google Scholar]

30. Lynn, R. and Harvey, J.. 2008. The decline of world's IQ. *Intelligence*, 36, 112–120. 10.1016/j.intell.2007.03.004 [CrossRef] [Google Scholar]

31. Lynn, R. and Meisenberg, G.. 2010. National IQs calculated and validated for 108 nations. *Intelligence*, *38*, 353–360. 10.1016/j.intell.2010.04.007 [CrossRef] [Google Scholar]

32. Lynn, R. and Mikk, J.. 2007. National differences in intelligence and educational attainment. *Intelligence*, 35, 115–121. 10.1016/j.intell.2006.06.001 [CrossRef] [Google Scholar]

33. Lynn, R. and Vanhanen, T.. 2002. *IQ and the wealth of nations*. Westport, CT: Praeger. [Google Scholar]

34. Lynn, R. and Vanhanen, T.. 2006. *IQ and global inequality*. Augusta, GA: Washington Summit Publications. [Google Scholar]

35. Lynn, R. and Vanhanen, T.. 2012a. *Intelligence: A unifying construct for the social sciences*. London: Ulster Institute for Social Research. [Google Scholar]

36. Lynn, R. and Vanhanen, T.. 2012b. National IQs: A review of their educational, cognitive, economic, political, demographic, sociological, epidemiological, geographic and climatic correlates. *Intelligence*, 40, 226–234. 10.1016/j.intell.2011.11.004 [CrossRef] [Google Scholar]

37. Mackintosh, N. J. 2011. *IQ and human intelligence* 2nd ed. Oxford: Oxford University Press. [Google Scholar]

38. Martorell, R. 1998. Nutrition and worldwide rise in IQ scores. In: Neisser U.. *The rising curve: Long-term gains in IQ and related measures*. Washington, DC: American Psychological Association, pp. 183–206. [Google Scholar]

39. Meisenberg, G. 2009. Wealth, intelligence, politics and global fertility differences. *Journal of Biosocial Science*, 41, 519–536. 10.1017/S0021932009003344 [PubMed] [CrossRef] [Google Scholar]

40. Meisenberg, G., Lawless, E., Lambert, E. and Newton, A.. 2005. The Flynn effect in the Caribbean: Generational change of test performance in Dominica. *Mankind Quarterly*, 46, 29–70. [Google Scholar]

41. Nijenhuis, J. and van der Flier, H.. 2007. The secular rise in IQs in the Netherlands: Is the Flynn effect on g? *Personality and Individual Differences*, 43, 1259–1265. 10.1016/j.paid.2007.03.016 [CrossRef] [Google Scholar]

42. Rindermann, H. 2013. African cognitive ability: Research, results, divergences and recommendations. *Personality and Individual Differences*, 55, 229–233. 10.1016/j.paid.2012.06.022 [CrossRef] [Google Scholar]

43. Rushton, J. P. and Jensen, A. R.. 2005. Thirty years of research on race differences in cognitive ability. *Psychology, Public Policy and Law*, 11, 235–294. 10.1037/1076-8971.11.2.235 [CrossRef] [Google Scholar]

44. Sigman, M. and Whaley, S. E.. 1998. The role of nutrition in the development of intelligence. In: Neisser U., ed. *The rising curve: Long-term gains in IQ and related measures*. Washington, DC: American Psychological Association, pp. 155–182. [Google Scholar]

45. Sundet, J. M., Barlaug, D. G. and Torjussen, T. M.. 2004. The end of the Flynn Effect? A study of secular trends in the mean intelligence test scores of Norwegian conscripts during the half a century. *Intelligence*, 32, 249–262. [Google Scholar]

46. Teasdale, T. W. and Owen, D. R.. 1989. Continuing secular increases in intelligence and stable prevalence of high intelligence levels. *Intelligence , 13*, 255–262. 10.1016/0160-2896(89)90021-4 [CrossRef] [Google Scholar]

47. Teasdale, T. W. and Owen, D. R.. 2000. Forty-year secular trends in cognitive ability. *Intelligence*, 28, 115–120. 10.1016/S0160-2896(99)00034-3 [CrossRef] [Google Scholar]

48. Truscott, S. D. and Frank, A. J.. 2001. Does the Flynn effect affect IQ scores of students classified as LD? *Journal of School Psychology*, 39, 319–334. 10.1016/S0022-4405(01)00071-1 [CrossRef] [Google Scholar]

49. Vinogradov, E. and Kolvereid, L.. 2010. Home country national intelligence and self-employment rates among immigrants in Norway. *Intelligence*, 38, 151–159. 10.1016/j.intell.2009.09.004 [CrossRef] [Google Scholar]

50. Volken, T. 2003. IQ and the wealth of nations: A critique of Richard Lynn and Tatu Vanhanen's book. *European Sociological Review*, 19, 411–412. 10.1093/esr/19.4.411 [CrossRef] [Google Scholar]

51. Webb, J. & Whitaker, S.. 2012. Defining Learning Disability. *The Psychologist , 25*, 440–443. [Google Scholar]

52. Wechsler, D. 2003. *WISC-IV technical and interpretive manual*. San Antonio, TX: Harcourt Associates Inc. [Google Scholar]

53. Wechsler, D., Coalson, D. L. and Raiford, S. E.. 2008. *WAIS-IV Technical and interpretive manual*. San Antonio, TX: Pearson. [Google Scholar]

54. Whetzel, D. L. and McDaniel, M. A.. 2006. Prediction of national wealth. *Intelligence*, 34, 449–458. 10.1016/j.intell.2006.02.003 [CrossRef] [Google Scholar]

55. Whitaker, S. 2008a. The stability of IQ in people with low intellectual ability: An analysis of the literature. *Intellectual and Developmental Disabilities*, 46, 120–128. 10.1352/0047-6765(2008)46[120:TSOIIP]2.0.CO;2 [PubMed] [CrossRef] [Google Scholar]

56. Whitaker, S. 2008b. Intellectual disability: A concept in need of revision. *The British Journal of Development Disabilities*, 54, 3–9. 10.1179/096979508799103350 [CrossRef] [Google Scholar]

57. Whitaker, S. 2013. *Intellectual disability: An inability to cope with an intellectually demanding world*. Basingstoke: Palgrave MacMillan. 10.1057/9781137025586 [CrossRef] [Google Scholar]

58. Whitaker, S. 2015a. Guidance on the assessment of intellectual disability in adulthood: Getting there but still some way to go. *The Bulletin of the Faculty of People with Intellectual Disabilities*, 13, 16–21. [Google Scholar]

59. Whitaker, S. 2015b. Error in the measurement of low IQ: Implications for research, clinical practice and diagnosis. *Clinical Psychology Forum*, 274, 37–40. [Google Scholar]

60. Whitaker, S. 2015c. Intelligence across the life span. *Paper read that the Annual Conference of the North East of England Branch of the British Psychical Society*. York. [Google Scholar]

61. Wicherts, J. M., Dolan, C. V., Hessen, D. J., Oosterveld, P., van Baal, G. C. M., Boomsma, D. I. and Span, M. M.. 2004. Are intelligence tests measurement invariant over time? Investigating the nature of the Flynn effect. *Intelligence*, 32, 509–537. 10.1016/j.intell.2004.07.002 [CrossRef] [Google Scholar]

62. Wicherts, J. M., Dolan, C. V., Carlson, J. S. and van der Maas, H. L. J.. 2010. Another failure to replicated Lynn's estimate of the average IQ of sub-Saharan Africans. *Learning and Individual Differences*, 20, 155–157. 10.1016/j.lindif.2010.03.010 [CrossRef] [Google Scholar]

63. Wicherts, J. M., Dolan, C. V. and van der Maas, H. L. J.. 2010. A systematic literature review of the average IQ of sub-Saharan Africans. *Intelligence*, 38, 1–20. 10.1016/j.intell.2009.05.002 [CrossRef] [Google Scholar]