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FLynn effect in Turkey: A comment on Kagitcibasi and Biricik (2011)

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ABSTRACT

Kagitcibasi and Biricik (2011) presented generational IQ gains for Turkey on the Goodenough Draw-a-Man test (Draw-a-Person). Following their results (their Table 1) the mean IQ gain from 1977 to 2010 (33 years) across three different population groups was 5.24 IQ (per decade dec = 1.59 IQ points). However, Kagitcibasi and Biricik did not acknowledge the changing social composition of society: the share of groups which had a lower IQ in 1977 and 2010 decreased, and the share of groups which had a higher IQ in 1977 and 2010 increased. Considering this, we came to an estimate of dec = 3.52 IQ points for the FLynn effect in Turkey over the past decades.

1. Introduction

Florence Goodenough (1886–1959) developed in the 1920s the Draw-A-Man test (1926; today called Draw-A-Person test, DAP). In this test, normally administered to children, the cognitive quality of drawings of persons (e.g. are there hands, is there a neck, is there a body, use of perspective, persons as cephalopods or with body) is used to measure cognitive ability and cognitive development. Past research with this test in emerging countries such as Brazil revealed remarkable gains (1930 to 2004, per decade dec = 2.36 IQ points; Colom, Flores-Mendoza, & Abad, 2007).

The FLynn effect[1] is a worldwide phenomenon and in the last decades especially strong in developing and emerging countries (Flynn, 2012; Khaleefa, Abdelwahid, Abdulradi, & Lynn, 2008; Meisenberg, Lawless, Lambert, & Newton, 2005, 2006). This gives hope for further improvement especially in the lower achieving parts of the world (e.g. Rindermann, 2012a; Rindermann & te Nijenhuis, 2012). Whether the secular rise of IQs is on the *g*-factor or not, if it is a real rise or only representing IQ-inflation, are contentious issues. There is some contradictory evidence (e.g. declining innovation rates; Woodley, 2012). However, many possible supporting factors for cognitive development such as health care, nutrition, education and stimulation (e.g. by gadgets) have improved in quality and quantity and reach today larger fractions of society (e.g. Lynn, 2009; Meyer, Ramirez, & Soysal, 1992). Reciprocally, indicators of increased ability such as increased technology complexity, higher rates of scientists among employed population, increased wealth (but not higher growth rates in industrialized countries since the 1970s), less superstition and a generally improved civilization level (declining murder rates, more rule of law and democracy) indirectly indicate higher cognitive ability levels (Oesterdiekhoff, 2012; Pinker, 2011; Rindermann, 2012b; Rindermann, Sailer, & Thompson, 2009).

Kagitcibasi and Biricik (2011, their Table 1) have presented generational IQ gains for Turkey on the DAP. In 33 years (between 1977 and 2010), people living in "remote-medium" regions (lower classes) gained +23.05 IQ points (dec = 6.98 IQ points), people in "nearby-low" regions (low to middle classes) gained +7.40 IQ points (dec = 2.24 IQ points) and people in "urban-middle" (middle classes) gained 0.62 IQ points (dec = 0.19 IQ points). Kagitcibasi and Biricik (2011) weighted the averaging according to their sample sizes and came to a mean of 5.24 IQ in 33 years (per decade dec = 1.59 IQ points).

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[1] "FLynn effect", a combination of the names of the two researchers who rediscovered secular score gains in intelligence, namely Richard Lynn and James Flynn.

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However, there are three problems if we take this result as an assumption for the FLynn effect: (1) The share of population groups in Turkey most probably does not correspond to the sample sizes they used (1977: remote-medium 14%, nearby-low 43%, urban-middle 43%; 2010: remote-medium 17%, nearby-low 63%, urban-middle 20%). (2) The share of population groups most probably has changed differently to their chosen samples. (3) Migrations between the groups (the majority from down to up) will bias the within group development. The last problem does not effect an estimation of the FLynn effect in Turkey in general.

We will try to consider Turkey's population shares and population changes to come to a more convincing estimate of the FLynn effect in Turkey.

2. Method

2.1. Kagitcibasi and Biricik's samples

Kagitcibasi (1979) and Kagitcibasi and Biricik (2011) used the Draw-A-Person test for fifth graders (age around 11 years) in 2010 in the city of Bursa and in the region around it. Bursa is the fourth biggest city in Turkey. It is near to Istanbul (90 km) in the far west of Turkey. There is automobile, steel and textile industry and fruit farming. Since 1975, there is a university. The population quadrupled from 1980 (445.000) to 2011 (1.948.000; http://de.wikipedia.org/wiki/Bursa, 1-14-2012). Like in other cities of the Turkish west, the majority of the population growth is due to immigration from the central and eastern parts of Turkey which are less developed.

2.2. Our population estimates

We used published data on population groups. Unfortunately, to our knowledge, no published data exist applying the same form of population division like the one used by Kagitcibasi and Biricik. However, the OECD, 2011 Factbook provides data for rural population (25.59%), intermediate (23.82%) and urban population (50.59%). For 1975, data are provided by the Turkish Fertility Survey 1978 (Hacettepe Institute of Population Studies, 1980): 58.19% lived in rural regions, 41.81% in urban. No finer grained distinction was made. We used two alternative approaches for our estimations. According to the first approach, we assumed a larger dissimilarity in the fractions of rural and intermediate for 1977 (1975) than for 2009 (OECD, 2011: 25.59% vs. 23.82%). Therefore, we split the 1975 rural of 58.19% in 38.41% rural and 19.20% intermediate (two thirds to one third). In a second approach we compared 1977 and 2010 by using only two population groups (summing 2010 "rural" and "intermediate").

Test results are not given in present-day, FLynn-corrected Greenwich IQ measures. Only their relative meaning, comparing 1977 and 2010, is relevant.

3. Results

According to our first approach and the published (and estimated) population estimates a mean IQ of 87.41 points results for 1977/1975 ($IQ_{remote} \times share_{remote} + IQ_{nearby} \times share_{nearby} + IQ_{urban} \times share_{urban}$; the IQs stem from Kagitcibasi & Biricik, 2011, Table 1, 1977 IQs, the shares from our estimations; the largest number between 0 and 1 rounded up to 1 to come to 100%; in numbers: $70.64 \times .39 + 89.39 \times .19 + 102.09 \times .42$). For 2010 results a mean IQ of 99.03 (the smallest number between 0 and 1 rounded down to 0 to come to 100%; in numbers: $93.69 \times .25 + 96.79 \times .24 + 102.71 \times .51$). This means an IQ increase of 11.62 IQ points in 33 years, per decade dec = 3.52 IQ points.

Only distinguishing between two groups (i.e., our second approach, urban vs. not) leads to an IQ of 89.29 points in 1977 ($80.02 \times .58 + 102.09 \times .42$) and 99.05 points in 2010 ($95.24 \times .49 + 102.71 \times .51$). This means an IQ increase of 9.76 IQ points in 33 years, per decade dec = 2.96 IQ points. Most probably this underestimates the average IQ increase because a stronger population reduction at the lower end is not considered.

4. Discussion

Based on population data, we came to an average FLynn effect of dec = 3.52 IQ points in Turkey between 1977 and 2010. The empirical measure of dec = 3.52 IQ points is more than double the size of the Kagitcibasi and Biricik result of dec = 1.59 IQ points. This is slightly higher than the general average for industrialized countries ("First World") in the 20th century (Pietschnig & Voracek, 2012). But it is smaller than what was reported for other developing and emerging regions such as Africa (dec = 4.18 IQ; Wicherts, Dolan, Carlson, & Maas, 2010), Argentina (dec = 6.28 IQ; Flynn & Rossi-Casé, 2012) and Dominica (dec = 5.10 IQ; Meisenberg et al., 2005). One possible explanation is that the much larger fertility in less developed East Turkey compared to West Turkey has interfered with the effects of the actual improvements in general biological and intellectual living conditions regarding, for example, health care, nutrition, education (e.g. in 1997, prolongation of compulsory education from 5 to 8 years with delayed effects on fifth graders via higher educational level of their parents) and cognitive stimulation (e.g. internet) being all supportive for cognitive development. Prolonged compulsory education will also reduce the fertility rate among premodern (and relatively low educated and low intelligent) groups. On the other hand, the at least mild re-Islamization could have an impeding effect (e.g. via an increase of education in religious İmam Hatip schools). One hint on cultural factors is that the IQ gain in Saudi-Arabia is nearly identical to the one in Turkey (dec = 3.55 IQ; Batterjee, Khaleefa, Ali, & Lynn, 2013). In future research, a closer look at instruction and curriculum and their changes is necessary.

Nevertheless, the past ability gains indicate continuing gains: young children become adults and can provide as parents for their own children a higher quality family environment creating more smart children again. In addition, longer education (12 years compulsory education is prospected) will at least have some effect because longer and cumulative knowledge acquisition at best triggers a "virtuous circle" within ability, for example, between fluid and crystallized intelligence (Maas et al., 2006; Rindermann, Flores-Mendoza, & Mansur-Alves, 2010), and within society, for example, between more rational decisions of voters and more rational decisions of politicians.