



## Brain drain in Syria's ancient capital: No Flynn Effect in Damascus, 2004–2013/14

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### ABSTRACT

The results of two administrations of the SPM to two samples of Damascus school children aged 13 to 18 are compared. It is shown that average SPM scores did not change statistically significantly between 2004 and 2013/14. In light of Flynn Effects in other developing countries, it is suggested that the brain drain caused by the ongoing civil war in Syria – and around Damascus specifically – would substantially explain this finding. In addition, it is shown that in both samples intelligence declines from late adolescence, a phenomenon which has been observed in other Arab countries.

### 1. Introduction

The Flynn Effect (e.g. Flynn, 2012) refers to the secular increase in IQ scores reported in Western countries during the twentieth century. On average, this has amounted to an increase of approximately 3 points per decade. The Flynn Effect has been found to have been the most pronounced on the less g-loaded subtests (e.g. te Nijenhuis & Van der Flier, 2013). Since the late 1990s, a Negative Flynn Effect has been reported in a number of European countries. This has amounted to an average IQ loss of 2.44 points per decade (see Dutton, Van der Linden, & Lynn, 2016). This has taken place on the most g-loaded subtests (Woodley & Meisenberg, 2013; Woodley Menie and Dunkel, 2015, cf. Dutton & Lynn, 2015).

Flynn Effects are have been reported in developing countries since the 1990s. Indeed, Flynn (2012) documents Flynn Effects in Kenya, Saudi Arabia, Dominica, Turkey, Sudan and China; this being a partial list of developing countries where Flynn Effects have been documented. More recently, however, further negative Flynn Effects have been reported, notably in Middle Eastern countries. Dutton, Bakhiet, Essa, Blahmar, and Hakami (2017) found a Negative Flynn Effect in Kuwait of 6.2 points per decade on the SPM among a representative sample aged between 9 and 15 while Dutton, Bakhiet, Ziada, Essa, and Blahmar (2017) have found a negative Flynn Effect, between 1999 and 2010, among children in Khartoum aged between 9 and 18, amounting to a

loss of 2.13 IQ points per decade. In terms of understanding the causes of the Negative Flynn Effect, there is evidence that it may not be the same in these developing countries when compared to developed ones.

Pietschnig and Voracek (2015) have argued, in a meta-analysis, that a key cause of the Flynn Effect is slowing Life History Speed (LHS). This has occurred due to industrialization fostering a more predictable environment. This has led to increased specialization and increased levels of education. This, in turn, has caused the population to think in a more analytical and scientific way. As Flynn (2012, p.12) has put it, society increasingly dons 'scientific spectacles'. People see the world in a scientific way and think in a highly analytical fashion. In their meta-analysis, Dutton et al. (2016) have noted that the Flynn Effect is not mainly occurring on g. They argue that a very substantial increase in weakly g-loaded subtests (specifically 'similarities') appears to be the driver of the Flynn Effect, a point with which Flynn (2012) concurs. With regard to the Negative Flynn Effect, Dutton et al.'s (2016) meta-analysis concludes that a key cause would appear to be the negative correlation between fertility and intelligence in Western countries.

But this does not appear to be the cause of the Negative Flynn Effect in Middle Eastern countries. Dutton et al. (2017) concluded that the negative intelligence-fertility nexus can only explain a very small percentage of the Negative Flynn Effect in Khartoum (or Kuwait) based on the available data. They argue that an explanation which is more consistent with age specific variation in the intensity of the Negative

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Flynn Effect in these countries is the presence of the so-called ‘Muslim Curriculum’. This is a school curriculum which is strongly focused around teaching Islam to the relative exclusion of scientific subjects. Kuwait and Sudan have adopted a strongly religious curriculum. Age and time related variation in the intensity of the employment of this curriculum parallels age and cohort variation in the intensity of the Negative Flynn Effect. Another explanation, in the case of Sudan, may be that compulsory schooling was only introduced in Sudan after data were collected from the first sample in 1999.

It is possible that this is a general trend in Middle Eastern countries. At first glance, it might be assumed that a negative Flynn Effect in a developing country – or the slowing down or cessation of the Flynn Effect – might simply reflect developing countries undergoing a delayed version of what has happened in Western countries. For example, a plateau of the Flynn Effect was recorded in the Porto Alegre region of Brazil between 1990 and 2000 (Bandeira, Costa, & Arterche, 2012). The authors observe that this is a very wealthy area of Brazil in which the living standards are very high by Brazilian standards. Over the period between the administrations, the region also witnessed improving levels of health and education. Thus, one interpretation of the situation in Port Alegre is that it is close to Western living standards and this has led to a cessation of the Flynn Effect, as has already been recorded in many Western countries (see Dutton et al., 2016). However, we have seen that there are Negative Flynn Effects now documented in two Middle Eastern countries (Kuwait and Sudan) and they do not appear to have the same causes as Western ones. To discern whether there is a general pattern in these regions, it is important to gather as many cases as possible. Accordingly, in this study we will compare two cohorts from Damascus, the capital of Syria.

## 2. Method

The first set of results is from an unpublished doctoral thesis from the University of Damascus (Rahma, 2004). The thesis presents a standardization of the Standard Progressive Matrices administered to a sample of 7 to 18 year olds from all schools in Damascus, selected at random from each year group. The second set of results is from an unpublished Master's Thesis, also from the University of Damascus (Ola, 2015). This later administration occurred between 2013 and 2014. The SPM was administered to 1123 students (567 male, 656 female) from all schools in Damascus. The students were selected at random from each year group. We have limited our results to 13 to 18 year olds, such that they are comparable in terms of age. The fact that they were from all schools across the city would help to make them representative sociologically.

## 3. Results

It can be seen from Table 1 that there are no statistically significant differences in the scores when comparing the 2004 cohort and the 2014 cohort. In other words, there is no Flynn Effect or Negative Flynn Effect in Damascus; simply a plateau. The other noteworthy finding is that the

average SPM scores fall, in both cohorts, when comparing those aged 17 to those aged 18. In both cases, this decline was found to be statistically significant at  $< 0.001$ . We explore why this might be the case below.

## 4. Discussion

It is very interesting that the SPM scores have plateaued when comparing two Damascus samples a decade apart. Pietschnig and Voracek (2015) observe in their meta-analysis of the Flynn Effect that, in Western countries, the effect seems to follow a clear process. The extent of the Flynn Effect gradually slows down over time until it reaches a plateau and, as Dutton et al. (2016) have observed, it then becomes a Negative Flynn Effect. Unfortunately, we cannot trace the Flynn Effect by year in Damascus in this way. However, in light of evidence of Flynn Effects in other Middle Eastern countries (see Flynn, 2012) we might expect there to be a Flynn Effect in Damascus. But there clearly is not.

The absence of this Flynn Effect may have a number of causes. There is circumstantial evidence – if no more than that – of a ‘brain drain’ in Syria and specifically Damascus. Most obviously, a civil war has been raging in Syria since 2011 (Van Dam, 2017). This has led to massive displacement of the population. Almost half a million people have been killed in this conflict. Around 4 million Syrians are now refugees in other countries, meaning that in the last six years a sixth of the population of Syria – which was originally 22 million – have fled the country. Syria had one of the highest literacy rates in the Middle East before the conflict but now around 45% of children in Syria are no longer attending school at all (Akkoc, 2016). The situation is particularly acute in Damascus as, although it is a government stronghold, it is surrounded by warzones, making it a tense and dangerous place in which to live. Accordingly, relatively close to the beginning of the war there was large scale internal migration from Damascus to safer coastal towns. This has led to a noticeable internal brain drain, including shortages of qualified doctors in Damascus itself (Cambanis, 2015). Gallagher (2012, p.95) refers to ‘the steady brain drain of young people who graduate and then pursue careers outside the country.’ It is widely agreed that the ‘middle class’ have, to a great extent, fled Damascus for the relative safety of coastal towns or simply other countries. Those who remain are the very wealthy elite and the ‘very poor’ (Solomon, 2017). Consistent with this, it has been found that 86% of those who fled Syria as refugees in 2015 had completed secondary school and almost half had attended university, according to the UN (Nichols, 2015). It should be noted that ‘brain drain’ in Syria was commented on even in the 1980s (Hopwood, 2013, p.128), but it is has intensified in the context of the civil war which has been engulfed the country since 2011 (Starr, 2012, p.139).

Many studies have found that intelligence predicts migration, at least in peace time (see Carl, 2015). The more intelligent have a longer time preference, are more inclined to plan for the future, are better able to judge how situations will unfold, and are better able to accrue the resources necessary in order to migrate, as evidenced by socioeconomic status being a mediating factor in the association (Jokela, 2014).

**Table 1**  
SPM Scores for 13 to 18 year olds in Damascus, 2004 and 2013/2014.

Age	2004			2013/14			Change in IQ points 2004–13/14		Unpaired t-statistics ( $H_0 = \text{no dif.}$ )	
	N	Mean	SD	N	Mean	SD	Dif.	Cohen's <i>d</i>	<i>t</i>	<i>p</i> (one-tailed)
13	355	29.15	7.75	183	29.64	7.68	0.49	0.06	0.697	0.243
14	266	32.50	7.30	179	32.63	7.29	0.13	0.02	0.184	0.427
15	360	34.10	6.25	192	34.10	6.36	0.00	0.00	0.000	0.500
16	303	35.95	6.50	189	36.00	6.63	0.05	0.01	0.082	0.467
17	177	38.40	5.75	185	38.59	6.10	0.19	0.03	0.305	0.380
18	132	35.60	7.00	195	35.21	6.50	− 0.39	− 0.06	− 0.516	0.303
Total	1593	34.28	6.76	1123	34.36	6.76	0.08	0.01	0.297	0.383

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