Relation Between Intelligence and Family Size, Position, and Income in Adolescent Girls in Saudi Arabia

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Abstract

Data are reported showing statistically significant negative correlations between intelligence and family size, position, and income in a sample of 604 adolescent girls in Saudi Arabia. There were no statistically significant correlations or associations between whether the mother or father were deceased or both parents were alive, and whether the parents were living together or were divorced.

Introduction

There have been many studies in economically developed countries of the relation between the intelligence of children and their family size (number of siblings), family position, and parental income. The studies of the intelligence of children and family size have invariably found that these are negatively related, i.e., the larger the family size, the lower the intelligence of the children. Seventeen of these studies are summarized by Lynn (1996, p. 61) from Britain, the United States, Greece, and New Zealand. All of the correlations in these studies were

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negative, ranging between $-.40$ in Greece and $-.16$ in New Zealand. One of the first to report this negative correlation was Lentz (1927) who reported a correlation of $-.30$ between intelligence and family size in the United States. Lentz argued that the intelligence of children is on average the same as that of their parents, the negative correlation between intelligence and family size implied that there must be more children of low intelligence in the child generation than in the parental generation, and therefore the genotypic intelligence of the population must be declining. This inference has been accepted by many other investigators of this phenomenon, reviewed by Lynn (1996, pp. 60–63).

Studies in economically developed countries of the relation between the intelligence of children and their family position have typically found that first born children have the highest average IQ, and the average IQ declines in those born later (Mackintosh, 2011, p. 308).

Studies in economically developed countries of the relation between the intelligence of children and their parental income have invariably found that the association is positive, i.e., children of families with high incomes have higher average IQs than those of families with low incomes, e.g., Lynn (1996, p. 163) and Mackintosh (2011, p. 313). There have been few studies of these relationships in economically developing countries and we therefore report data for these for Saudi Arabia.

Method

The sample consisted of 604 girls school students aged 13–15 years with a mean age of 14.7 years ($SD = 1.6$). The girls attended the first-, second-, and third-year classes in middle schools in six randomly selected public schools in the city of Tabuk in north of Saudi Arabia, about 1304 km from Riyadh. The sample were tested in 2012 for intelligence with Raven's Standard Progressive Matrices (SPM), a British non-verbal reasoning test standardized in Britain in 1979 and extensively used in many countries (Raven, 1998). Data were obtained for family size (number of siblings) and position (birth order), parental income, whether the mother or father were deceased or both parents were alive, and whether the parents were living together or were divorced.

Results

The sample obtained a mean score on the SPM of 35.9. There were statistically significant negative correlations between SPM scores and the number of siblings ($r = -.09$, $p < .05$) and birth order ($r = -.08$, $p < .05$). The sample was divided into three groups by parental income of high ($n = 222$), middle ($n = 334$), and low ($n = 48$). There was a significant positive association between parental income and the SPM scores of 37.04, 36.05, and 29.90, respectively, for the three groups (ANOVA $F = 8.34$, $p < .001$, $\eta^2 = 0.201$). There were no statistically significant

correlations or associations between whether the mother or father were deceased or both parents were alive, and whether the parents were living together or were divorced.

Discussion

There are three points of interest in the results. First, the negative correlation between SPM scores and the number of siblings was statistically significant but very low at −.09, and much lower than those in economically developed countries noted in the Introduction section. It is proposed that the explanation for this is that Saudi Arabia has only just begun to enter the demographic transition in which in economically developed countries fertility declined first among those with higher intelligence. This entailed a negative association between intelligence and the number of children and therefore also between intelligence and the number of siblings.

Second, the negative correlation between SPM scores and birth order was also statistically significant and replicates a number of studies in economically developed countries, but this was also very low at −.08. There is no agreed-upon explanation for this negative correlation. One theory is Zajonc's (1983) confluence model, which assumes that children's intelligence is partly determined by the amount of cognitive stimulation they receive from their parents; first born children receive the most stimulation, second born the next most, and later born children receive less cognitive stimulation. An alternative explanation advanced by Jensen (1997) is that later born children are more likely to experience a maternal attack on the fetal brain, which impairs intelligence. Whatever the explanation, the very weak negative correlation between intelligence and birth order found in the present study suggests that the effect is very small.

Third, the highly significant positive association between the intelligence of the children and parental income replicates a number of studies in economically developed countries. The likely explanation for this association is income has frequently been found to be positively associated with intelligence (Mackintosh, 2011). The effect of this is that parents with high incomes and high intelligence transmit their intelligence to their children both genetically and environmentally by providing them with better cognitive stimulation, nutrition, and health care.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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