Do Genes Correlate with Intelligence and Decision Making? A Case-Control Study in Greek Volunteers with Elevated IQ

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Introduction

According to a recent publication, the genetic basis of non environmentally influenced intelligence and decision making characteristics seem to have no statistically significant differences between genders [1]. Within a population, the majority seems to be genetically characterized by prudence and temperance of thought, with only a small proportion expected to express genetically spontaneous and adventurous reaction. Similarly, regarding intelligence, a population seem to be around average and a little above it. It is suggested that only a small number the population, although assumed genetically "smartest", somehow seem to lack prudence as genetic characteristic, concluding that intelligence and decision-making may be less linked to each other than expected. The objective of this case-control study is to determine the rs324420, rs1800497, rs363050, rs6265, rs1328674 gene effect on intelligence and decision making in over 1000 Greek volunteers.

Materials and Methods

Human personality characteristics were correlated with specific genetic polymorphisms in a Greek population consisting of 100 volunteers of known IQ score and 930 controls. Initially, the frequency distribution of rs324420, rs1800497, rs363050, rs6265 and rs1328674 polymorphisms, known to be involved in individual personality characteristics, were determined. Demographic data of both groups were obtained including gender and age. Gene frequencies and the minor allele frequency (MAF) were calculated. All volunteers were anonymized after signing an informed consent. Intelligence and decision making scores were assigned following a simple algorithm, where volunteers receive +1 or -1 for each genotype, which theoretically is associated with an enhanced or relegated intelligence or decision-making, respectively.

Results

Table 1.
Intelligence and decision making combined scores according to the genotypes method.

Population	%	Grades: Intelligence	Grades: Decision Making
1	0.1%	2	0
3	0.4%	0	0
4	0.5%	4	2
11	1.4%	2	2
16	2.0%	0	2
25	3.2%	-2	2
256	32.3%	2	4
477	60.2%	0	4

Table 2. Intelligence and decision making combined scores according to the alleles

Population	%	Grades: Intelligence	Grades: Decision Making
1	0.0%	-2	-4
5	0.2%	0	-4
6	0.2%	-4	-2
20	0.7%	2	-2
28	1.0%	-2	-2
30	1.1%	0	-2
30	1.1%	4	0
48	1.7%	-4	0
106	3.7%	-2	0
142	5.0%	2	0
161	5.6%	0	0
191	6.7%	4	2
241	8.4%	2	2
313	11.0%	-2	2
463	16.2%	0	2
477	16.7%	0	4
595	20.8%	2	4

Conclusions

Preliminary data show that personality characteristics, derived genetically by genotype determination of rs324420, rs1800497, rs363050, rs6265 and rs1328674 polymorphisms, have a close relationship to data derived from established IQ tests. These findings may be useful in targeted and personalized therapies of relevant disorders.

[1] Marinos G, Naziris N, Limnaios SA, Drakoulis N. Genes and personality characteristics: Possible association of the genetic background with intelligence and decision making in 830 Caucasian Greek subjects. Meta Gene. 2014 Nov 16;2:844-53