World Academy of Science, Engineering and Technology
International Journal of Bioengineering and Life Sciences
Vol:14, No:07, 2020

Genetic-Environment Influences on the Cognitive Abilities of 6-to-8 Years Old Twins

Authors : Annu Panghal, Bimla Dhanda

Abstract : This research paper aims to determine the genetic-environment influences on the cognitive abilities of twins. Using the 100 pairs of twins from two districts, namely: Bhiwani (N = 90) and Hisar (N = 110) of Haryana State, genetic and environmental influences were assessed in twin study design. The cognitive abilities of twins were measured using the Wechsler Intelligence Scale for Children (WISC-R). Home Observation for Measurement of the Environment (HOME) Inventory was taken to examine the home environment of twins. Heritability estimate was used to analyze the genes contributing to shape the cognitive abilities of twins. The heritability estimates for cognitive abilities of 6-7 years old twins in Hisar district were 74% and in Bhiwani District 76%. Further the heritability estimates were 64% in the twins of Hisar district and 60 in Bhiwani district % in the age group of 7-8 years. The remaining variations in the cognitive abilities of twins were due to environmental factors namely: provision for Active Stimulation, paternal involvement, safe physical environment. The findings provide robust evidence that the cognitive abilities were more influenced by genes than the environmental factors and also revealed that the influence of genetic was more in the age group 6-7 years than the age group 7-8 years. The conclusion of the heritability estimates indicates that the genetic influence was more in the age group of 6-7 years than the age group of 7-8 years. As the age increases the genetic influence decreases and environment influence increases. Mother education was strongly associated with the cognitive abilities of twins.

Keywords : genetics, heritability, twins, environment, cognitive abilities
Conference Title : ICGGR 2020 : International Conference on Genetics and Genome Research
Conference Location : Toronto, Canada
Conference Dates : July 16-17, 2020