Genetic Variations Associated With Dyslexia and ADHD: A Comparative GWAS Study

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This project looked at two prevalent neurodevelopment disorders that often exhibit overlapping symptoms, ADHD and Dyslexia. The purpose of this project was to find out if these two disorders are genetically similar by mathematically analyzing them through a Principle Component Analysis Model. To collect this data, I went to GWAS website since they study the entire set of DNA from a large group of people. The GWAS site not only studies the genome of a large group but also searches for small variations. Then, the seven of the highest linkage disequilibrium for dyslexia and ADHD were recorded into an EXCEL sheet. Out of the seven, the fourth linkage disequilibrium in every sequence was the single nucleotide polymorphisms - small variations - being examined. Then these patterns were entered into the NCSS statistical software to determine the Principal Component Analysis factors which would reveal the similarities between Dyslexia and ADHD. The data in the excel spreadsheet showed the location of the gene variations of Dyslexia and ADHD within DNA. The single nucleotide polymorphism is the variation based on the location, and if the genes are closer in the DNA than it is more likely that if there is a variation in one gene, there is a variation in the other gene. The excel sheet calculates the likelihood of this linkage. In conclusion, this project looked at probabilities of gene sequences of the disorders Dyslexia and ADHD through GWAS website. This is to gain information on two complex disorders with the help of the method, Principal Component Analysis.

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