

# Systemizing (Warrier, 2019)

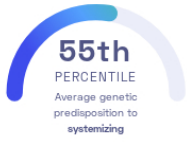
Varun Warriar, et al.  
Communications Biology

Behavior Mind

### STUDY SUMMARY

Discovery of 3 genetic variants associated with systemizing, a trait related to autism spectrum disorder.

### YOUR RESULT



### STUDY DESCRIPTION

Autism is a developmental disorder that is typically characterized by social, communication, and behavioral challenges. It is known as a "spectrum disorder" because there is much variation in how it manifests in affected individuals. One trait associated with autism is "systemizing", which describes the tendency of an individual to search for or create structures in the physical environment or mentally. An example of systemizing that is commonly observed in autistic children is the ordering of toys by size or other criteria. This genome-wide association study of over 60,000 individuals of European ancestry found 3 variants associated with systemizing. Two of the implicated genes were LSAMP and ZSWIM6, which both play a role in the development of the brain early in life.



A typical example of systemizing observed in a young child.

### DID YOU KNOW?

One sign of autism spectrum disorder is hyperlexia. It describes the ability of a child to read far beyond the level expected at their age. A study found that over 80% of children with hyperlexia have autism spectrum disorder.

### YOUR DETAILED RESULTS

To calculate your genetic predisposition to systemizing we summed up the effects of genetic variants that were linked to systemizing in the [study that this report is based on](#). These variants can be found in the table below. The variants highlighted in green have **positive effect sizes** and increase your genetic predisposition to systemizing. The variants highlighted in blue have **negative effects sizes** and decrease your genetic predisposition to systemizing. Variants that are not highlighted are not found in your genome and do not affect your genetic predisposition to systemizing. By adding up the effect sizes of the highlighted variants **we calculated your polygenic score for systemizing to be -0.73**. To determine whether your score is high or low, we compared it to the scores of 5,000 other Nebula Genomics users. We found that your polygenic score for systemizing is in the **55th percentile**. This means that it is higher than the polygenic scores 55% of people. We consider this to be an **average genetic predisposition to systemizing**. However, please note that genetic predispositions do not account for important non-genetic factors like lifestyle. Furthermore, the genetics of most traits has not been fully understood yet and many associations between traits and genetic variants remain unknown. For additional explanations, click on the column titles in the table below and visit our [Nebula Library tutorial](#).

VARIANT <sup>Ⓞ</sup>	YOUR GENOTYPE <sup>Ⓞ</sup>	EFFECT SIZE <sup>Ⓞ</sup>	VARIANT FREQUENCY <sup>Ⓞ</sup>	SIGNIFICANCE <sup>Ⓞ</sup>
rs4146336_C <span style="color: green;">NEW</span>	A / C	-0.73 (↓)	38%	2.58 x 10 <sup>-8</sup>
rs8005092_T <span style="color: green;">NEW</span>	A / A	3.03 (-)	5%	3.74 x 10 <sup>-8</sup>
rs1559586_C <span style="color: green;">NEW</span>	A / A	-0.70 (-)	43%	4.78 x 10 <sup>-8</sup>