

Survey suggests family history of psychiatric disorders shapes intellectual interests

A hallmark of the individual is the cultivation of personal interests, but for some people, their intellectual pursuits might actually be genetically predetermined. Survey results published by Princeton University researchers in the journal PLoS ONE suggest that a family history of psychiatric conditions such as autism and depression could influence the subjects a person finds engaging.

Although preliminary, the findings provide a new look at the oft-studied link between psychiatric conditions and aptitude in the arts or sciences. While previous studies have explored this link by focusing on highly creative individuals or a person's occupation, the Princeton research indicates that the influence of familial neuropsychiatric traits on personal interests is apparently independent of a person's talent or career path, and could help form a person's basic preferences and personality.

Princeton researchers surveyed nearly 1,100 students from the University's Class of 2014 early in their freshman year to learn which major they would choose based on their intellectual interests. The students were then asked to indicate the incidence of mood disorders, substance abuse or autism spectrum disorder (ASD) in their family, including parents, siblings and grandparents.

Students interested in pursuing a major in the humanities or social sciences were twice as likely to report that a family member had a mood disorder or a problem with substance abuse. Students with an interest in science and technical majors, on the other hand, were three times more likely to report a sibling with an ASD, a range of developmental disorders that includes autism and Asperger syndrome.

Senior researcher Sam Wang, an associate professor in Princeton's Department of Molecular Biology and the Princeton Neuroscience Institute, said that the survey - though not exhaustive nor based on direct clinical diagnoses - presents the idea that certain heritable psychiatric conditions are more closely linked to a person's intellectual interests than is currently supposed.

During the past several decades, Wang said, various researchers have found that, in certain people and their relatives, mood or behavior disorders are associated with a higher-than-average representation in careers related to writing and the humanities, while conditions related to autism exhibit a similar correlation with scientific and technical careers.

By focusing on poets, writers and scientists, however, those studies only include people who have advanced far in "artistic" or "scientific" pursuits and professions, potentially excluding a large group of people who have those interests but no particular aptitude or related career, Wang said. He and lead author Benjamin Campbell, a graduate student at Rockefeller

University, selected incoming freshmen because the students are old enough to have defined interests, but are not yet on a set career path. (Princeton students do not declare a major until the end of sophomore year.)

"Until our work, evidence of a connection between neuropsychiatric disorders and artistic aptitude, for example, was based on surveying creative people, where creativity is usually defined in terms of occupation or proficiency in an artistic field," Wang said. "But what if there is a broader category of people associated with bipolar or depression, namely people who think that the arts are interesting? The students we surveyed are not all F. Scott Fitzgerald, but many more of them might like to read F. Scott Fitzgerald."

The Princeton research provides a new and "provocative" consideration that other scientists in this area can build upon, said Kay Redfield Jamison, a psychiatry and behavioral science professor at Johns Hopkins University and co-director of the university's Mood Disorders Center.

Jamison, who is well known for her research on bipolar disorder and her work on the artistic/mood disorder connection, said that while interests and choice of career are presumably related, Wang and Campbell present data suggesting that intellectual interests might also be independently shaped by psychiatric conditions, which provides the issue larger context.

In addition, the researchers focused on an age group that is not typically looked at specifically, but that is usually included in analyses that span various ages. Such a targeted approach lends the results a unique perspective, she said. Though the incidence of psychiatric conditions in the Princeton study was based on the students' own reporting and not definitive diagnoses, the rates Wang and Campbell found are not different from other populations, she noted.

"This is an additional way of looking at a complex problem that is very interesting," said Jamison, who played no role in the research project. "This work provides a piece of the puzzle in understanding why people go into particular occupations. In this field, it's important to do as many different kinds of studies as possible, and this is an interesting initial study with very interesting findings. It will provoke people to think about this question and it will provoke people to design other kinds of studies."

An implied connection between psychiatric conditions and a flair for art or science dates to at least Aristotle, who famously noted that those "eminent in philosophy, politics, poetry and the arts have all had tendencies toward melancholia."

Modern explorations of that relationship have examined the actual prevalence of people with neuropsychiatric disorders and their relatives in particular fields.

Among the most recent work, researchers at Sweden's Karolinska Institute reported in the British Journal of Psychiatry in November that of the 300,000 people studied, people with bipolar disorder, as well as their healthy parents and siblings, were more likely to have a "creative" job - including a field in the arts or sciences - than people with no familial history of the condition. Parents and siblings of people with schizophrenia also exhibited a greater tendency to have a creative job, though people with schizophrenia did not.

Various other studies in the past few decades have found a similar correlation between psychiatric disorders and "creativity," which is typically defined by a person's career or eminence in an artistic field such as writing or music. In their work, however, Wang and Campbell present those criteria as too narrow. They instead suggest that psychiatric disorders can predispose a person to a predilection for the subject matter independent of any concrete measure of creativity.

Jamison, in an editorial regarding the Karolinska study and published in the same journal issue, wrote that "having a creative occupation is not the same thing as being creative." Wang and Campbell approached their project from the inverse of that statement: Being creative does not necessarily mean a person has a creative occupation.

"A person is not just what they do for a living," Wang said. "I am a scientist, but not just a scientist. I'm also a guy who reads blogs, listens to jazz and likes to cook. In that same respect, I believe we have potentially broadened the original assertion of Aristotle by including not just the artistically creative, but a larger category - all people whose thought

processes gravitate to the humanistic and artistic."

As past studies have, Wang and Campbell suggest a genetic basis for their results. The correlation with interests and psychiatric conditions they observed implies that a common genetic path could lead relatives in similar directions, but with some people developing psychiatric disorders while their kin only possess certain traits of those conditions. Those traits can manifest as preferences for and talents in certain areas, Wang said.

"Altogether, results of our study and those like it suggest that scientists should start thinking about the genetic roots of normal function as much as we discuss the genetic causes of abnormal function. This survey helps show that there might be common cause between the two," Wang said.

"Everyone has specific individual interests that result from experiences in life, but these interests arise from a genetic starting point," Wang said. "This doesn't mean that our genes determine our fate. It just means that our genes launch us down a path in life, leading most people to pursue specific interests and, in extreme cases, leading others toward psychiatric disorders."

This study was published 26 January in the journal PLoS ONE.

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