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Mental Health Status is Subjective and is Revealed in ADHD Distribution

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Abstract

Mental health status is both subjective and objective. Computer intelligence should not be applied to determining this mental health status if artificial intelligence data has been obtained mainly from non-professionals in the field of mental health. Details of neuron biology and their changes are beyond the scope of computer scientists, and so merely mapping areas of the brain *via* functional Magnetic Resonance Imaging (fMRI) under various conditions, for instance, cannot provide the full scientific picture of the state of the brain. In addition, it is reasoned that the number of persons declared mentally unhealthy in any particular community is a reflection of the cultural norms of the local community.

Keywords: ADD; ADHD; Diagnosis; Big data; Artificial intelligence; Computer

Background

Data listed below and discussed are from the National Survey of Children with Special Health Care Needs, obtained in 2009-2010 [1]. Parents of Attention Deficit Hyperactivity Disorder (ADHD) diagnosed children were asked about their young patient's ADHD medication use in the preceding week and about behavioral therapy in the preceding year. The data collected in the survey are summarized below.

Medication rate by state

- "70%: California, DC, Arizona, Alaska, Pennsylvania, Utah, Florida, New Jersey, Montana, Idaho, Colorado, Maine, Oregon.

- 70 to 75%: New Hampshire, Vermont, Washington, New York, Nevada, New Mexico, Hawaii, Illinois, Texas and Alabama.

- 75.1 to 80%: Maryland, Massachusetts, Missouri, Oklahoma, Rhode Island, Connecticut, Delaware, Arkansas, Louisiana, Kentucky, Minnesota, Georgia, South Carolina, West Virginia, Ohio, North Dakota and Tennessee.

- >80%: Virginia, North Carolina, Wisconsin, Kansas, South Dakota, Mississippi, Wyoming, Indiana, Nebraska, Iowa and Michigan."

It has been deduced by some [2] that the distribution pattern is owing to the fact that in large metropolitan areas, where child psychiatric specialists are plentiful, there seems to be a tendency to over identify Attention Deficit Disorder (ADD) or ADHD. Conversely, in rural areas, where there are much fewer child psychiatric specialists, there would be the occurrence of under diagnosing ADD.

Parental and Cultural Attitudes

It is the premise of the current work that parental attitudes, which are in large part a reflection of local cultural attitudes, also play a major role in the distribution pattern of diagnosed ADHD cases in the United States of America (USA).

For instance, in Virginia and North Carolina, the high medication rates could be entirely due to the fact that child psychiatric specialists abound.

The states of Louisiana, Mississippi, Alabama, Arkansas in the Deep South going along a corridor northwards to Midwestern states Indiana and Ohio, gives the author the impression that a conservative attitude towards children rather than a laissez-faire one, is a major reason for the high rates of children diagnosed with ADHD or ADD. This is in line with the general impression in the country that the states mentioned above are more conservative in customs and traditions, as compared to the 'progressive' east coast states and west coast states, Illinois and Texas. Historically, the eastern and western coastal states had more external influences to culture, and with the advent of commercial flights, Illinois and Texas should be included as 'progressive'.

It is thus deduced that the state of mental health has a large subjective component, besides an objective component. It is thus imperative that the efforts of the computer scientists in the area of ADD classification be verified by professionals in the area, and not used or interpreted professionally without their input. This precautionary measure should also be true for other 'Big Data' use and publication regarding mental health in general. Details of the neuron biology and their changes are beyond the scope of computer scientists, and thus are important in defining the state of a person's brain. Hence, simply mapping areas of the brain *via* functional Magnetic Resonance Imaging (fMRI) under various conditions [3,4], for example, cannot provide the full scientific picture of the state of the brain.

Discussion about the Data

Dr. Carlos Gadia [2], associate director of Joe DiMaggio children's Hospital in Hollywood, Florida, stated that the published data [1] is a result of "over diagnosis and under diagnosis". He is also of the opinion that in lower socio-economic areas, there is a greater tolerance for 'badly behaved kids' rather than 'this is a child with ADD'. It is clear that Gadia validates the fact that the status of mental health is a function of the parental attitude. Parents' attitude towards their children is a reflection of their own upbringing, socio-economic status, religious background, etc. that is, their culture.

In the listing of signs and symptoms of ADHD [2], it is obvious to this researcher that the signs and symptoms would merely be considered 'slightly misbehaving' in many cultures, outside of the USA. For instance, displaying five out of the nine signs and symptoms listed in [2] would be considered rather normal in Malaysia, and certainly not deserving of medication. The approach there would be to exercise control of the child's behavior *via* mild punishments administered frequently. The symptoms under discussion [2] are as follows:

(1) "Have trouble focusing and finishing tasks

(2) Squirm or fidget

(3) Talk too much

(4) Be easily distracted

Leave seat in situations where seating is expected"

In the consideration of this survey data, and trying to deduce the causation of the pattern of ADHD occurrences, the social factors surrounding the issue need to be recognized. Parents and teachers are almost exclusively the persons who would bring the potential patient to visit a psychologist or psychiatrist. Their motivation would be to help cure the child, and this would be the same throughout the country, but their interpretation of the child's behavior with respect to the ADHD criteria would be rather dependent on their own culture and that practiced by the local community. Hence, even the calling of attention to whether there is problem or not is a function of the norms of the family and the local community.

ADD and ADHD

Another motivation of the current work comes from an apparent disparity in goals between the neuroscientists represented by the ADHD-200 initiative [5-8], and the clinicians.

Brain imaging technology could be a useful tool in aiding medical doctors in better diagnoses. The ADHD-200 is a data sharing effort from 3 continents amongst neuroscientists to share and study ADHD. The 2011 ADHD-200 Global Competition involved "analyzing a large dataset of 973 participants including Attention deficit hyperactivity disorder (ADHD) patients and healthy controls. Each participant's data included a resting state functional magnetic resonance imaging (fMRI) scan as well as personal characteristic and diagnostic data. The goal was to learn a machine learning classifier that used a participant's resting state fMRI scan to diagnose (classify) that individual into one of three categories: healthy control, ADHD combined (ADHDC) type, or ADHD inattentive (ADHDI) type," [5]. The conclusion in Brown MR et al. [5] publication, is as stated in the title of this refereed publication, that personal characteristic information is more useful than resting state fMRI measurements to ensure accuracy in diagnoses. There were at least two different categories recognized by the ADHD-200 initiative [5-8]. There are subtypes recognized and found by this 3-continent (North America, Asia and Europe) neuroscience initiative. Subjects for the ADHD-200 were age 21 or younger.

In the world today, there are supposedly millions of people with ADHD/ADD [5-8]. Even to this day, most of the clinicians in the USA only recognize the classical ADHD. There were discussions about SPECT (Single-photon emission computed tomography) imaging and ADHD in 1993 [9]. Amen, Paldi, and Thisted recognized 5 ADD/ADHD subtypes by neurological profile and behavior, way back in 1993 [9]. There seems to be a controversy in this area of clinical psychology.

From Amen et al. [10] in 2008 published about the positive and negative responses to stimulant therapy by ADHD patients. This implied that there are different types of ADHD/ADD. In fact, many patients had come to Amen, complaining about misdiagnosis by other clinicians (who did not realize the different types of ADD) because they were becoming worse from the stimulants they were prescribed. In Amen DG et al. [11] publication, this 2008 paper concluded that "clinical SPECT holds the potential for differentiating ADHD brains from healthy brains among older patients in a statistically sensitive and specific way." The older patients were persons over 50 years. Until recently, the Center for Disease Control (CDC) has been focused on ADHD for the young.

Amen has claimed [12,13] that many people have one form of the seven forms of ADD, of which ADHD or 'classic ADD' is only one of the seven forms. Amen claims that many successful persons have ADD, including himself and his current wife, a successful nurse and nutritionist.

Discussion and Conclusion

An important controversy in clinical psychology has not been resolved. It is about time that governmental agencies fund research to help resolve this controversy. Finding the truth and answers when controversy arises, is a natural progression of science and medicine.

It is the perspective of the author that personal characteristic information and neuroimaging together are needed for accurate diagnoses and proper treatment. This is strongly supported by the ongoing controversy about ADHD and ADD.

The health of neurons can be indicated by the shapes and forms of the neurons. The way a neuron branch tells whether the neuron is healthy or not, neurologists claim. The way it branches determines the synapse it makes with a neighboring neuron. So if a neuron is branching differently, the synapse it makes also changes. This information is structural biology of neurons, and a topic computer scientist is not trained about.

One contribution of the current work is to point to the fact that the distribution of ADHD cases in the lower forty-eight states could very well be due to the subjectivity of what may be considered standard ADHD signs and symptoms in children. It was deduced in [2] that the number of psychiatrists and psychologists contributed to this interesting distribution, with states from Alabama and Louisiana to Ohio and Indiana having the highest levels of cases.

References

1. Visser SN, Bitsko RH, Danielson ML, Ghandour RM, Blumberg SJ, et al. (2015) Treatment of Attention Deficit/Hyperactivity Disorder among Children with Special Health Care Needs. J Pediatr 166: 1423-1430.

2. Kay J (2016) Are we too quick to say a child has ADD or ADHD? The Miami Herald, Miami, USA.

3. Cortese S, Kelly C, Chabernaud C, Proal E, Di Martino A, et al. (2012) Toward systems neuroscience of ADHD: a meta-analysis of 55 fMRI studies. Am J Psychiatry 169: 1038-1055.

4. Tian L, Jiang T, Liang M, Zang Y, He Y (2008) Enhanced resting-state brain activities in ADHD patients: a fMRI study. Brain Dev 30: 342-348.

5. Brown MR, Sidhu GS, Greiner R, Asgarian N, Bastani M, et al. (2012) ADHD-200 Global Competition: diagnosing ADHD using personal characteristic data can outperform resting state fMRI measurements. Front Syst Neurosci 6: 69.

6. ADHD-200 Consortium (2012) The ADHD-200 Consortium: A Model to Advance the Translational Potential of Neuroimaging in Clinical Neuroscience. Front Syst Neurosci 6: 62.

7. Fair DA, Nigg JT, Iyer S, Bathula D, Mills KL, et al. (2013) Distinct neural signatures detected for ADHD subtypes after controlling for micro-movements in resting state functional connectivity MRI data. Front Syst Neurosci 6: 80.

8. ADHD-200 (2011) The ADHD-200 Sample. National Institutes of Health Blueprint for Neuroscience Research, Maryland, USA.

9. Amen DG, Paldi JH, Thisted RA (1993) Brain SPECT Imaging. J Am Acad Child Adolesc Psychiatry 32: 1080-1081.

10. Amen DG, Hanks C, Prunella J (2008) Predicting Positive and Negative Treatment Responses to Stimulants with Brain SPECT Imaging. J Psychoactive Drugs 40: 131-138.

11. Amen DG, Hanks C, Prunella J (2008) Preliminary evidence differentiating ADHD using brain SPECT imaging in older patients. J Psychoactive Drugs 40: 139-146.

12. Amen DG (2015) Amen Clinics. California, USA.

13. Amen DG, Amen T (2015) Healing ADD with Daniel Amen and Tara Amen. KPBS Public Broadcasting, California, USA.