Limitations of Clinical Psychiatric Diagnostic Measurements

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Abstract

Misunderstood, and often feared, the most severe mental illnesses affect some 5 million American adults, and nearly 50% of Americans have been mentally ill at some point in their lives. While more than a quarter of the American population has suffered from mental illness in the past 12 months, their families undergo an extraneous emotional and financial burden. Clinicians and researchers follow the definitions and diagnostic guidelines of the American Psychiatric Association as outlined in the Diagnostic and Statistical Manual of Mental Disorders. According to the DSM, mental disorders are behaviours or psychological syndromes which cause significant distress or interfere with a person's ability to function during their everyday life. Yet, this diagnostic tool falls short. This article highlights how the diagnostic manual does not provide physicians with the appropriate guidelines by which they can diagnose mentally-ill patients.

An Introduction to Our Age of Mental Illness

In the first 2010 issue of Nature, Philip Campbell, the editor of Nature and a research scientist from the University of Leicester, stated that the next 10 years in American science will be "the decade for psychiatric disorders" [1]. Dr. Campbell was not foretelling an epidemic, nor was he suggesting that new illnesses would be discovered by the scientific community. The essential element he conveyed was that research on mental illness was reaching a climactic decade in which insights gained from molecular and cell biology, genetics and neuroscience would transform our understanding of psychiatric disorders. Due to significant advances in the neuroscientific community, the brain has emerged as the central focus for studies of mental illness. Innovative scientific technologies have begun to weave a seamless picture of the way in which the brain influences biological and psychological factors on human thought, behaviour and emotion in mental illnesses. Interestingly, a recent study by Dr. Walter Grove from Vanderbilt University published in the journal of social science

Mental Health, has demonstrated that indeed women experience more psychological distress than men. In attempts to control our mental health issue, the United States Government spends more than $150 billion each year on treatment for the mentally ill, while Schizophrenia itself costs the Nation $30 billion annually [2].

An Overview of Diagnosis

As science has progressed, society has come to understand that a significant portion of the American people suffers from a mental disorder, but what exactly does this term mean and how do we quantify its implications? Clinicians and researchers follow the definitions and diagnostic guidelines of the American Psychiatric Association as outlined in the Diagnostic and Statistical Manual of Mental Disorders. According to the DSM, mental disorders are behaviours or psychological syndromes which cause significant distress or interfere with a person's ability to function during their everyday life. Accordingly, it is the responsibility of Psychiatrists to develop precise diagnostic tools in order to categorize a patient as one suffering from a mental disorder. According to researchers at the Mayo Clinic, the distinction between mental health and mental illness isn't so obvious [3]. It is often very challenging to distinguish normal mental health from mental illness due to the fact that there is no easy test to illustrate if something is wrong. Thus, mental health disorders are diagnosed and treated based on specific signs and symptoms which the patient displays, as well as on how much the condition may be affecting ones

daily life. In general, mental illnesses will demonstrate as symptoms affecting your behaviour, feelings, thoughts and even actions.

Although science can detect certain abnormalities within the brains of individuals suffering from a mental health disorder, our truest diagnostic method in this field rests in language. Our ability to understand how a true suffering patient will express themselves, as opposed to a healthy individual, is the most authentic method we may use to identify a patient suffering from mental illness. As complicated and complex as the brain may be, we can penetrate an individual's state of mind through the use of language. Although new technology has improved our ability to study the living brain, there is no definitive laboratory test, scan, or biopsy for mental illness. This makes the diagnosis of mental disorders more difficult than the diagnosis of most other medical disorders. Until scientists develop physiological tests, mental health professionals will have to diagnose mental illnesses based on the symptoms that a person displays, and particularly through their linguistic expressions to the physicians. Psychiatrists and psychologists use specially designed interview and assessment tools to evaluate a person for a mental illness. The doctor bases his diagnosis on the person's report of symptoms, including any social or functional problems caused by the symptoms, and his observation of the person's attitudes and behaviour. The doctor then determines if the person's symptoms and degree of disability point to a diagnosis of a specific disorder. When utilizing the Diagnostic and Statistical Manual of Mental Disorders, trained physicians asses if the scores each patient receive on the diagnostic test meet the qualifications for the mental disorder criteria. Language as we know it is a form of expression. Through psychiatric diagnostic tests, which run in parallel with the DSM, patients are able to communicate to their physicians how they truly feel in their own language.

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The Limitations of Diagnosing Mental Disorders with a Checklist: Major Depression

In order to officially diagnose a patient with a disorder, doctors use the criteria checklists established in the DSM. The Diagnostic and Statistical Manual of Mental Disorders contains descriptions of all the symptoms a patient needs to add up to a disorder. Interestingly, experts at the American Psychiatric Association say that this method doesn't really capture how mental disorders work in the real world [4]. For example, in diagnosing major depression, which is a thoroughly studied disorder, doctors use a checklist of nine symptoms (explained below), ranging from sleep and mood to feelings and social behaviour. Individuals with five of the nine criteria would be diagnosed as having major depression. But, asks Dr. Darrel Reiger, vice chairman of the DSM5 task force, what about a patient who has only four of the nine symptoms, and yet all four are very severe? Technically speaking, this individual would not be diagnosed with major depression, although he may be paralyzed from dragging himself out of bed in the morning [3]. Clearly, the underlying limitation of diagnosing patients with the current DSM criteria is that it doesn't take into consideration the severity of each symptom. Consequently, under the newly proposed system in the DSM5, a patient wouldn't need 5 criteria to be diagnosed with major depression, as the severity of each symptom would play a crucial role in diagnosis. According to Dr. David Schaffer, chief of the division of child and adolescent psychiatry at Columbia University Medical Center, doctors and researchers already treat patients in this manner throughout their practice; patients are treated even if their symptoms don't add up to a clear cut disorder [4]. Dr. Schaeffer explains that the medical community does utilize scales of severity when treating patients in the clinic, but "the goal is to somehow bring that into practice." These studies indicate the glaring limitations when using the checklists outlined in the DSM for the exclusive diagnosis of the mentally ill.

The human condition dictates self expression; How we speak, how we move, and how we interact with others is clearly an indicator of how we feel inside, what we believe, and how we perceive ourselves. It seems extremely limiting to categorize an entire mental condition based primarily on scores which patients receive through our diagnostic testing experiments. There needs to be a more thorough instrument for measuring what one is feeling, truly feeling, as opposed to used a simple numbers count. This opinion is also shared by Dr. Robert F Krueger from the Department of Psychology at the University of Minnesota. Dr. Krueger published an extensive article in the Journal of Abnormal Psychology illustrating the intense limitations of categorizing mental illnesses through the criteria presented by the DSM [5].

Mood Disorders Exposed

The major mood disorders bipolar disorder and major depressive disorder represent a spectrum of brain disorders with multiple etiologies, ranging from genetics to environmental stress and the dysregulation of neurotransmission [4]. The Diagnostic and Statistical Manual of Mental Disorders designates the term mood disorder to classify a group of diagnoses in which a disturbance in a patient's mood is hypothesized to be the main underlying feature. A patient may be categorized as experiencing a major depressive episode when they go through an episode of constant and enveloping emotional depression [6]. According to the DSM, one suffering from a major depressive episode will have five or more of the following symptoms within a 2week period and these symptoms will demonstrate a change from previous functioning: a depressed mood or loss of interest and pleasure, feelings of sadness and emptiness, significant weight loss or decrease in appetite, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness or excessive guilt, decreased ability to concentrate, or recurrent suicidal thoughts. Furthermore, these symptoms cannot meet the criteria for a mixed episode in order to be counted as a major depressive episode [6]. In order to be diagnosed with a major depressive disorder, a patient must have experienced at least one major depressive episode, but no manic, hypomanic or mixed episodes [7]. Additionally, these symptoms could not have been accounted for by other psychiatric disorders, such as Schizoaffective Disorder. It is interesting to note that much of the assessment can be subjective, as the patient will express feelings of sadness and hopelessness, or describe themselves as feeling guilty or even suicidal. Furthermore, there is a correlation between how patients explain their cognitive ability and motor function throughout their daily routines and how they are diagnosed.

According to the National Institute of Mental Health, bipolar disorder, which at times is referred to as manic depressive disorder, is characterized by exponential shifts in mood, energy and activity levels which directly affect an individual's ability to fulfil daily activities [8]. Bipolar disorder is not easily detected when it begins, for symptoms may seem like separate issues and not identified as parts of a larger problem. It is for this reason that some patients suffer with the disorder for years before they are properly diagnosed. The diagnosis of bipolar 1 disorder necessitates at least one manic episode. This entails the manic episode not being accounted for by other psychiatric disorders. The primary symptoms of bipolar disorder are dramatic and unpredictable mood swings. Patients are known to have stages of euphoria or irritability, complain of racing thoughts and excess talking, and describe themselves as having unusual energy and inflated self-esteem. In addition to this, bipolar 1 patients can also tell of their depressed mood, low energy levels, sadness, and even slowed speech; In regards to sleep, many patients will express signs of insomnia or oversleeping. To be diagnosed with bipolar 2 disorders, a person must have at least one episode of hypomania in addition to an episode of major depression (described above). Hypomania is a mood state characterized by constant elevated or irritable mood, which at times can be described as euphoric. These patients have a decreased need for sleep, are extremely outgoing and competitive and have an intense amount of energy. In comparison to patients with mania, hypomanic individuals are completely functioning and may even express that they are more productive than usual [8]. It is noticeable that the language in which patients use to describe their varying mood disorders is at times very similar. This creates a roadblock for scientists and clinicians who are attempting to identify exactly which medication to prescribe to a certain patient. Although the DSM provides clear cut outlines for these disorders, it seems inevitable that there will be mistakes due to misdiagnoses, which is partially due to the overlap of symptoms between the myriads of disorders of energy. In comparison to patients with mania, hypomanic individuals are completely functioning and may even express that they are more productive than usual [8]. It is noticeable that the language in which patients use to describe their varying mood disorders is at times very similar. This creates a roadblock for scientists and clinicians who are attempting to identify exactly which medication to prescribe to a certain patient. Although the DSM provides clear-cut outlines for these disorders, it seems inevitable that there will be mistakes due to misdiagnoses, which is partially due to the overlap of symptoms between the myriads of disorders.

Cyclothymia, defined medically within the bipolar spectrum, is a serious mood disorder which causes both hypomanic and depressive episodes. It is important to note the differential diagnosis

of cyclothymia, as it is common to bipolar disorder and some individuals with cyclothymia eventually develop bipolar disorder themselves. According to Dr. David B. Merril, assistant professor of Psychiatry at Columbia University Medical Center, dysthymia is chronic type of depression in which a person's moods are regularly low. Dysthymic patients experience feelings of hopelessness, undergo extreme insomnia, and have low self-esteem. Furthermore, patient's appetites, energy levels and cognitive abilities, such as concentration, are poor. Overall, people with dysthymia often take a negative outlook of themselves, their future, and life as a whole [9].

Anxiety Disorders to a "Clinician's Ears"

"We always imagine the things which were worse than they really were. When we get stomach-ache, we will think it was an ulcer" [9]. Generalized anxiety disorder is diagnosed when a person worries excessively about an array of daily issues for at least 6 months. A typical day for people with generalized anxiety disorder is filled with exaggerated worry and nervousness, in spite of the fact that there is nothing to provoke it. Sufferers claim they constantly anticipate disaster, and are unable to rid themselves of their worries even though they realize that their personal anxiety is over exaggerated. On a cognitive level, patients describe themselves as being unable to relax, are startled easily, have difficulty concentrating, and can't fall asleep at night. Additionally, GAD sufferers complain of fatigue, muscle tension, headaches, sweating, nausea and twitching. Interestingly, depression and substance abuse often accompany GAD [10]. Obsessive Compulsive Disorder (OCD), affecting about 2.2 million American adults [9]. Is a specific anxiety disorder in which the patient complains of relentless and constant thoughts and behaviours which the patient may feel compelled to continue, even though they may know that the thoughts or actions may be inappropriate [11]. In a 2010 Nature article, Dr. Ronald Kessler, a scientist from the Department of Health Care Policy at Harvard Medical School, explains that there is a growing debate over whether OCD should remain an anxiety disorder in DSMV or be classified with other impulsive conditions [12]. A typical OCD patient will express that they have repetitive thoughts, images, impulses, and mental acts that they perform in order to relieve anxiety [13].

Agoraphobia is an anxiety disorder in which one fears being overcome by a panic attack when placed in a situation that is perceived to be difficult to escape from. A panic disorder with agoraphobia is usually described as unexpected and recurrent panic attacks which are correlated with feeling trapped (agoraphobia). A patient will describe feeling concerned about having additional attacks and feels as if they may be "going crazy" or "losing control." In comparison to panic disorder without agoraphobia, patients will relay and express the same symptoms, except without the presence of agoraphobia. During a typical panic attack, a person will experience a sudden attack of terror, heart palpitations, sweatiness, weakness, or dizziness. These patients describe a sense of "impending doom" and "losing control." Post-traumatic stress disorder (PTSD) develops after one experiences a horrifying incident that involved physical harm or endured psychological trauma. A usual PTSD patient will suffer from feelings of "intense fear," "helplessness," or "horror." Furthermore, these patients express to clinicians that they have flashback memories of the incident, recurring distressing dreams, which leads to insomnia, or an intense psychological response to any reminder of the traumatic event. In comparison to other anxiety disorders, social phobia is diagnosed when a person becomes overwhelmingly anxious and overly self-conscious during daily social activities. Patients feel as if "they are being watched

and judged" by others, and are constantly in fear of embarrassment. One patient disclosed to the NIMH that "in any situation he felt fear. He will be anxious before he even leaves the house, and it would escalate as he get closer to a college class, a party, or whatever." In comparison to this disorder, specific phobias arise as an intense and irrational fear towards something that poses no real threat in reality, such as heights (acrophobia), escalators, tunnels, water, and dogs. Interestingly, the diagnoses for this phobia includes that the patient recognize that their fear is excessive and unreasonable.

Dementia

At least 360,000 Americans are diagnosed with AD each year. Dementia is a non-specific syndrome in which various brain functions are affected, such as memory, language, problem solving and attention. This neurodegenerative disease is characterized by the dramatic decline of intellectual and cognitive function. However, dementia is not merely a problem of memory. It reduces the ability to learn, reason, retain or recall past experience and there is also loss of patterns of thoughts, feelings and activities. There exists several different diseases and disorders which may cause dementia, such as Alzheimer's Disease, frontotemporal dementia, vascular dementia, brain tumors, and Parkinson's disease. 45 million people in the United States have some degree of dementia, and that number will increase over the next few decades with the aging of the population. Symptoms of dementia can be classified as either reversible or irreversible, depending upon the etiology of the disease. Advanced scientific research is continuously being conducted to discover an effective treatment plan for patients' suffering from dementia. Treatment of dementia focuses on correcting all reversible factors and slowing irreversible factors. This can improve function significantly, even in people who have irreversible conditions such as Alzheimer disease. Symptoms of dementia may be treated with a combination of psychotherapy, environmental modifications, and medication. Treatment of dementia begins with treatment of the underlying disease, where possible. The underlying causes of nutritional, hormonal, tumor-caused and drug-related dementias may be reversible to some extent. Treatment for stroke-related dementia begins by minimizing the risk of further strokes, through smoking cessation, aspirin therapy, and treatment of hypertension. Dementia due to some conditions, such as Alzheimer disease, may be slowed in the early-to-intermediate stages with medication. Several different types of medications have been developed to treat patients' suffering from dementia, but no medication can cure dementia. According to the British Association of Psychopharmacology, an effective administered medication for dementia is a cholesterase inhibiitor, such as donepezil, galantamine, or exelon. These are used to improve or maintain mental function and were developed to treat Alzheimer's disease, yet may be tried in other dementias.

Listening to Schizophrenia

Commonly manifested as auditory hallucinations, paranoid and bizarre delusions, and disorganized speech and thinking, schizophrenia is a serious mental disorder affecting a person's thinking, emotions and behaviour. Patients report hearing voices that may tell them what to do, as well as demonstrate a lack of responsiveness, loss of motivation and severe impairment in social cognition; Furthermore, patients may be described as speaking in a "word salad" as their auditory and linguistic capabilities may be impaired. According to Dr. Harrison Pope, a clinical psychiatrist at Harvard Medical School, it is important to note that these symptoms may be present in a few other mental disorders, such as bipolar, borderline personality disorder, and drug-induced psychosis [14]. Schizophreniform disorder is a mental disorder which

shares the exact diagnostic symptoms of schizophrenia, except for its duration. Patients will express signs of hallucinations and delusions, but their symptoms are not present for the full 6 months required for the diagnosis of schizophrenia. In relation to these mental disorders, schizoaffective disorder is characterized by a recurring episode of elevated or depressed mood, along with distortions in perception; it primarily influences the cognitive and emotional state of the patient. Patients may also show signs of clinical depression, mixed episodes and manic episodes. These patients may be convinced that they are Jesus, or have a special mission to save the world, or are even being monitored by special government agencies; Logically, this may be the cause for their common paranoia as well.

Diagnoses of these disorders are based on self-reported experiences of the patient, as well as abnormal behaviour reported by others. Evidently, there are many psychiatric illnesses which contain a very similar range of psychotic symptoms, such as bipolar disorder, major depression, drug intoxication, and drug induced psychosis. Thus, diagnosing patients specifically for the range of schizophrenic disorders is intensely intricate and must be done thoroughly and diligently, as to rule out any other possibilities.

Positive and Negative Syndrome Scale: Is the Measuring Instrument Reliable?

In 1987 Dr. Stanley Kay, Dr. Abraha, Fiszbein and Dr. Lewis Opler, practicing psychiatrists from the Bronx Psychiatric Center, published a ground breaking article in the journal Schizophrenia Bulletin titled The Positive and Negative Syndrome Scale (PANSS) for Schizophrenia. In this article they developed a medical scale used for measuring the symptom severity of patients with schizophrenia. The methodology of this measuring mechanism is based in its ability to categorize the symptoms of this disorder into positive and negative sections. A positive symptom of schizophrenia, which refers to an excess or distortion of normal functions, may include delusions, hallucinations, and disorganized thinking; there are 7 categories in total. In contrast, the negative symptoms, which represent a loss of normal function, are characterized by deficits in cognition, social functions, and passive withdrawal; There are also 7 negative categories in total [15]. The PANSS is currently still the most established scale in patients with schizophrenia, and is the most frequently cited article with more than 4000 citations [16]. Additionally, psychopharmaceutical, such as the distributors of Invega (Paliperidone), promote the efficacy of their medication for schizophrenia but illustrating significant improvement in the PANSS score over a certain time duration [17].

The mapping methodology of this psychiatric exam matches fairly well with the diagnostic criteria outlined in the DSM; This is primarily due to the precise and detailed questions presented to the patient upon measuring their symptoms. Despite its common use, however, there still seems to be profound uncertainty within the psychiatric community regarding its mathematical properties [16]. Researchers from the Ludwig Maximillians University in Munich have conducted a systemic review to investigate the scope of incorrect PANSS calculations. After researching articles published in the top ten psychiatric journals they discovered that an alarming 65% of publications use incorrect calculations in the methods described for the PANSS [16]. All 30 items on the PANSS range from 1 to 7, leading to a minimum score of 30 ; this implies that the PANSS is an interval scale. Straightforward calculations of relative changes on an interval scale are not appropriate; Rather, in order to calculate outcome criteria we need to transform the scale into a ratio scale. According to Obermeier et al., the best way to avoid incorrect calculations would be to subtract the

theoretical minimum (which is 30) from the total score, which results in a score range starting from zero [16]. Researchers are now beginning to use this correction method in the PANSS as they publish clinically relevant data on schizophrenia research using the PANSS diagnostic measurement tool [16].

Conclusion: The Glaring Overlap in Diagnoses

We must remind the scientific community of how little we truly know about the brain. Although the DSM is intricately detailed, extremely precise, and very informative, it is blatantly clear that there is a great deal of confusion, ambiguity and even debate in regards to how we should approach the mentally ill community. The way a patient expresses themselves to a clinician may be precisely informative in regards to how we diagnose their condition; however, with all of our technology, and even with everything the patient subjectively shares with the physician, our measurement instruments and methodological approach to diagnoses is clearly far from perfect. Mood disorders, anxiety disorders and schizophrenia all share very relative common denominators which can manifest themselves in a way which leads to misdiagnoses. Clearly, A simple checklist which does not take into account the severity of each category, which is a great flaw in the DSM, needs to be developed so we may more confidently diagnose the mentally ill community.

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