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Medicalization of Depression, Anxiety, Schizophrenia, ADHD, Childhood Bipolar Disorder and Tantrums: Scientific Breakthrough, or Broad-Based Delusion?

Model biomedycznego podejścia do depresji, zaburzeń lękowych, schizofrenii, ADHD, dziecięcego zaburzenia dwubiegunowego i ataków złości: przełom naukowy czy iluzja?

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Summary

Clearly, a number of psychological and behavioral disorders arise within our biology. These include autism, Down's syndrome, those due to toxin exposure, metabolic and endocrine difficulties, and several others. In contrast, there is minimal research evidence to support biological origins of the vast number of common disorders such as depression, anxiety disorders, schizophrenia or child problems such as conduct disorders, attention deficit hyperactivity disorder (ADHD), childhood bipolar disorder, oppositional behaviors or tantrums. These disorders have been medicalized when, in the absence of supportive research evidence, they are said to be caused by genetic defects, chemical imbalances or other biological phenomena. The roots of contemporary medicalization in the U.S. are traced to two primary factors – psychiatry's efforts to re-gain lost status, and profit motive in the pharmaceutical industry. Given that both psychiatry and the drug industry are global enterprises, medicalization threatens to escape the boundaries of the U.S. and spread to other nations. There are a number of unfortunate by-products of medicalization including patients' feelings that there is less hope for improvement and increased community prejudice, when disorders are thought to be rooted in biology. Another by-product is that validated behavioral treatments may be overlooked, as drugs with unfortunate side effects become the treatment of choice. Research in support of biological causation is discussed and found to be relatively weak. Efforts at pushback against medicalization are discussed.

Key words: medicalization, psychiatry, pharmaceutical industry, drug industry

Streszczenie

Wiadomo, że niektóre nieprawidłowości rozwojowe mają podłoże biologiczne. Do nich należą, między innymi, autyzm, Zespół Downa, zaburzenia związane z zatruciem toksynami, choroby metaboliczne i endokrynne. Nie ma jednak mocnych przesłanek naukowych, aby stwierdzać biologiczne przyczyny wielu zaburzeń psychologicznych, takich jak depresja, stany lękowe, schizofrenia, zaburzenia zachowania u dzieci, zespół nadpobudliwości ruchowej (ang. *attention deficit hyperactivity disorder* – ADHD), dziecięce zaburzenie dwubiegunowe, czy zachowania opozycyjno-buntownicze. W świetle obecnej wiedzy odwoływanie się do modelu medycznego ("medykalizacja") jako przyczyny powstania ww. zaburzeń jest nadmierne. Powodami, dla których w USA najbardziej popularnym podejściem do problemów psychiatrycznych i psychologicznych jest model biomedyczny są: 1) dążenie psychiatrii do utrzymania silnej pozycji, jako dyscypliny monopolizującej leczenie oraz 2) działanie firm farmaceutycznych w celu zwiększenia zysku finansowego ze sprzedaży leków. Biorąc pod uwagę, że psychiatria i przemysł farmaceutyczny są przedsięwzięciami ogólnoswiatowymi, fenomen medykalizacji może szybko rozprzestrzenić się poza Stany Zjednoczone. Takie podejście do zdrowia psychicznego prawdopodobnie będzie prowadziło do: poczucia pacjenta, że poprawa jest mało prawdopodobna i stygmatyzacji związanej z umieszczeniem zaburzenia „w osobie”. Innym niekorzystnym zjawiskiem jest wykorzystywanie leczenia farmakologicznego jako głównego sposobu oddziaływania, a w przypadku zaburzeń behawioralnych poświęcanie zbyt małej uwagi oddziaływaniom psychologicznym, których efektywność jest potwierdzona naukowo. W obecnym artykule omówione są wyniki badań nad biologicznymi przyczynami niektórych zaburzeń. Przedstawiono również rekomendacje dotyczące zmniejszenia koncentracji na działaniach opartych na modelu medycznym w przypadku wielu zaburzeń psychologicznych.

Słowa kluczowe: medykalizacja, psychiatria, przemysł farmaceutyczny

INTRODUCTION

A psychological disorder or behavioral disorder is “medicalized,” when the patient is given a pseudo-explanation based in the patient’s biology. That is, in the absence of supportive evidence, the patient is told that the disorder was caused by processes within his or her brain chemistry or genes or another biological process. For example, a patient’s depression is medicalized when he is told that the cause is a chemical imbalance in his brain. There is no medical test for such an imbalance in a living person.

For at least forty years in the U.S., psychological and behavioral disorders have been increasingly medicalized by the drug industry, organized psychiatry, and patient advocate groups that are heavily funded by the drug industry such as the National Alliance on Mental Illness (NAMI) which received nearly \$12 million from the drug industry in only a four-year period in the late 1990s (1). Today, such unscientific explanations of psychological and behavioral disorders are so frequently spoken and written that they are routinely accepted as factual, although they are not based in research evidence.

In contrast, a number of developmental disorders and other disorders are biologically caused. These include autism, Down’s syndrome and other genetic forms of retardation, as well as disorders that are related to traumatic brain injury, exposure to toxins, nutritional deficiencies, endocrine and metabolic factors, and several others.

However, it has not been proven that the majority of other common behavioral and psychological disorders are biologically caused. Nevertheless, in the U.S. there exists wide-spread belief that our biology causes the majority of cases of depression, schizophrenia, anxiety disorders and children’s disorders such as non-compliance, tantrums, attention deficit hyperactivity disorder (ADHD), bipolar disorder, tantrums and others.

Medicalization is so widely accepted in the U.S. that to call it a delusion may be appropriate. There is little doubt that Americans are capable of widespread false beliefs. Recent polls show that about one-quarter of Americans are either convinced or suspicious that President Barack Obama was born outside the U.S. even though his birth certificate has been made public, and newspapers in Hawaii published announcements of his birth within a week of its occurrence. Moreover, the Governor of Hawaii, who knew the Obama family at that time, has publicly stated that he remembers seeing Barack Obama soon after the future president was born (2). A similar false belief involves global climate change. Only 53% of members of the U.S. Republican Party believe in global warming, despite an overwhelming scientific consensus that global warming is real (3). Thus, it is no surprise that medicalization has flourished, given that sources with credibility, such as the American Psychiatric Association, promote it to the public.

There is another concern. Although psychiatry and the pharmaceutical industry have rendered medicaliza-

tion quite strong in the U.S., it could go global, given that both psychiatry and the pharmaceutical industry are global.

In the past forty years, medicalization has increasingly substituted for science-based explanations of many disorders of both adults and children. This is true for the disabled and non-disabled (1, 4, 5). It is these common disorders that are the focus of this article. For additional discussion of this topic see a special issue of Behavior and Social Issues (6).

UNANTICIPATED CULTURAL SIDE EFFECTS OF MEDICALIZATION

Medicalization of behavioral and psychological disorders has become more pervasive in the past forty years, and seems to be accelerating. This has occurred within both the professional and public communities. Regarding the latter, from the mid-1990s to the mid-2000’s the percentage of the U.S. public who believe that our biology causes most mental disorders rose from 38% to nearly 75% (7).

There are dangers in the widespread turn to biological causation. For example, research shows that patients feel that there is less hope for improvement, even with proper treatment, when they are convinced that their disorders are bio-determined (8). Belief in biological causation also is related to public increased prejudice against and fear of mentally disabled people, as well as a strong desire to maintain distance from them (9, 10). Medicalization has increased the use of psychotropic drugs as the treatment of choice, and the medicines produce many bad side effects, including some that are potentially fatal. Psychotropic medication errors result in more than six thousand deaths per year in the U.S. (11). These side effects may disrupt the functioning of nearly every organ system in the human body. Also, while medications may provide temporary relief, they do not alter the environmental variables that maintain many problem behaviors. When the medication is stopped, at times the difficult behavior may return at greater intensity than prior to the course of medication, a phenomenon termed behavioral rebound (1).

It is especially tempting for those trained as physicians and nurses to be pulled into the vortex of medicalization, because their training has taught them to observe a patient’s symptoms and then diagnosis a medical illness within the patient’s body. This temptation is heightened because there are biological causes of some disorders, such as autism and others mentioned above. But a warning is called for. Researchers have not discovered biological causes of the majority of common behavioral disorders.

In contrast, there are a number of environmental contingencies that likely cause most disorders. While it is not the purpose of this article to review that literature, researchers have provided convincing evidence that ADHD, conduct disorders and temper tantrums may result from either positive reinforcement of the inappropriate behavior, or inadvertent parental attention

to children's misbehavior. We know that many adults with depression have failed to learn adequate stress-coping skills and, thus, they are at high probability to feel depressed when faced with routine levels of stress. We know that other depressed adults may have adequate coping skills but they become depressed because they are faced with extreme stress at a given point in their lives. We know that anxiety disorders tend to result when people have been subjected to unusual levels of aversive stimulation such as extreme punishment during childhood or elevated levels of job stress, economic stress or family/social stress in adulthood. There are numerous sources for more information about any of these findings. For more, see Flora (12), Whitaker (1) or journals such as the *Journal of Applied Behavior Analysis*, *Behavior Modification*, *Behavior Research and Therapy*, *The Behavior Therapist*, *The Behavior Analyst in Practice*, *The Behavior Analyst Today*, and others.

As one example of the way that one's learning history may create a psychological/behavioral disorder, simple phobias typically originate via classical conditioning and then are maintained by operant conditioning. For example, the child who is highly fearful of dogs typically has been frightened by a vicious dog with the result that his fear initially was established. Later, when near a friendly dog, he begins to feel extreme fear and he dashes into his home. The relief he feels negatively reinforces his escape behavior, which then causes him to escape in the future, when in the presence of a dog. Anti-anxiety medication will cause him to feel more relaxed in the presence of dogs, but does not treat the underlying cause of his phobia. When told by well-intentioned professionals that his problem lies in a chemical imbalance or other biological variable, he is being misled. He and individuals like him, and their treating professionals, have much to gain by reading this article.

THE RISE OF MEDICALIZATION

The past four decades have witnessed an increasing tendency toward medicalization of the majority of psychological/behavioral disorders such as depression, anxiety disorders, substance use disorders and childhood disorders such as attention deficit hyperactivity disorder (ADHD), conduct disorders and childhood bipolar disorder. Medicalization now pervades both the professional and popular cultures (1, 4, 12).

To understand the roots of medicalization it is important to examine a number of factors that have nourished it. A major influence has been the role of the psychiatry profession as it has attempted to protect its turf from other professionals. Prior to World War II, there were no professions in competition with psychiatry for the right to treat mental health patients. However, following World War II a number of other professions emerged to steadily gain both patients and prestige. These include clinical psychology, counseling, clinical social work and behavior analysis. As a result, psychiatry attempt-

ed to buttress its position at the top of the mental health pecking order by tightly embracing medicalization.

By the 1980s the rhetoric of leading psychiatrists had become revealing, as they reacted to the burgeoning status of the "intruder" professions. One psychiatrist, writing in *Hospital and Community Psychiatry*, stated that "medicalization" of disorders was useful "to rally the troops... to thwart the attackers... Economics demands that we be medical... we use the term to rout the enemy within..." (13). Another wrote in the *American Journal of Psychiatry* that psychiatrists should "...speak with a united voice not only to secure support but to buttress (psychiatry's) position against the numerous other mental health professionals seeking patients and prestige" (14).

In 1988, Paul Fink, who was president-elect of the American Psychiatric Association, stated that psychologists and others who were not psychiatrists "...don't have the training to make the initial evaluation and diagnosis... (and) are not trained to understand the nuances of the mind..." (15). Also that year, as psychologists were attempting to gain hospital privileges in New York, Melvin Sabshin, who was Medical Director of the American Psychiatric Association, warned New York State lawmakers about "the grave and inevitable risks to healthcare...of psychologists' self-serving claimed advantages for their clients..." Sabshin asked, "Do the substantial and inevitable risks to the quality of patient and medical care in hospitals outweigh the dubious, purported benefits associated with hospital privileges for these non-physician practitioners?" (15). Unfortunately, psychiatry's attacks on other professionals have continued into the present century (16).

By the 1980s it seemed clear that psychiatrists had become concerned with protection from psychologists and other professionals whom they considered to be intruders. Medicalization of disorders, with or without sufficient research support, had become a means to "buttress" their status within the mental health profession.

Psychiatrists had an additional concern, beyond their competition from other professionals. Psychiatrists had noticed their profession's crumbling status within the field of medicine itself. Between 1970 and 1980 the percentage of U.S. medical school graduates who chose psychiatry as a career had dropped from 11% to 5%. There were several reasons for the decline in interest among young physicians, including that many young doctors viewed psychiatry as a "dinosaur," a discipline mired in unscientific psychoanalytic thinking. In response to the difficulty recruiting young physicians into the field, psychiatrists held strategy conferences. They concluded that if their field was to re-gain its lost status it would have to emphasize the scientific roots of the profession, or what resembled the scientific roots. Psychiatry would have to advocate biological explanations of mental illnesses (17).

Psychiatry reached for greater scientific respectability with the 1980 revision of its diagnostic handbook,

The Diagnostic and Statistical Manual of Mental Disorders (18), commonly referred to as the DSM. A new edition, The DSM-III, was developed to aid the profession's quest for scientific credibility. In 1977 the president of the American Psychiatric Association, Jack Weinberg, eagerly anticipated the coming edition of the DSM-III. Weinberg announced that the DSM-III would "clarify to anyone who may be in doubt that we regard psychiatry as a specialty of medicine" (19, p. 114). Following its publication, the DSM-III was hailed as "...the ascendance of scientific psychiatry... the new psychiatry (based on) fact" (20). The Medical Director of the APA, Melvin Sabshin, termed the DSM-III "...amazing... a brilliant tour de force" (21). Unfortunately, this was the rhetoric of persuasion, rather than of research findings. The DSM-III was based on no new scientific discoveries about the causes of disorders.

Rather, the primary change from DSM-II to DSM-III was improvement in descriptions of the behaviors, thoughts and feelings that must be demonstrated by a patient in order that a diagnosis could be made. The improved diagnostic criteria brought with it greater likelihood that mental health professionals would agree on the diagnosis, a phenomenon termed reliability. But that had nothing to do with new discoveries about the origins of disorders. Regarding causes of disorders, there was no reason to consider the DSM-III a significant scientific achievement because, as Robert Whitaker (1) put it, no scientific discoveries had led to the revision.

Although the DSM-III provided no new scientific evidence in support of biological causation, psychiatrists unleashed a tsunami of public relations activity aimed at marketing the field as scientific. As Whitaker (1) described it, the American Psychiatric Association launched a blitz of publicity that continues to the present. In 1981 the APA established a division of publications and marketing whose purpose was to "deepen the medical identification of psychiatrists." The APA held media conferences, produced radio programs, gave awards to journalists whose stories it liked and worked to place spokespersons on television programs.

Included in psychiatrists' marketing efforts was a stream of books designed to further convince the U.S. population that scientists had discovered biological causes for most of the common mental disorders. One such book was *The Broken Brain* by Nancy Andreasen who would later become editor of the flagship journal of APA, the *American Journal of Psychiatry*. Andreasen wrote that "The major psychiatric illnesses are diseases. They should be considered medical illnesses just as diabetes, heart disease, and cancer are." At the same time, Andreasen confessed that researchers had not actually found the biological causes of those psychiatric illnesses, although she confidently said that the causes would be found, "even if the process requires a number of years" (22). Andreasen was asking the public to believe in biological causation as a matter of blind faith, like a religion.

Andreasen's confidence was unwarranted. In 2010 Robert Whitaker reflected on her statement and on psychiatry's marketing efforts:

Twenty-five years later, that breakthrough moment still lies in the future. The biological underpinnings of schizophrenia, depression, and bipolar disorder remain unknown. But the public has long since been convinced otherwise, and we can see now the marketing process that got this delusion under way (1, p. 275).

As the APA nears publication of the fifth edition of the DSM in 2013, the delusion remains that there is a broad base of research support of bio-causation. Early reports suggest that the primary change in the new edition of the DSM is that greater numbers of disorders will have been "discovered". For example, one proposed addition is "childhood temper dysregulation disorder with dysphoria," a diagnostic term for behaviors that bear a remarkable resemblance to childhood tantrums. Interestingly, this disorder has been created in recognition of the fact that far too many children's tantrums have been erroneously interpreted as (biologically caused) manic episodes that must be treated with mood-stabilizing drugs (23). Unfortunately, like the disorder it is designed to replace, the new disorder may quickly come to be viewed as a biological phenomenon that lurks within the child and is in need of psychotropic medication. In contrast, it might better be viewed as a behavioral difficulty that would benefit from effective and safe child behavior management training for parents.

SYMBIOSIS: PHARMACEUTICAL INDUSTRY AND PSYCHIATRY

Psychiatrists are not the only group to benefit from medicalization. Drug makers also have reaped benefits because biological causation implies that drugs are the treatment of choice. Study after study shows that, as biological causation theory has flourished, drug sales have skyrocketed (4). Between 1988-1994, there was a 20% increase in the number of U.S. doctor visits at which psychotropic drugs were prescribed. Prescriptions of stimulants tripled and prescription of mood elevators doubled to more than 20 million (24).

In 1995 it became legal to advertise prescription medications directly to the public in the U.S. After years of lobbying the Congress for this change in the law, the drug industry had succeeded. Jobs in the marketing of drugs soared (25). From 1996 to 2005, drug makers tripled their spending on marketing (26). Advertisements to the public soon were found throughout the media, and the advertisements often were wrapped in unwarranted claims of biological causation.

The resultant influence of drug advertisements on both the public and doctors was demonstrated in a study published in the *Journal of the American Medical Association* (27). In the study, 152 family doctors and internists were visited unannounced 298 times by "patients" – actors who had been trained to demonstrate symptoms of either major depressive disorder

or adjustment disorder with depressed mood. At some of the visits the patients mentioned the anti-depressant Paxil, adding that they had seen an advertisement for the drug on television, and they asked the doctor whether the drug might be of help. At other visits the patients told the doctors that they had seen an advertisement for anti-depressant medication, but they mentioned no specific drug. At still other visits the patients made no reference to drugs.

Of the visits at which the patients pretended to have major depressive disorder and Paxil was mentioned, it was prescribed 27.4% of the time. Of the visits at which "medication" was mentioned, Paxil was prescribed only 2% of the time. When the patient made no mention of medication, Paxil was prescribed 4% of the time. Results were similar when patients presented with symptoms of adjustment disorder with depressed mood. It is clear that advertisements for medications may exert powerful influence on doctors' prescribing processes, a fact well-known to the pharmaceutical industry.

Drug makers' advertisements to the public often suggest that biological causation has been proven. However, often there are large gaps between what is claimed in the advertisements and what is known within the scientific community. For example, the drug makers' advertisements often describe a connection between the neurotransmitter serotonin and depression. In contrast to the advertising, the following are findings by respected researchers as reported by Lacasse & Leo (28):

- "A serotonin deficiency for depression has not been found," said Joseph Glenmullen, clinical instructor of psychiatry at Harvard Medical School, in 2002.
- "I spent the first several years of my career doing full-time research on brain serotonin metabolism, but I never saw any convincing evidence that any psychiatric disorder, including depression, results from a deficiency of brain serotonin," said David Burns in 2003. Burns is winner of the A.E. Bennett Award given by the Society for Biological Psychiatry for his research on serotonin metabolism.
- In 2004, psychiatrist David Healy described the state of the research. "Indeed, no abnormality of serotonin in depression has ever been demonstrated." Healy is former Secretary for the British Association for Psychopharmacology.
- Psychiatrist Kenneth Kindler said, in 2005, "We have hunted for big, simple neurochemical solutions for psychiatric disorders and have not found them". Kindler is a former co-editor-in-chief of *Psychological Medicine*.
- Compare the above statements with pharmaceutical industry advertisements that routinely claim that the serotonin-depression connection is scientific fact, also as reported by Lacasse & Leo, (28).
- "Celexa helps to restore the brain's chemical imbalance..." (29).
- "LEXAPRO appears to work by increasing the available supply of serotonin... In people with depression and anxiety, there is an imbalance of serotonin..." (30).

- "When you're clinically depressed...the level of serotonin...may drop...to help bring serotonin levels closer to normal, the medicine doctors now prescribe most often is Prozac." (31).
- "...depression may be related to an imbalance of natural chemicals... Zoloft works to correct this..." (32).

The financial interests of the drug industry supplement the efforts of psychiatry, as both promote medicalization. The two industries have become symbiotic. Biological causation is the theoretical mortar that cements them together, although there is remarkably little research to support the notion that physical disease processes cause the majority of cases of common disorders such as depression, anxiety disorders, schizophrenia and childhood disorders such as ADHD, childhood bipolar disorder and conduct disorder (4, 5). Given that drug makers and psychiatrists are convinced of medicalization, what is the state of the research? A brief look at lines of studies frequently cited in support of medicalization reveals a research base that is surprisingly weak.

THE RESEARCH IN SUPPORT OF BIOLOGICAL CAUSATION

Two lines of research typically are cited in support of biological causation. First are genetic family studies. These studies examine the connection between family relatedness and the likelihood that two individuals will be diagnosed with the same mental disorder, a phenomenon termed concordance. The second group of studies compares the structure, function and chemistry of the brains of individuals with mental illness to the brains of those with no mental illness.

Genetic family studies. These studies have consistently shown that the more closely related are two members of a family, the greater the likelihood that both will be diagnosed with the same mental illness, a phenomenon called concordance. Family concordance studies have been described in psychology and psychiatry textbooks for decades and have been interpreted to provide powerful evidence of genetic causation of mental disorders. Perhaps the most frequently cited overview of the family studies was done by Gottesman (33) whose interest was schizophrenia. His review of earlier studies shows that an individual who has been diagnosed as schizophrenic has an approximate 12% chance that his first degree relative (child, sibling or parent, who would share half his genetic structure), also will be schizophrenic. That is well above the 1% population base rate for schizophrenia and suggests a genetic component. Gottesman's review also found a mean schizophrenia concordance rate of 48% for identical twins. That finding has special importance because their genetic structures are identical. Thus, it is easy to conclude that Gottesman's review provides powerful evidence of a genetic component to the disorder. Today, Gottesman's findings are

repeated in many psychology textbooks, typically with little critical examination (34).

However, in 2006 a careful review of Gottesman's methods and conclusions was undertaken, with disturbing results (34). It was revealed that Gottesman had presented only European studies, some of which had been conducted as early as the 1920s. Gottesman had ignored U.S. studies with better methodology that were done in the 1980s. Many of the earlier studies that Gottesman had summarized were done by investigators who were devoted to genetic theories. Many of these early researchers had advocated sterilization of schizophrenics. They had possessed a genetic causation bias that likely influenced their methodology and conclusions. Also, most of the early studies had not been conducted using double-blind methodology. That is, in examining a sibling, the researchers were aware of whether his brother or sister had been diagnosed as schizophrenic. Also, they had employed vague, non-standardized diagnostic criteria and it is possible that many of their subjects were not schizophrenic.

In contrast to Gottesman's finding of 12% concordance for first degree relatives, six U.S. studies, that were conducted with better methodology between 1980 and 1985, found the mean concordance rate to be only 3.3%. Combining those findings with two studies from Switzerland and Greece (also done in the 1980s) resulted in a mean 4.1% concordance rate (34). These more recent studies suggest a much weaker genetic component to schizophrenia than is commonly presented in psychiatry and psychology textbooks.

Additionally, Gottesman's 48% concordance rate for identical twins is unreliable, for a number of reasons. For example, studies reviewed by Gottesman employed the proband method to calculate concordance rates. The pairwise method of calculation, which is methodologically preferable and more straightforward, reduces Gottesman's figure to about 30% concordance for identical twins.

Also, research shows us that identical twins tend to be treated more similarly by their environments than are fraternal twins or ordinary siblings, even in rare instances in which the twins are reared apart. Identical twins reach puberty at the same rate, are always the same sex and will be of equal height and equal physical attractiveness. Each of these variables has been shown to be related to adjustment and mental health. It is well established in the developmental literature that these variables influence children's psychological and behavioral adjustment because of the ways that others, especially peers, respond to them. Moreover, when twins are reared apart, it is often by members of the same extended family. When identical twins are separated and not raised by extended family, adoption agencies often require that adoptive families closely mirror biological families on variables such as urban/rural environment, religious affiliation and other environmental factors that are known to influence mental health. There has been little accounting for these

environmental variables by researchers who seem determined to find genetic causation where, perhaps, it does not exist (4, 5).

Given the issues raised above, it appears that decades of family studies are of little use when it comes to establishment of causation of mental disorders. The contributing genetic and environmental variables are hopelessly confounded.

Studies of brain structure, chemistry and function. These studies employ fMRI and PET scan technology on living humans, and autopsy analyses of brain tissue of the deceased. They consistently show differences between those who have been diagnosed with common disorders and those who have not been so diagnosed. However, the studies are not able to establish the direction of causation. That is, we do not know whether a pre-existing brain disorder caused the behavioral disorder, or whether long-term disordered behavior caused the brain abnormalities.

To further explain how the latter may occur, consider the schizophrenic lifestyle that involves years of social isolation, absence of consistent employment, poverty, minimal family support, frequent hospitalizations and long-term use of psychotropic medications. It would be surprising if such a lifestyle did not cause changes in the brain's structure and chemistry, a phenomenon known as neuroplasticity (35). The brain's structure, function and chemistry change when one learns to read, dance or ride a bicycle. Similarly, the brain changes when a person becomes chronically depressed, nervous, isolated, schizoid, is abused or when any other unfortunate circumstance prevails.

It should be expected that lifestyle change may alter brain function and chemistry, given that there is no dispute that lifestyles influence other organ systems. For example, the person who works under great pressure may, as a result, develop a stomach ulcer, high blood pressure or other physiological disorders. It would be no surprise to discover that he also developed concurrent changes in his brain structure and chemistry. The person who goes from a normal mood to severe depression may stop exercising, begin to consume a poor diet and greatly reduce his level of socialization. At the same time, his body loses muscle tone and cardiovascular integrity. He gains body fat and loses lean muscle mass and he becomes less attuned to his surroundings. His brain chemistry changes, as well.

Thus, when studies of brain chemistry, structure and function find fairly consistent differences between the normal person and those diagnosed with mental disorders, there is no reason to conclude that a brain disorder caused the behavioral disorder. It could as credibly be concluded that disturbances in behavior caused changes in the brain. It is also possible that some unknown third factor could have caused changes in both overt function and brain structure and chemistry.

The evident rush to locate causes of common disorders within the brain has escalated as technology has

advanced. Vivid images of ongoing neurological activity in living brains are impressive. But the ability to directly observe such activity does not tell us its causes.

The APA is unable to provide evidence of bio-causation. Given that the American Psychiatric Association promotes medicalization theory, one would assume that the APA would readily produce supportive evidence. In that regard, a 2003 battle of communication was revealing. A U.S. organization called MindFreedom requested the APA to “provide scientifically valid evidence that most major mental disorders are biologically based, or that any physical diagnostic test can distinguish those so diagnosed from normals”. The APA initially responded by suggesting that the answers could be found in several specific journals and books. After reviewing those sources, MindFreedom wrote to the APA to report that those sources tell us that the causes of most mental disorders are unknown. At that point the APA issued a self-contradictory position paper which states first that mental disorders are “...neurobiological”, but then adds that “...brain science has not advanced to the point...” at which the causes of most mental disorders have been identified (36). Like Nancy Andreasen who became editor of its most important journal, the American Psychiatric Association appeared to ask that biological causation be treated like a religion, a belief to be accepted on blind-faith.

Although the evidence of biological causation for the majority of common disorders remains minimal, a number of individuals, including some who are highly placed, continue to beat the drum of true belief. Eric Kandel, a Nobel Prize winner and professor of brain science at Columbia University, recently said, “All mental processes are brain processes, and therefore all disorders of mental functioning are biological diseases. The brain is the organ of the mind. Where else could (mental illness) be if not in the brain?” Similarly, Thomas R. Insel, director of the U.S. National Institute of Mental Health, said, “The only difference here (between mental illness and heart disease, diabetes, etc.) is that the organ of interest is the brain instead of the heart or pancreas. But the same basic principles apply” (37). Neither Kandel nor Insel offered compelling evidence for their broad claims. Rather, they failed to mention that, unlike heart disease and diabetes, there are no medical tests for the majority of mental disorders.

Thus, twenty-eight years after Nancy Andreasen’s nearly identical assurances, and nearly a decade after the APA failed to support its claims of medicalization, Kandel and Insel continue the perpetuation of the bio-causation delusion, as they evidently remain unable to consider that the majority of behavioral disorders well may be under the control of environmental variables.

THE PHARMACEUTICAL INDUSTRY STEPS IN

The financial interests of the drug industry fit well with the interests of psychiatry. While psychiatrists

worked to convince the public that psychiatry had become more scientific, the pharmaceutical industry was more than willing to cooperate. The two industries were aided in their efforts when, in 1995, it became legal for prescription drugs to be advertised directly to the public in the U.S. In the five years that followed, the number of jobs in marketing drugs doubled to nearly one hundred thousand, a figure that is nearly twice the number of those in research and development. Clearly, the cost of marketing drugs in the U.S. has escalated to levels far above those of any earlier era (38).

As additional years passed, the drug makers and psychiatrists drew closer. By 2001-2002 three psychotropic medications (Zyprexa, Zoloft and Paxil) were among the top ten revenue producers in the U.S. By 2003 the drug industry was underwriting 70% of all drug clinical trials in the U.S. Drug manufacturers were having studies ghost written and there were accusations of negative studies being terminated prior to publication (39).

As the drug industry has become more deeply involved in mental health treatment, it has begun to focus on children as a market target. Psychiatrists and drug manufacturers increasingly promote the view that children need medications to treat tantrums, anxiety, moodiness, over-activity, non-compliance and other difficulties, although each of these is treatable without medications. It is tempting for parents to rely on medications as treatment for everyday problems in raising children. One study found that when parents were first told to try behavioral interventions for their children, after which medications might be tried, 95% of the parents sought behavioral interventions. In contrast, when the parents first were given the drug for their child and also were told to enroll the child in a behavioral intervention program, only 25% did so (40). In another study, parents were given a prescription for their children and told to follow-up with behavioral treatment. Three months later only 50% had done so (41).

As the U.S. drug industry pushed for greater profits, it increasingly saw children with behavioral disorders as a market target group, as is made clear in a number of studies. Fostered children seem to be particularly vulnerable to treatment with psychotropic drugs. A study by the U.S. Government Accounting Office (GAO) found that such children were four-and-a-half times more likely to receive the powerful drugs than were children covered by the government’s Medicaid services for the poor, but who live with their parents (26).

From 2001 to 2004 there was a 49% increase in prescriptions for medications to treat ADHD in children younger than five years of age (42). Today about eight percent of U.S. children have been diagnosed with ADHD and about half of them receive medication (26).

Of perhaps even greater concern has been the escalation of children’s prescriptions for anti-psychotic drugs. The GAO study found that infants were being prescribed the drugs despite no scientific evidence to

support such use (26). In 1995-1996 about 500,000 U.S. children (ages two to eighteen, with a mean age of thirteen) were taking anti-psychotic medications. That increased to 2.5 million by 2001-2002 (43). A study of Florida children (who receive the government's Medicaid benefits for the poor) showed that in 2000 there were 9,364 of them taking the powerful anti-psychotic drugs in the Sunshine State. That had nearly doubled to 18,137 by 2006 (44).

The increase in anti-psychotic drug prescriptions for children may well be attributed to the increased number of U.S. children who are diagnosed with bipolar disorder, an increase from 20,000 in 1994 to 800,000 by 2003. In 1999-2001 about one in 1,300 U.S. children aged two to five was taking an antipsychotic medication. By 2007 that figure had doubled to one in 630 children. Among five-yr.-olds only, the increase was from one in 650 in 1999-2000 to one in 329 in 2007 (45).

What motivated so many U.S. physicians to diagnose greater numbers of children with childhood bipolar disorder and to prescribe anti-psychotic medications? What caused this change in treatment habits in a brief time? The answers may be found, in part, in the ways that pharmaceutical manufacturers have purchased the services of high-profile child psychiatrists. Several cases illustrate this phenomenon.

Dr. Fredrick K. Goodwin was host of a National Public Radio (NPR) program, "The Infinite Mind," which was broadcast nation-wide, for many years. In his program on September 20, 2005, Goodwin described the (alleged) benefits of anti-psychotic medications for children. He told his audience, "...modern treatments, mood stabilizers in particular, have been proven both safe and effective in bipolar children... Left untreated, they could develop brain lesions." The same day, Goodwin was paid \$2,500 by the pharmaceutical company GlaxoSmithKline to promote its mood stabilizer Lamactil, in a Florida speech. For the full year of 2005, Goodwin was paid \$329,000 by GSK to promote its drugs.

Similarly, Harvard Medical School professor Dr. Joseph Biederman, a renowned child psychiatrist who promotes medicalization of childhood disorders, became a powerful proponent of anti-psychotic drugs for children. Biederman was paid \$1.6 million by drug makers from 2000 to 2007 (46).

Emory University medical school professor Dr. Charles Nemeroff, an internationally known expert on depression who promotes medicalization of disorders, was forced out of his academic position in 2009 because he had not disclosed to university officials more than \$800,000 in speaking fees from the drug firm GlaxoSmithKline. Under Nemeroff's leadership Emory's psychiatry department had obtained more than \$22 million in grants from the U.S. National Institute of Health in 2007 alone (47).

A number of research findings suggest that Drs. Goodwin, Biederman, Nemeroff and others who heavily promote anti-psychotic medication for children,

have deluded both themselves and the public in their quests for drug industry cash. The long-term outcomes for bipolar children who take the powerful antipsychotic drugs, as summarized by Whitaker (1), reveal disturbing conclusions: "Anticonvulsants and atypical antipsychotics cannot be recommended for children diagnosed with bipolar disorder" (48). Bipolar children treated with neuroleptic drugs are "significantly less likely to recover (after five years) than those who did not receive a neuroleptic" (49). The side effects for children include "metabolic difficulties, hormonal problems, obesity, diabetes, and non-reversible neurological disorders such as tardive dyskinesia" (48). Today about eight million U.S. children take one or more psychotropic drugs, a greater number than any other country, and the majority do so without a clear diagnosis and despite the fact that there are no long-term data on the effects of the medications on child development, according to Carl Tishler, a professor of psychology at Ohio State University. What, ultimately, are the full effects of the drugs on children's physical growth, brain development, behavior, mood and cognitive functioning? Tishler answered, "We just don't know" (50).

U.S. Senator Charles Grassley, a Republican from Iowa, recently has raised questions about a number of psychiatrists who have financial ties to the drug industry. One of them was Dr. Alan Schatzberg, then chair of the Stanford University Department of Psychiatry and a former president of the American Psychiatric Association. Schatzberg was the principal investigator on a study of the drug mifepristone which is used to treat psychotic depression. The study was funded by the U.S. National Institute of Health. Sen. Grassley found that Dr. Schatzberg had as much as \$6 million invested in the company, Corcept Therapeutics, that made the drug (51). A thoughtful person may ask, what is the likelihood that Dr. Schatzberg's research would find mifepristone ineffective, given that such a finding would decrease the value of his stock holdings?

The drug industry has insinuated itself into psychiatrists' practices in several ways. Marcia Angell is a former editor-in-chief of the *New England Journal of Medicine* and a critic of the pharmaceutical industry. Angell (52) described an incident that occurred at the annual meeting of the American Psychiatric Association, as told to a reporter from the *Boston Globe* (53). The reporter described an encounter with a psychiatrist who attended the meeting. The psychiatrist, who was from Mexico, had been given a clock by the maker of antidepressant Prozac; a thermos from the maker of the antidepressant Paxil; an engraved silver business card holder from the maker of mood stabilizer Depakote; a CD carrying case from the maker of the antipsychotic Risperdal; a passport holder from the maker of the antidepressant Celexa; a paperweight from the maker of the antidepressant Remeron and more. Also, Pfizer, which makes several psychotropic drugs, paid for her airfare from Mexico City, and paid for the airfare of thirty of her colleagues and her eighteen-year-old

nephew, and paid for them to stay in hotels near the APA meeting in Philadelphia. Unfortunately, the story is not unusual (54). Moreover, it is important to note that such gifts to physicians by the drug companies also occur daily in physicians' offices and in hospitals. It is a practice that increases the influence of the industry over physicians who remain happy to believe that such gifts do not change their prescribing practices (55, 52, 56, 57).

The Boston Globe story (53), described another way that drug makers have taken control of the American Psychiatric Association. By the early 2000s the drug companies were spending between \$200,000 and \$400,000 for each of the more than fifty industry-sponsored symposia at the APA's annual meeting. In addition, the drug makers paid \$60,000 directly to APA for each symposium, a fee that significantly bolstered the APA's coffers. It is estimated that without such drug company payments to the APA, the organization's members' dues might rise from \$540 to \$3,000 per year (55).

Thus, it is difficult to escape the conclusion that, when the pharmaceutical industry and psychiatry mutually promote medicalization of behavioral disorders, their motives are based more on profit margins than on behavioral research. The profit motive is so large that drug companies' tactics sometimes become illegal. In March, 2009, U.S. Federal prosecutors charged the Forest Pharmaceutical Company with illegally marketing its anti-depressants Lexapro and Celexa to children, even though the drugs were said to be no better than placebo. The government also charged Forest with influencing pediatricians with spa visits, fishing trips and tickets to sporting events and Broadway shows. However, in a display of the power of the pharmaceutical industry, one month later the U.S. Food and Drug Administration (FDA) approved Lexapro for adolescents. It is not a surprise that the FDA was of little help. The FDA's own Science Advisory Board issued a report saying that the FDA is unable to effectively do its job because of inadequate staffing, poor retention of staff, out-of-date technology and a general lack of resources (58).

A ray of hope emerged more recently. On July 2, 2012, it was announced by the U.S. government that British drug giant GlaxoSmithKline had admitted to illegal marketing of its anti-anxiety drug Paxil and its antidepressant Wellbutrin. The company agreed to pay \$3 billion in both damages and criminal penalties for its wrongdoings. The government found that GSK had placed doctors on sham "advisory boards," paid for trips to lavish resorts, tickets to basketball games and more, to get doctors to promote its drugs. The government also found that GSK has made false claims about the safety and usefulness of its drugs and had not reported safety data about the cardiovascular effects of its diabetes drug Avandia to the U.S. Food and Drug Administration (59).

Today the drug industry in the U.S. is more powerful than ever in the mental health field. It recently was re-

vealed that 57% of the 141 individuals who are working to revise the DSM have financial ties to the drug industry (60). In Washington, the pharmaceutical industry has far more lobbyists than members of the Congress. Hundreds of former federal employees, including dozens of former members of the U.S. Congress are among them (39).

While the industry profits, dangers lurk. Psychotropic medication errors cause almost seven thousand deaths per year in the U.S. (11). And while more children and adults consume medications, fewer receive empirically-based treatments such as those based on applied behavior analysis or other non-drug treatments.

Fortunately, not all nations have embraced medicalization as heavily as has the United States. However, given that the pharmaceutical industry is global, it would come as no surprise if other nations are soon to be consumed with biological theories of behavioral disorders for which drugs become the primary form of treatment. Fortunately, European nations have done better than the U.S. when it comes to resisting the tendency to prescribe medications for common childhood problems. A study of children in the Netherlands, Germany and the U.S. looked at the percentage receiving psychotropic medications. In the Netherlands only 2.9% of children were found to be on the drugs, while in Germany 2.0% were taking them. In contrast, in the U.S. 6.7% of children were receiving the prescriptions. Among the children taking any single psychotropic medication, in the Netherlands, Germany and the U.S., 8.5%, 5.9% and 19.2%, respectively, were also taking drug "cocktails" comprised of two or more such drugs (61).

A comparison of U.S and the U.K children looked at increases in numbers of youngsters who take anti-psychotic medications. From 1992-95, the number of U.K children taking the drugs increased from 4 in 10,000 to 7 in 10,000. Within a similar time-frame in the U.S. the number of such children increased from 23 in 10,000 in 1996 to 45 in 10,000 in 2001 (62). (Note that dates of data collection differ slightly due to differential source availability).

PUSHBACK

Many peer-reviewed journals publish behavioral research which describes non-drug treatment of behavioral/psychological disorders. It is not the purpose of this article to review that research. For a treatment of that subject see Stephen Ray Flora's *Taking America Off Drugs: Why Behavioral Therapy is More Effective for Treating ADHD, OCD, Depression and other Psychological Problems* (12). Flora's book begins,

"America has been deceived – deceived by the drug companies, by psychiatry, by our children's teachers, by well-meaning physicians, and by mental health workers of all stripes. The deception has been so complete and successful that Americans believe the deception is fact... The deception is that whatever one's

problem... there is a drug that can help the problem, if not cure it" (12, p. 1).

Flora, who is a psychologist, then describes validated behavioral treatments for anorexia, bulimia, bingeing, obesity, phobias, obsessive-compulsive disorder, ADHD, depression, schizophrenia and health concerns such as sleep disorders, various sexual dysfunctions, irritable bowel syndrome, premenstrual syndrome and urinary incontinence (12).

Fortunately, it is not just the behavioral sciences community that has recognized and offered alternatives to both medicalization theory and drug treatment. The medical profession itself has begun to push back against the relentless influence of the pharmaceutical industry to increase profits by medicalization of disorders. For example, several high-profile medical schools such as Stanford University now train students in ways to resist drug representatives' sales pitches (63).

Editors and former editors of some of the most prestigious medical journals now state openly that the journals have come to function as extensions of the drug industry (64). For example, a 2006 article in the *Journal of the American Medical Association (JAMA)* was titled "Health industry practices that create conflicts of interest". In the article's understated first sentence, the authors wrote, "Conflicts of interest between physicians' commitment to patient care and the desire of pharmaceutical companies and their representatives to sell their products pose challenges to the principles of medical professionalism" (65).

Two years later, Catherine DeAngelis, Editor-in-Chief of *JAMA* said, "The influence the pharmaceutical companies, the for-profits, are having on every aspect of medicine... is so blatant now, you would have to be deaf, blind and dumb not to see it... We have just allowed them to take over, and it is our fault, the whole medical community" (63).

Marcia Angel, a former Editor-in-Chief of the *New England Journal of Medicine*, described the influence of the pharmaceutical companies on research:

"Drug companies insist as a condition for providing funds that they will be intimately involved in all aspects of the study, they are the sponsors and they can easily tilt things in their favor, so their medications seem more reliable and secure than what they are in actuality. Therefore, it is not surprising that industry-funded studies published in medical journals are consistently biased in favor of drugs that receive positive results. On the negative results we rarely hear... (The) sponsoring companies... often design the studies, perform the analyses, write the papers; and decide whether, when and in what form to publish the (drug research) papers" (52).

Angel describes the "real pharmaceutical industry" as one which has morphed from its historic purpose of "...discovering and producing new drugs into primarily a marketing machine to sell drugs of dubious benefit..." She makes a number of important recommendations including that we end the "fiction" that drug companies provide valid medical education at events

such as the meeting of the American Psychiatric Association and that consumers disregard drug company advertisements (54).

DeAngelis and Angel have edited two of the world's most prestigious medical journals. Perhaps we are seeing the germination of efforts within medicine to curb the influence of the drug industry.

CONCLUSIONS

Medicalization of common behavioral disorders now pervades the U.S. culture. Some disorders (Down's syndrome, documented cases of toxin exposure, metabolic and endocrine imbalances and several others,) have been shown to be biologically caused. However, the same may not be said of common disorders such as depression, anxiety disorders, schizophrenia, and childhood disorders such as ADHD, tantrums, and childhood bipolar disorder.

The dual forces of psychiatry and the drug industry have promoted the belief that the majority of cases of common disorders are caused by problems in patients' biology.

Stephen Ray Flora (12) describes medicalization as a deception that has broadened well beyond the drug industry and psychiatry:

"It is the nature of deceptions that they are believed to be true by those deceived. This is the case with the mental health community... the 'professionals' and patients (have) so completely bought the drug companies' and psychiatry's sales pitch that behavioral problems are "brain disorders," that now it too is perpetuating the deception (p. 2)... The truth, uncomfortable as it may be, is that problems in an individual's family, social, school or work environment are mainly responsible for behavioral difficulties... By drugging children into compliance and docility, or by drugging adults into comfortable numbness, drug therapies work around the problem. But behavioral approaches work on or at the actual problem. They attack the problem-whereas drug approaches hide the problem" (p. 9).

It is not the purpose of this article to enumerate the broad and growing base of empirical research which demonstrates the effectiveness of non-drug, behavioral treatment for a variety of disorders. A number of those are described elsewhere in this special issue, especially as regards the developmentally disabled (66) and in numerous behavioral journals such as the *Journal of Applied Behavior Analysis*, *Behavior Modification*, *Behavior and Social Issues*, *The Behavior Analyst in Practice*, *Behavior Research and Therapy* and others. The purpose of this article has been to address a campaign that daily is perpetuated by both the drug and psychiatry industries. Their efforts are to convince us that the majority of disorders are biologically caused and that drugs are necessary treatment. A single conclusion is inescapable-that broad-based medicalization is a delusion that must be cast aside if the well-being of those with behavioral disorders is to advance at a pace commensurate with the state of behavioral science.

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