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The biological etiology of mental health disorders: Social influences and change potential of practitioners' beliefs

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The biological etiology of mental health disorders: Social influences and change potential
of practitioners' beliefs.

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By

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ABSTRACT

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of practitioners' beliefs

Donna M. Midkiff

This study was designed to examine mental health professionals' strength of belief in biological causation of several syndromes including ADHD, unipolar depression, anxiety disorders, and schizophrenia and whether a three-hour educational program will alter their thinking. Findings suggest that pre-training, mental health professionals' reported strength of belief regarding the etiology of many mental health disorders tends toward the biologically based. Also, this study demonstrated that attendance at a three hour training program is able to reduce the expressed acceptance of biological causation of such disorders. The social influences of pharmaceutical direct to consumer advertising and medical guild dominance, as well as empiricism, contributed significantly to prediction of strength of belief in biological causation. Of the three variables, empirical data had the greatest influence. These findings suggest that as mental health professionals' are exposed to social influences that may be contributing to belief systems supporting biological causation, it is critical examination of empirical data said to support biological causation that contributes the most robust change in expressed belief.

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Chapter 1

Introduction

Worldview

When considering the causes of behavior, especially abnormal behavior, including behaviors that define diagnostic syndromes, the discussion usually takes one of three directions – biology, environment (learning), or some combination of the two. Individuals in the mental health and behavioral health fields frequently become devoted to one of these three worldviews. Data show an ebb and flow of the strength of each worldview within the professional community over the years (Durand & Barlow, 2003; Davidson & Neal, 1994). The biological causation model has gained substantial influence over the past 30 years, but the validity of empirical support for it remains a topic of ongoing debate (Wyatt, 2003).

The extent to which professionals in the mental health field come to subscribe to one of these worldviews is of interest, as are the variables that influence those processes. That is because once a worldview of abnormal behavior is in place, one tends to interpret instances of behavior (hallucination, delusions, irrational fears, feelings of depression, and “normal” behavior etc) in light of that worldview. Those interpretations then influence the practitioner’s efforts at prevention and treatment, as well as the consumer’s acceptance of specific forms of prevention or treatment (Langer & Ableson, 1974). Yet, at times the data supporting a particular view of causation and treatment of a given behavioral disorder are not as powerful or convincing as one might suppose (Seligman, 1998).

The strength and influence of a worldview is evident in the story of Wilhelm Reich. Reich was a physician-scientist, born in 1897 in the Austrian province of Galicia. Reich

graduated from the Medical School of the University of Vienna in 1922. He was a student of Sigmund Freud, and a psychoanalyst before his clinical studies led him into the laboratory and into investigations of the energy processes in nature. Reich ultimately came to the United States where he went on to claim that he had discovered a universal cosmic and biological energy present everywhere and detectable through specified experiments. He called this energy orgone. He built a box-like apparatus with organic material on the outside and metal on the inside that he called an “orgone accumulator”, which he believed collected and accumulated orgone energy that existed in the atmosphere. He claimed that exposure to orgone, particularly through sitting in the accumulator, promoted health and vitality, and was an effective treatment for cancer. He also claimed to detect another energy, oranur or deadly orgone radiation (DOR), which produced negative health effects and reacted to orgone. He also built a device he called a “cloud buster”, with which he claimed he could manipulate the weather by manipulating the orgone in the atmosphere. Thousands of people came to accept his worldview as evidenced by their purchases of the “accumulator” and other of his devices, yet they failed to be helped. Reich was taken to court for shipment of fraudulent devices by the Food and Drug Administration (FDA). The court ordered his books and research burned and his equipment destroyed. Reich was given a prison sentence, and he died in federal prison in 1957 (Swalley, 1997).

A more recent example in which a theoretical model of causation influenced clinical practice with negative effects was frontal lobotomies (Stuss & Alexandar, 2005). The frontal lobe is thought to be the control center in the brain, specifically affecting the planning, initiation and regulation of goal-directed behavior (Mahurin, Velligan, & Miller, 1998). In the mid 1930's scientists began experimenting with frontal lobe cutting in chimpanzees. In these experiments aggressive animals became much calmer. The docile chimps looked to be much better off than

prior to the experiment. These experiments transitioned into accepted medical treatment interventions for the mentally unstable (Stuss, et al., 2005). However, psychiatric patients who underwent frontal lobotomies experienced significant neurological deficits as a result. Patients were noted to exhibit little spontaneous facial expression, they had difficulty interpreting environmental cues, and experienced problems with speaking, also known as Broca's Aphasia (Kolb & Miller, 1981; Brown, 1972). These patients had trouble responding to questions, and their associative learning skills were impaired (Kucharski, 1984). This treatment was an accepted alternative in many hospitals. Patients on whom the operation was performed had a variety of diagnoses, including schizophrenia, obsessive-compulsive disorder, and affective illnesses. People did not begin to realize the ramifications of the operation until it became clear, through observation, that lobotomized individuals were far from normal or happy, and that in actuality, the appearance of a less crazed nature had simply been mistaken for (what was in some cases) a total loss of the individual's personality (Burgler, 2005).

Given the evident ease with which conceptualizations of causality arise in the professional communities, and given the impact of those conceptualizations upon treatment, it is important to understand the extent of support for any claim of causation. It is equally important to understand the variables that contribute to the rise of any given worldview of causation because those variables may well be unrelated to research evidence that would confirm or disconfirm the model. This study will explore the social and environmental influences upon the professional's worldview development regarding the etiology of abnormal behaviors and how these variables influence treatment practices.

Chapter 2

“Chemical Imbalance” – The Biological Model

Models

We attempt to make sense of the puzzle of psychopathology by creating models of its development. This process often begins serendipitously and contributes to the evolution of understanding the etiology of mental disorders. These models then lead us to efforts at treatment (Wilson, Nathan, O’Leary, & Clark, 1997). One such example is the treatment of schizophrenia. Scientists observed patients with Parkinson’s disease who exhibited delusional and hallucinatory behaviors when exposed to excessive levels of dopamine (Carver, 2000; Woodruff, 2005). Antipsychotic medications such as Risperdal, Zyprexa, Haldol, and Thorazine, thought to block dopamine receptor sites, are now primary forms of treatment for positive and negative symptoms of schizophrenia (Bank, 2005; Hertzman, 1992). Another example, behavioral in nature, occurred when Ivan Pavlov discovered fundamental conditioning processes by way of trying to unveil the secrets of the digestive system (Fredholm, 2001). Today, these conditioning processes provide a basis for perspectives on the etiology and maintenance of anxiety disorders and are utilized as effective behavioral treatment interventions for a variety of anxiety disorders (Mineka & Zimbarg, 2006; Mackillop, 2005; Machulda, 1998).

It follows, that once the etiology of a disorder is thought to be understood, the most effective treatment for such disorder is suggested by that theorized cause. What does not follow is a global generalization and rigid application of this logic. There is good evidence to show that biological interventions can be helpful in dealing with mental health problems associated with environmental influences just as there are cognitive behavioral interventions that are demonstrably helpful in dealing with symptoms of disorders that are biological in origin. For

example, it is evident that anxiolytics such as Zanax, Ativan, or Valium, are proven effective biological treatments of symptoms associated with PTSD (e.g. anxiety, increased heart rate, hyper vigilance, etc.), an environmentally rooted disorder, while cognitive behavioral therapy techniques are helpful in managing delusional and reclusive behaviors in the schizophrenic patient (Butler, Chapman, Forman, & Beck, 2006; Hammer, Robert, Frueh, 2004; Maryasti & Pascal, 2004; Andreas, Verena, Dirk, Michael, Elmar, Birgit, Julia, Michael, & Joachim, 2005). Nevertheless, there is clear and convincing evidence that chemical treatment of mental health disorders has escalated exponentially in recent years (Pincas et al, 1998; Angell, 2000; Glenmullin, 2000; Korcok, 2002; Good, 2003; Edwards, 2003; Vaczek, 2004; Bloice, 2005). This gives rise to a credible postulate that an increasingly popular belief system within the mental health community is that many mental health disorders have a large biological/chemical basis for existence.

Biological Causation

The contemporary biological model of abnormal behavior assumes that the principal causes of, and the most likely effective treatments for, abnormal behaviors are biological (Wilson et. al, 1997; Carver, 2000; NAMI, 2005). Biological theorists view abnormal behavior as caused by a physical illness or injury. Most often, they point to a malfunctioning brain as the cause of abnormal behavior, focusing particularly on problems in brain structure, brain chemistry, or genetic makeup (Mesulam, Human, Hobson, & Silvestri, 1999; Schwartz, 1999).

The diagnostic task of defining an organic contribution to the etiology of abnormal behavior involves two basic steps: 1) identifying a specific organic factor based on evidence from history, physical examination, and/or laboratory tests; and 2) judging the factor to be etiologically related to the behavioral disturbance (Reid, Balis; Sutton, 1997).

Structural brain imaging techniques, such as Computed Axial Tomography (CT Scan – a form of advanced X-ray technology) and Magnetic Resonance Imaging (MRI - a spectroscopic technique used by scientists to obtain microscopic chemical and physical information about molecules), are at times touted as preferred methods in psychiatric diagnosis (Sadock & Sadock, 2000). However, when unusual brain structures or activity are observed in a person who exhibits overt abnormal behavior, it is unclear whether the brain abnormalities cause, are caused by, or are unrelated to the overt behavior. It is also possible that some third factor, or set of factors, caused both the overt abnormal behavior and the unusual brain structure noted on testing. Yet, such correlational data, when reported by researchers, may be misinterpreted as evidence of causation.

It is important to point out that biological abnormalities are known to cause *some* abnormal behaviors. For example, structure changes to the cerebrum may result in dementia. Dementias are typically classified according to the general brain areas involved and include cortical changes [Alzheimer's disease, Pick's disease], subcortical [Huntington's disease, Parkinson's disease], and axial [Wernicke-Korsakoff syndrome] (Heilman & Valenstein, 1979). There is universal agreement that other disorders such as Down's syndrome and Autism are the result of biological abnormalities. The same is true for other disorders such as those attributable to brain tumors, intracranial infection, and toxins (e.g., lead exposure). However, many other disorders (e.g., depression, anxiety, ADHD, schizophrenia) are typically of unknown origin. In such cases, it is tempting to make unwarranted attribution to unobserved structures or functions of the central nervous system. Skinner (1974) labeled this phenomenon the "conceptual nervous system" as if to point out its illegitimacy. Skinner termed the CNS a "dumping ground" where the cause of any unexplained abnormal behavior is hypothesized to lie.

Although computerized brain-imaging technologies *promise* to open new doors in the study of the gross (large-scale) anatomy and function of the human brain, it is microscopy that contributes to the analysis of the cellular structure and, more recently, the cellular function of the nervous system. This particular means of investigation has fueled speculation that various disorders are due to chemical imbalances in the brain.

The brain is estimated to be made up of approximately 100 billion nerve cells, called *neurons*, and thousands of billions of support cells, called *glia* (Comer, 2001). Researchers into brain anatomy have speculated that there may be a connection between psychological disorders and chemical exchanges between neurons. A tiny space, the *synapse*, separates one neuron from the next. Hypothetically, when a thought, feeling or behavior occurs, chemicals called *neurotransmitters* are released and travel across the synaptic spaces to the receptor sites of other neurons. Those who subscribe to the biological causation worldview theorize that a given behavioral problem may be the result of too little or too much of one or more neurotransmitters reaching the receptor sites. Although there is no reason to believe that such a chemical imbalance could not cause disordered thoughts, feelings and overt behaviors, the exact mechanism and processes remain unknown. It is worth noting that there is little evidence that directly supports this theory (Antonuccio, Danton, DeNelsky, Greenberg , & Gordon, 1999; Wyatt, 2003).

A branch of biological causation theory holds that abnormal activity by certain neurotransmitters is associated with, and may cause specific behavioral disorders such as depression and anxiety (Gershon & Reider1992; Robert, Aubin, & Darcourt1999). This belief is built upon a top-down reductionistic analysis of abnormal behavior, which reduces complex social interaction and other behaviors to activity at the cellular level (Kohn, 1984). This at times

leads to illegitimate “explanations”. For example, if a child is given methylphenidate (Ritalin) for hyperactive behavior and the family then reports improved behavior, then it is (reductionistically) assumed that the drug’s dopamanergic effect (Plomin, 2002) substantiates an underlying brain chemistry abnormality which was casual for the hyperactive behavior. This style of deductive reasoning is also erroneously applied to use of other drugs that are prescribed for other behaviors, such as anti-depressants for mood disorders (Nierenberg, McLean, Alpert, Worthington, Rosenbaum, & Fava, 1995).

Efficacy of Psychotropic Medications

Treatment practices are often a product of research driven by sourcing the etiology of the problem. An important issue relative to the biological causation worldview is that a review of the literature reveals that there is less evidence of effectiveness for biological treatment of mental health issues than one would suppose. A number of meta-analytic reviews have revealed that evidence for effectiveness of medications is scarce, a surprising finding given the frequency with which medications are prescribed (Khan, Leventhal, Khan, & Brown, 2002; Kirsch & Sapirstein, 1998; Sommers-Flanagan & Sommers-Flanagan, 1996).

In a meta-analysis published in 1998, Kirsch and Sapirstein compared the mean effect size changes in symptoms of depression across 19 double-blind studies assessing the efficacy of antidepressant medications. Results demonstrated that placebos accounted for approximately 75% of the improvement found in the active drug. Furthermore, the authors asserted that the remaining 25% of improvement accounted for by the active drug was debatable, and could have been the result of an enhanced placebo response due to the side effects that patients experience when taking the active drugs, or other factors.

Other factors that may contribute to inaccurate analysis of data are (1) a paucity of double-blind methodologies, (2) failure to account for placebo effects, and (3) over-generalization of results. For example, Kirsch and Weixel (1988) argued that placebo and drug effects obtained in double-blind conditions are not comparable to those obtained in clinical practice. They asserted that because clinical administration procedures do not lead people to suspect that they might be receiving an inactive preparation, the expectations are greater for change.

The placebo effect, in this case a sugar pill, has long been acknowledged to have the capacity to rally healing processes (Harrington, 1999), and has been cited in many studies to equal, if not exceed, improvement rate when compared to drug effects (Khan et al., 2002; Sommers-Flanagan et al., 1996; Kirsch & Sapirstein, 1998). For example, Khan et al., (2002), found that individuals who received a diagnosis of mild to moderate depression had a superior response (e.g., self report of improved mood) to placebo than to a drug. Although Khan argued that severe degrees of depression seemed to be more responsive to medication than placebo, they noted that the greater change among patients with severe scores on the initial depression scale scores may simply have reflected regression to the mean, rather than true drug effects. One would expect exactly that from a mathematical point of view (Cronbach & Furby 1970; Rogosa & Willett, 1983; Willet, 1994).

The methodologies of drug studies also present some problems in interpretation. First, over-generalization of treatment effects from research participants to the general population is frequently evident. Research participants usually must meet stringent exclusion and inclusion criteria and are not representative of the population of individuals with specific disorders (Kahn et al., 2002). For example, Nierenberg, et al. (1995) assessed early non-response to the anti-

depressant fluoxetine (Prozac) as a predictor of 8-week outcome. They reported that patients were excluded from the study if they had: failed to respond to any antidepressant therapy during the current episode; had another Axis I disorder; experienced any serious medical illness; presented with significant lab tests (CBC, urea nitrogen, creatinine, electrolytes, plasma glucose, liver function, thyroid, etc); were receiving anticoagulants; had a positive drug screen; reported suicidal ideation; “ever” received CBT or ECT; were pregnant or lactating women; were those of childbearing potential who were not using contraceptives or if they had responded to placebo during a 2-3 week “single-blind placebo run-in period”. It is likely not generally known outside the drug research community that exclusion of potential subjects such as those is standard practice in psychotropic medication research studies. Zimmerman (2004) suggests that there is much variability in the generalizability of antidepressant efficacy trials (AET). Subjects treated in AET’s represent only a minority of patients treated for major depression disorder (MDD). He further states that since the inclusion and exclusion criteria used to select subjects for participation in AET’s vary from study to study, it is unknown how much impact different sets of exclusion criteria have on the representativeness of subjects treated.

Of special interest for this research is that in most drug studies there is a practice called placebo run-in or “washout” group factored into the design (Leutcher, Cook, Witte, Morgan, & Abrams, 2002; Lydiard, Steiner, Burnham, & Gergel, 1998; Nierenberg et al, 1995; Lønborg, Wolkow, Smith, DuBoff, England, Ferguson, Rosenthal, and Weise, 1998; Pohl, Wolkow, & Clary, 1998; Sommers-Flanagan & Sommers-Flanagan, 1996). A given rationale for this practice appears to come from a number of studies performed to determine how to separate placebo and true clinical responses to antidepressants. Results are reported to indicate that antidepressant placebo responses occur early and are of short duration, whereas true drug responses occur later

and last longer (Laurie, 1996; Womack, Potthoff, & Udell, 2001;). Using a washout period is certainly logical and intuitively compelling in efforts to minimize placebo effect. However, this process impacts overall validity of the true drug effect by minimizing the generalizability of the sample size and therefore erroneously exaggerating efficacy results.

After enrollment in the study, all potential subjects are given a one to three week clinical trial of placebo (single-blind) treatment. Those subjects who respond favorably to the placebo treatment are then excluded from the remainder of the study. Thus when the remaining subjects are divided into two groups (drug v. placebo) results suggesting a higher drug effect when compared to placebo is exaggerated. Conclusions such as “sertraline was safe in reducing panic attacks” (Londborg et al, 1998), or “sertraline (Zoloft) is an effective and well tolerated treatment for patients with panic disorder” (Pohl et al, 1998) or “paroxetine (Paxil) was significantly more efficacious than placebo” (Lydiard et al, 1998) are then often found in publications targeted at professionals. More troubling is that the message of drug efficacy presented to the public by the pharmaceutical industry in direct-to-consumer advertising, is often accepted unwarily by the consumers of psychotropic medication.

Whether treatment is a pharmacologically inert pill or a chemically arranged Serotonin Selective Reuptake Inhibitor (SSRI), or some other psychotropic drug, the recognition of its symbolic value, expectancy effects and its power as a conditioned stimulus seem to be undervalued and regularly ignored (Khan, et al. 2002; Montgomery & Kirsh, 1997).

Side Effects of Psychotropic Medication

In a world where medications are increasingly being prescribed as treatment for mental health disorders, a patient must consider the balance between the drug's benefit and its negative

side effects. Side effects also have implications for interpretation of studies of medication effectiveness. For example, the most common side effects for anti-depressant and anti-anxiety psychotropic medications include anticholinergic effects such as blurred vision, dry mouth, urinary retention - which can require catheterization in order to facilitate voiding, constipation, and sexual dysfunction. An interpretation difficulty arises, then, when in double-blind, placebo controlled studies of efficacy subjects in the placebo group fail to experience any of these well-known side effects and as a result become less than blind to their experimental condition. Similarly, those subjects in the control group become aware of their condition by experiencing side effects it then becomes difficult to extract true drug effect from expectancy effects.

Aside from the difficulties that side effects present in interpretation of research results, there are clinical concerns any time that such medications are used. Anticholinergic effects may be especially significant in treating elderly patients who are at increased vulnerability to side effects such as bradycardia, gastrointestinal intolerance, weight loss, and increased confusion. However, these side effects are often “balanced” by potential for individual improvement in quality of life. Other side effects include nausea, dizziness, headache, tension, sedation, weight gain, postural hypotension, and more (PDR, 2004).

The anti-psychotic medications, also referred to as neuroleptics or major tranquilizers, may have serious, life threatening, side effects. Anti-psychotics have calmed the positive symptoms of schizophrenia (delusions and hallucinations) but this calm may be synonymous with sedation. Patients are often heavily sedated, chronically thirsty, dry mouthed, and motorically out of control. Anticholinergic side effects may include disorientation, agitation, hallucinations, fever, seizures, stupor, and coma (PDR, 2004).

At times the anti-psychotics also induce side effects similar to anti-depressants and anti-anxiety medications such as blurred vision, constipation, and urinary retention. The list goes on - incontinence of both bowel and bladder, drooling, orthostatic hypotension, gynecomastia (enlarged breasts – male and female), galactorrhea (lactation of the breasts – male and female), sexual dysfunction, significant weight gain, sedation, skin rashes and photosensitivity, epileptogenic effects (seizures), cardiotoxicity, neuroleptic induced acute dystonia (abnormal movements reflecting slow sustained muscular contraction, may involve trunk, neck, jaw, mouth, eyes, and which can be painful), neuroleptic induced parkinsonism, masked facies, rigidity, bradykinesia, shuffling gait, stooped posture, also known as the “Haldol Shuffle”, neuroleptic induced acute akathisia (intense sensation of restlessness), neuroleptic induced tardive dyskinesia (abnormal, involuntary, irregular movements which may be irreversible), tremor, and neuroleptic malignant syndrome (severe muscle rigidity, elevated temperature, diaphoresis, dysphagia, incontinence, mutism, elevated or labile blood pressure, death) (PDR, 2004; American Psychiatric Association, 1994). Taking into consideration that studies designed to generate percentage of prevalence for these side effects have proved non-generalizable to the population makes determination of the rate of occurrences, as well as the degree of human debilitation impossible to quantify. The potential for both good and ill effects of anti-psychotics exists, and their use and dis-use is understandable.

Factoring in that the prescribing of medication has shown significant growth (Balis et al. 1997; Sturm et al., 1995); medication compliance is often problematic for care providers. Studies have noted that medication non-compliance is often related to poor treatment outcome and a common reason for non-compliance is reported to be the side effects (Schwenk, Evans, Laden, Lewis, 2004).

As medication compliance remains an obstacle marketing efforts of treatment facilities and pharmaceutical companies have attempted to address the problem. In one brochure produced by St. Paul-Ramsey Medical Center titled *A Way To Recovery, Use of Psychiatric Medications* it is stated that “medications are needed to become well” and “medications are needed to stay well.” There is no mention of potential harm or alternative treatment strategies. Monmaney (1999) suggests the relaying of information to the public at large regarding potential dangerous effects of drugs is often delayed because when problems do emerge, the pharmaceutical companies and drug proponents initiate a vigorous strategy of defending the drug.

One example of such delay involved risperidone also known as Risperdal. On July 21, 2004 Janssen pharmaceutical company mailed out an important correction of drug information to all health care providers. This correction pointed out that the Food and Drug administration’s Division of Drug, Marketing, Advertising, and Communications (DDMAC) had asked Janssen Pharamceutica Products to contact health care providers because of a “recently” received warning letter concerning the pharmaceutical company’s promotion of Risperdal. The warning letter concluded that Janssen disseminated a Risperdal *Dear Health Care Provider* (DCHP) packet insert dated November 10, 2003 that omitted material information about Risperdal, minimizing potentially fatal risks, and made misleading claims suggesting superior safety to other atypical anti-psychotics without adequate substantiation, which was in violation of the Federal Food, Drug and Cosmetic Act (Mahmoud, 2004). Eight months passed before this information was communicated to care providers, over half of a fiscal year in sales.

Although the Food & Drug Administration (FDA) is the primary entity empowered to police the dangerousness of medications being released to the public, only 4% of the FDA’s

budget is allocated to monitoring side effects once drugs have been approved (Monmaney, 1999). FDA Commissioner David Kessler revealed in 1993 that only about 1% of serious events [side effects] were reported to the FDA (Glenmullen, 2000).

An increasing concern is the treatment of childhood behaviors as biological “disorders” in need of medication (Fisher & Fisher, 1996). Use of psychotropic medications with children has not been tested sufficiently to show they are safe or effective in children. Many are prescribed “off-label” (not FDA approved). Nor have there been longitudinal studies to determine any potential long-term consequences (Ramchandani, 2004; Fisher & Fisher, 1996). In 1997 over 2 million children were being treated with medication and the numbers are estimated to be even higher today despite a near-unanimous body of literature indicating that antidepressants are no more effective than placebos in treating depression in children and adolescents (Edwards, 2003; Fisher et al., 1996).

On December 10, 2003 Gordon Duff, chairman of the Committee on Safety of Medicines in the United Kingdom, advised that most of the antidepressant drugs in the selective serotonin reuptake inhibitor group should not be used to treat major depressive disorder in children and adolescents under the age of 18 years. The new advice follows the review of data from clinical trials by an expert working group, convened initially because of concerns that selective serotonin reuptake inhibitors may increase the risk of suicidal thoughts and self harm in young people. The group concluded that the balance of risks and benefits was unfavorable for three of the selective serotonin reuptake inhibitors (sertraline [zoloft], citalopram [celexa], and escitalopram [lexapro]) and that there was insufficient evidence to support the use of a fourth, fluvoxamine [luvox] (Ramchandani, 2004).

The number of American children diagnosed and medicated for attention deficit hyperactivity disorder (ADHD) more than quadrupled in the 1990's (Tanielian, Marcus, Suarez, & Pincus, 2001). One might expect these numbers with a newly diagnosed disorder; however the disorder has been articulated for three decades. Thirty years ago ADHD was diagnosed mostly in young boys who had attention problems such as difficulty staying in their seats or waiting their turn. Now it has spread from boys to girls and to all age groups, including adults. Although behavior modification, parenting education and focus training are effective treatment's of ADHD behaviors, especially with early intervention, psychiatry continues to assert that medication yields the most success (Edwards, 2003; Handen, Feldman, Lurier, & Murray, 1999; Perring, 1997).

Moreover, some experts dispute the contention that ADHD should be termed a "disorder". Medical sociologist Peter Conrad of Brandeis University believes that the increased use of drugs is an example of how Americans have come to treat normal differences among children and adults as evidence of disease (Edwards, 2003).

In summary, biological causation is somewhat synonymous with the chemical imbalance hypothesis. The essential postulate is that all behaviors are rooted in the quantity chemistry of neurotransmission (our biology). It is thought you either have too much or not enough neurotransmitters and medication serves as a correction factor in the equation. However, when taking into consideration questionable drug efficacy studies with a continued significant rise in the prescribing of psychotropic medications, it is of interest to explore if there are other variables influencing the theory of biological basis for behavior.

Chapter 3

Social Influence

What follows is discussion of several influences that are believed to contribute to the development of biological causation worldviews of many mental health professionals. The discussion is focused upon ways in which mass media, pharmaceutical companies' advertising, guild influences, insurance industry interests and layperson preferences, individually and collectively, may lead to the practitioner's adoption of a biological causation worldview.

Pharmaceutical Industry Influence

Is academic medicine for sale? Marcia Angell, Editor in Chief of *The New England Journal of Medicine* (2000), asked that question in an editorial prompted by a study on antidepressants. She reports that many authors have financial links to drug companies, links so numerous that there is not enough space to list them all in the journal. Angell acknowledged violations of journal policy which prohibits review articles and editorials written by an author with a financial interest in his or her topic. Moreover, Angell (2000) postulates that drug companies are increasingly promoting diseases to fit drugs and that common people are coming to believe they suffer from serious ailments.

The pharmaceutical industry has gained much by its efforts at convincing professionals and laypersons that biology is the cause of abnormal behaviors. According to the April 2003 issue of Pharmacy Times, the anti-psychotic, Zyprexa and the anti-depressants Zoloft and Paxil were sixth, ninth and tenth respectively, among all drugs, in 2002 overall sales, generating almost \$8 billion dollars in revenue for the pharmaceutical industry that year. Although Neurontin is a medication that is FDA approved only for the treatment of seizures and pain, its common use for mania made it number twelve in overall sales, with over \$2 billion in sales. The

anti-psychotic, Risperdal, followed at number 15 with \$1.8 billion in sales, and the anti-depressant Celexa ranked twentieth with \$1.5 billion in sales. Sales growth in 2002 ranged from 10.7% (Paxil) to 39.9% (Celexa). According to Pharmacy Times, advertising to consumers and physicians was a driving influence in raising awareness about anxiety and depressive disorders (Vaczek, 2003). This particular success in advertising has significant implications. Research demonstrates that when a consumer responds to an “ask your doctor” campaign, over-prescribing of medication occurs even when the patient presents with minor symptoms (Kravitz, Epstein, Feldman, Franz, Azari, Wilkes, Hinton, & Franks, 2005).

Pincus (1998) reported that psychotropic prescriptions increased 20% from 1985 – 1994 in the United States. During this same time period prescriptions for stimulants tripled and those for mood elevators doubled to 20 million. In the span of one decade (1990 – 2001) production of Ritalin increased 700%, which was also consistent with increased advertising. In Pediatrics the number of full-page advertisements for stimulants doubled from 1990 – 2000 (Wyatt, 2003). In 1996 USA consumers were spending \$3.8 billion a year on anti-depressants. That had nearly tripled to \$9.9 billion by 2001 (Millenson & Shalowitz, 2005).

Pfizer, a well-known pharmaceutical company, includes in its mission statement, “We dedicate ourselves to humanity's quest for longer, healthier, happier lives through innovation in pharmaceutical, consumer, and animal health products” (Pfizer, 2003). Pfizer describes a budget of \$5.3 billion for research and development (R&D) as a path to its mission (Pfizer, 2003). However, United States R&D discovery of new molecular entities (medicines) is significantly below global standards and generated revenue remains sizeable relative to profit versus R&D budget (Light & Lexchin, 2005).

Funding resources are often channeled to the development and marketing of what industry critics term “me-too” drugs and the practice of “evergreening” (Bloice, 2005). Me-too drugs refer to medications that come on the market to compete with a new drug that has taken market prominence – and profits. Rather than develop a new drug to tackle a troubling medical condition, corporations develop drugs to compete with market leaders. “Evergreening” involves employing the same basic research used to manufacture one drug in order to make available a new, slightly different one. When the patent on the original drug is about to run out and other companies are preparing to launch generic, cheaper versions, the new version is promoted through direct advertising to physicians and consumers.

In a submission for public hearing in 2005, Donald W. Light, PhD, University of Medicine and Dentistry of New Jersey, and Joel Lexchin, MD with the School of Health Policy and Management of York University wrote, *“The most objective research on corporate R&D in the United States reports that just under 12 percent of domestic sales is devoted to R&D, not the much higher figures cited by industry leaders. Thus, contrary to what the pharmaceutical industry claims, in relative terms, R&D spending outside the U.S. is more intense and more productive than in the U.S.”* (Pharmacy Times, 2003; Light & Lexchin, 2005). Typically a new drug’s sales increase by no more than 14 percent per year, however sales of drugs heavily advertised to consumers surge by more than twice that amount, on average 32 percent a year (Good, 2003; Pincas, Chang, Tol, & Hubert, 1993).

Mass Media

Consumers are reached by television, newspapers, magazines, medical newsletters, billboards, radio, pamphlets, and mailings of various kinds. With approximately 4800 journals indexed on MEDLINE (2005), containing more than 9 million abstracts, the sheer mass of

emerging research is overwhelming. Unfortunately, there is a gap between the wealth of expanding information and the quality of the public's health knowledge and practice, partly because of the difficulty of dispensing this information to the public.

The editors of the New England Journal of Medicine noted that "the problem of [communicating health] is not in the research itself but in the way it is interpreted for the public" (Angell & Kassirer, 1994). We rely on the skills of journalists to facilitate the flow of reliable and valid medical research to the public at large. Assuming that a journalist is reporting medical information accurately, there are still several barriers to improving the informative value of medical journalism such as lack of time, space and knowledge; competition for space and audience; difficulties with terminology; problems finding and using sources; as well as problems with editors and commercialism (Coulter, 2003). Given that public perceptions continue to be greatly influenced by the media it seems necessary to assure the accuracy of disseminated information (Wakefield, 2003; Mutz, 1989).

The media strive to meet the increasing public demands for health information. Often health journalism goes far beyond the available data. For example, a headline in Time appeared beside the picture of a stark ambiguous face with vacant eyes, that read "Suicide check: Advances in bio-psychiatry may lead to lab tests for self-destructive behavior and other mental disorders" (Gorman, 1994). The article described the "promising development" of a potential lab test for suicide. It pointed out that the vast percentage of people who commit suicide show brain changes at autopsy. However, what was missing was the percentage of people who never attempt suicide who possess those same brain changes. The article further emphasized the "hot new field of biological psychiatry" and that what once was the purview of priests and analysts, is

now a frontier for psychiatrists who use “blood tests, brain scans and spinal taps” to distinguish among types of depression and schizophrenia.

Beyond health related information media reports contribute to an expanding biologicalization of all elements of human experience. For example, the National Geographic (1995) published an article titled, “Quiet Miracles of the Brain”, where former National Institutes of Health pharmacologist Candice Pert described emotions as, “...neuropeptides attaching to receptors and stimulating an electrical charge on neurons.” In that article Pert did not account for the influence of verbal communities that teach us to label emotions as we do. It is plausible that some basic emotions such as fear and rage amount to little more than genetically programmed responses. But the vast majority of emotions labeled - embarrassment, anticipation, shyness, perplexity, etc., are likely learned, taught to us by the verbal community (Skinner, 1974). We have to be cautious in reading the media as they report more on the biological basis of behavior as this practice can shift perception in an extreme direction.

Newsweek (2003), a popular magazine with a circulation of 4 million worldwide and 3 million in the United States alone, (and a readership likely well beyond that) reported how an amygdala, “...perceives a threat...” However, amygdala’s do not explain why one person may scream at the sight of a spider, while another keeps spiders as pets. It is in volume that these styles of statements are disseminated to the public. If one believes the criticisms of the biological causation model previously discussed, then it is logical to conclude that articles in this format could be construed as misleading the majority of readers, given that they are usually not equipped to think critically about behavioral sciences.

Professional Guild Influence

Abnormal behavior has not always been “medicalized.” For example, in the early 1900’s child abnormal behavior was considered a social problem. Some professionals hypothesize that governmental forces pressured the medical community to re-conceptualize the origin of deviant behavior in an effort to apply more effective techniques of reform (Rafalovich, 2001). In *Identifying Hyperactive Children*, a book claimed to be the “first empirical analysis of the process of medicalization”, Conrad (1976) examined the process by which medical professionals first problematized childhood deviance.

What is significant, however, is the expansion of the sphere where medicine now functions as an agent of social control. In the wake of general humanitarian trend, the success and prestige of modern medicine, the increasing acceptance of deterministic social and medical concepts, the technological growth of the twentieth century and the diminution of religion as a viable institution of control, more and more deviant behavior has come into the province of medicine (Conrad, 1976).

Guild issues, particularly those of organized psychiatry, have played a part in the history of how we have come to medicalize abnormal behaviors. Between 1970 and 1980 the percentage of medical school graduates choosing psychiatry as a specialty dropped by more than half, from 11% to 5% (Nelson, 1982). As a result of that decline organized psychiatry undertook an effort to recruit more medical school graduates into the field. In the 1980’s psychiatrists held conferences, such as one in San Antonio, to outline a plan of action. The consensus among those attending was that psychiatry had lost esteem (perhaps due to visibility of *avante garde* “treatment” of the radical 1960’s emphasis on family practices etc.) and that it would need to

become more “biological” if it was to regain lost esteem and influence (Nelson, 1982). To become more medical, it was necessary for psychiatry to conceptualize more and more disorders as biologically determined, so as to become more closely identified with scientific methods and at the same time move away from non-medical explanations.

In 1988 two high profile members of the American Psychological Association authored a paper which they titled “Psychiatry Declares War on Psychology”. They describe numerous kinds of evidence for the “war”, including that psychiatry had, over the past decade, attempted to “medicalize” itself, by suggesting that if mental health care is defined as exclusively “medical” it would follow that psychologists, untrained in “medical matters”, would be incompetent to diagnose or treat such problems. Exceptions would be made for psychologists working under the direct supervision of a psychiatrist.

At the same time that psychiatry was becoming increasingly medical, organized clinical psychology was attempting to expand various aspects of its scope of practice. These included hospital admission privileges (APA Practitioner Focus, 1990), the right to be reimbursed by Medicare without supervision by a physician (Buie, 1989), and prescription privileges (Seaman, 1997).

In 1988 the American Psychiatric Association’s President-Elect, Paul Fink, wrote that Psychologists and other non-Psychiatrists, “Don’t have the training to make the initial evaluation and diagnosis...are not trained to understand the nuances of the mind...” (Tanney, 1988). A month later Melvin Shabshin, Medical Director of the American Psychiatric Association, testified to the New York state legislature asking, “Do the substantial and inevitable risks to the quality of patient and medical care in (NY) hospitals outweigh the dubious, purported benefits associated with hospital privileges for these non-physician practitioners?” (Welch, 1988).

Although organized psychiatry minimized the training of clinical psychologists throughout the 1980's while organized psychology was able to demonstrate the profession's ability to diagnose and treat mental health problems, with equal efficacy of practicing physicians and psychiatrists (Tanney, 1988, Buie, 1989 & Youngstrom, 1990).

In 2002, former American Psychiatric Association President Ronald E. Fox, in reference to psychiatry's opposition to psychology's prescription privileges, noted that the medical profession has always resisted intrusions on its "turf" by attempting to medicalize assessment and treatment techniques and by holding that non-physicians are ill-trained to accomplish those activities (Fox, 2002). The case has been made for caution in the psychologist's pursuit of prescription privileges. Some suggest that psychologists should maintain their focus and expertise in assessment and psychosocial intervention, particularly thought to be the most effective form of treatment for mental health problems (Amerikaner, 1997). Regardless of where one falls in that debate, this context suggests that organized medicine and organized psychiatry have fought a "turf" battle by conceptualizing psychiatric disorders as biologically caused.

HMO and Insurance Interest

In selecting the treatment modality to be used, the relative effectiveness of drug and non-drug therapy is not the only criterion. Cost is certainly a consideration (Valenstein, 1998). With health care costs rising, health care reform is an urgent issue facing the United States today. One effort to solve this growing problem is the Health Maintenance Organization (HMO). Millions of Americans have found their health insurance has changed, as they have been moved into HMOs and away from more traditional health insurance programs. Many of these HMOs are for-profit organizations, creating an uneasy relationship between business and health care, especially mental health care (Taylor, 2003). It has been established that in the short term medication is less costly than psychotherapy to insurers by about 50% (DeRubeis, Gelfand, Tang, & Simons, 1999). Seizing upon that fact, and ignoring the long term benefits of psychotherapy, the insurers appears to accept the use of medication over therapy and general medical care, as opposed to specialty mental health care as primary treatment for mental health problems (Sturm & Wells, 1995).

Moreover, administrators of managed care programs have argued that psychotherapy is "enhancement not treatment" (Valenstein, 1998). This mode of thinking is illustrated in fee per service reimbursement. The amount of money allotted to reimburse psychotherapists for each session is, in some instances, only one-half of their customary charge. Many health plans pay 80 percent of the average fee of physicians who dispense antidepressants, but only 50 percent of a psychotherapist's normal fee.

However, the industry position is contradictory to empirical findings. Several meta-analyses of studies covering thousands of patients comparing medication vs. therapy found remarkable consistency in support of the perspective that psychotherapy is as effective as

medication for treatment of depression and more effective than medicine in the long term (Jacobson & Hollon, 1996; Hollon, 1996, & Antonuccio, Danton, & DeNelsky, 1995). Yet there has in recent years been an attempt on the part of healthcare providers to limit the number of psychotherapy sessions much more so than the number of office visits for medication refills (Valenstein, 1998). The industry will support medication treatment, a biologically based intervention that, arguably does the same thing as psychotherapy – “enhance” an individual’s life.

Layperson Preference

Sylvia Plath was a young promising author and poet said to have had a “mental breakdown” in her early college years. She wrote about the indignity she felt for her suffering of the mind, “... *if only something were wrong with my body it would be fine, I would rather have anything wrong with my body than something wrong with my head.*” (1966). Plath committed suicide at the age of 30. Unfortunately, many who suffer similar experiences share her preference. The diagnosis of a mental “illness” is not a welcomed label and can be viewed as an added burden, often linked with job loss, relationship breakdown, and social rejection. A psychological diagnosis often carries a stigma similar to that of AIDS and cancer (Wahl, 1999). Many believe that a psychological problem has an element of personal culpability, implying that a person is weak or has not tried to overcome his problem (Link, Struening, Rahav, Phelan, Nuttbrock, 1997; Wahl, 1999).

Assumed communication difficulties and social non-productivity reinforce the tendency to discriminate against those with mental health problems. Also, among the general population abnormal behavior is associated with dangerousness. The rare but widely publicized violent

incidents associated with mentally ill patients fuels that fear. Images of stigma, non-productivity, and violence contributed to the movement among laypersons toward re-classifying mental illness as a physical disease rather than a “character flaw” (Hill, Steinhauer, Zubin, 1986; Astrid, 1998; Begleiter & Porjesz, 1999; Farnham & James, 2000).

The National Alliance for the Mentally Ill (NAMI), a broad-based consumer advocacy group strongly advocates the position that mental illness essentially is a biological brain disorder (NAMI, 2005). With a paid membership of 80,000 and a website (www.nami.org) that reportedly receives 14,000 hits a day, NAMI’s literature emphasizes that the theory of biological causation is an effective tool in the fight against the stigma of mental illness. NAMI asserts mental illness is not the result of personal weakness, lack of character or difficult upbringing. Critics suggest that NAMI, which is comprised mainly of parents of the mentally ill, simply wants to shift the notion that mental illness is a biological brain disorder rather than the responsibility of child-rearing flaws – or even abuse (Donahue, 2000).

Daniel Fisher, MD, who recovered from schizophrenia to become a psychiatrist and now heads the National Empowerment Center, believes that seeing mental illness as a biological disorder is the “*easy way out*”. He postulates that blaming the brain is much easier than looking at individual issues, taking personal responsibility or accurately interpreting the realities of social situations and context (1999).

As the divergence between treatment modalities (i.e., biologically based treatments vs. therapy) moves on, a paradoxical scenario results for the consumer. First, viewing mental illness as biologically based alleviates shame and reduces stigma. It shifts the responsibility for recovery (and relapse) to the treating physician. On the other hand, this same process can inadvertently remove the consumer from one important element necessary for regaining or

sustaining mental health – a sense of internal locus of control (Michelson, Bellanti, Testa, & Marchione, 1997).

In addition to matters of guilt reduction and personal control, the layperson also is inundated with direct-to-consumer advertising by pharmaceutical companies. Advertisements often reinforce the message of biological causation. The billions spent on advertising each year is evidence for its efficacy (Edwards, 2003; Good, 2003, Pharmacy Times, 2003; & Bloice, 2005). It is a common occurrence for United States television viewers to be subjected to pitches for pharmacological interventions that will ease their “illness”, often encouraging the consumer to, *“Be sure to ask your doctor if this medication is right for you.”*

Laypersons have little exposure to the empirical evidence about drug efficacy and safety. They depend on information that amounts to nothing more than drug company promotional material, or at the very least, is information that is filtered and shaped by drug companies (Valenstein, 1998). A model of direct-to-consumer advertising holds that: (1) advertisement exposure raises consumer awareness of conditions and treatments; (2) increased awareness motivates patients to seek medical care and request drug therapy; and (3) patients’ requests lead to increased prescribing. This leads to the over prescribing of unnecessary, expensive and potentially harmful anti-depressant medications (Kravitz et al, 2005).

The patient’s preference for a non-stigmatizing, responsibility-alleviating, responsibility shifting view of mental illness fits neatly with social influences of the drug industry and has in recent years been magnified by direct-to-consumer advertising. The downside is that the causes of patients’ abnormal behaviors may be overlooked, at least to the extent that the causes are located in patients’ environmental and learned histories.

Chapter 4

Persuasion

Persuasion and Attitude Change

A great deal has been written about the topics of persuasion and attitude/belief change (e.g., Allen & Preiss, 1998; Cialdini, 2001; Dillard & Pfau, 2002; Perloff, 1993). The majority of these sources are devoted to fields other than the attitudes of mental health practitioners. For the most part, the literature on attitude change has focused upon changing beliefs concerning political matters, consumer products and guilt or innocence of defendants in criminal and civil cases. EBSCO host searches revealed no results for “attitude change” or “opinion change” when these terms were combined with any of the following: mental health, schizophrenia, depression, anxiety or ADHD. Additional search of the literature uncovered no other relevant sources.

Despite the lack of empirical evidence relative to the mental health field and attitude change, some fairly consistent findings have emerged regarding a number of variables that are thought to be influential in changing attitudes and beliefs of listeners, in general. For example, physical attractiveness of the speaker tends to exert a positive influence on message acceptance (e.g., Cialdini, 2001; Haughtvedt, 1997; Perloff, 1993). Similarly, perceived prestige of the speaker tends to enhance attitude change (Aronson & Golden, 1962; Berlo, Lemest & Martin, 1969; Eagly, Wood & Chaiken, 1978; Haughtvedt, 1997).

A speaker’s verbal presentation style has impact upon the listener’s adoption of the speaker’s position. That is, a speaker’s verbal speed, intensity, choice of words and the like will influence the resulting level of agreement with the speaker’s position (Perloff, 1993). An extensive review of the influence of verbal style (Burrell & Koper, 1998) revealed several factors that any speaker would do well to keep in mind: An extensive vocabulary is beneficial; use of

declaratives, as opposed to questions, results in greater attitude change; employment of empty adjectives (“cute,” “sweet”) degrades message acceptance as does being overly polite. Burrell & Koper (1998) found, as well, that use of hedges (“I guess,” “kinda,” “you know”) and intensives (“very” and other superlatives) tends to hamper message acceptance, and use of powerful language (“it is,” “no doubt”) is helpful in persuading an audience. Summarizing their findings, Burrell and Koper concluded that the use of “socially powerful language” enhances persuasion and credibility.

Systemic & Heuristic Factors

Related to research trends regarding persuasion and attitude change are contemporary theories. Although historically audiences were thought to be passive, accepting whatever message was brought to them, that conceptualization has changed with the emergence of the cognitive perspective. In the past audiences were thought of as infused with information, while in recent years the cognitive perspective has taken the approach that audiences actively process information (Perloff, 1993). Listeners may do this in either of two styles: systemic or heuristic, the latter also known as the elaboration likelihood model—ELM (Booth-Butterfield, 2005; Petty & Cacioppo, 1986). When a listener is responding systemically, he or she is actively processing what is said, is alert, is attending to details and is weighing the content that is being presented. In contrast, when a listener is responding heuristically, he or she is more influenced by superficial variables such as physical attractiveness and verbal style. Although research continues along systemic/heuristic lines, it is clear from the host of variables described above, that the interplay of listener style with both speaker style and content is an area that has much to offer researchers in the field.

Where the biological causation model of mental disorders is concerned, any effort to

realign the attitudes and beliefs of mental health professionals with the state of research should give consideration to the variables described above. However, when one considers the training and experience of front-line treating professionals, it is reasonable to assume that empirical data would have significant impact in any presentation that is designed to change their thinking.

While heuristic factors should have some relevance for such an audience, one would hypothesize that systemic factors, such as research data, may well exert more powerful influence simply because most mental health practitioners (psychologists, counselors, clinical social workers, etc.) have training histories in which research was emphasized.

However, that is not to say that heuristic factors are not at times paramount. Further, it is not to say that non-empirical cultural zeitgeists (e.g., as shaped by factors such as advertising) have but little influence upon those trained in behavioral and social sciences. Quite the opposite is the case, as demonstrated earlier. Rather, the role of empirical data in attitude change ought to be particularly important when the audience is comprised of health care practitioners, given that their training is well-known to place emphasis upon research, albeit in varying degrees across disciplines and training institutions. Perloff (1993) concluded that. “The research literature strongly supports the notion that evidence enhances persuasion”. Similarly, Reinard (1988) found that, “Evidence appears to produce general persuasive effects that appear surprisingly stable”.

It is possible that evidence may be misperceived, or may not be “evidence” at all. For example, when pseudo-scientific messages are employed, particularly those that contain a great deal of scientese (scientific jargon), message persuasiveness is enhanced (Haard, Slater & Long, 2004). In any event, however, it is clear that research evidence is an important variable in the influence process. That would likely be especially true when the audience is trained to

appreciate and utilize research, although one would still expect a professional audience to be influenced to some extent by heuristic variables.

Audiences tend to pay greater attention when the speaker's message has high relevance for them. For example, when students listened to a presentation about potential changes in comprehensive exams, the message had greater impact if the proposed changes would affect *their* exams, as opposed to exams of some future generation of students (Kerr, 2002). Similarity (e.g., age, sex) of presenter and audience also affects change in attitude, but that factor is more powerful if a similarity (e.g., profession) is relevant to the message presented (e.g., Perloff, 1993).

Ultimately, it would seem that a relatively sophisticated audience of mental health practitioners would be positively influenced by research evidence. O'Keefe (1998) performed a meta-analysis of the credibility effects of evidence and found consistent positive effects for evidence. Reynolds and Reynolds (2002) reviewed the literature and concluded, "In summary, the use of evidence produces more attitude change than the use of no evidence". However, Reynolds and Reynolds were careful to point out that recipients must be aware of the evidence being presented, must process the evidence and must perceive the evidence as legitimate in order for the evidence to influence the audience.

One may ask, then, what specific conditions would tend to cause a data-based message to be favorably received. One factor appears to be the citation of sources (Fleshler, Ilardo & Demoretcky, 1974; O'Keefe, 1998). The failure to cite relevant sources may result in changes in the opposite direction of that desired by the speaker. That result may be even worse if no supporting citations are cited to counter an opposing message that *is* supported (Reynolds & Reynolds, 2002).

Whether anecdotes help or harm a speaker's efforts to bring about attitude/belief change may depend on several factors. Some research suggests that anecdotes may be as persuasive as statistical data when the audience is only moderately involved (Baesler, 1997). Other data indicate the superiority of data over anecdote (Allen & Preiss, 1997). Kopfman, Smith, Ah Yun and Hodges (1998) found that statistical evidence is more persuasive in producing cognitive reactions in the listener, while anecdotes result in greater affective change. Probably it is wise to use both some statistical evidence and some anecdote, with the preponderance going to statistical evidence, in any effort to bring about attitude/belief change.

Whether evidence is accepted by the listener may also depend upon his or her prior knowledge of the subject. Reynolds & Reynolds (2002) found that evidence is unlikely to have impact upon an audience that lacks prior information about the subject. Perhaps that is because an audience must perceive the evidence as legitimate, and it may be difficult to achieve that with a completely naïve audience. Reynolds (1987) pointed out that an audience must be able to follow a link from evidence evaluation to overall message evaluation, to achieve change in belief.

Additional factors that influence a listener include the perception of bias in the presentation. At least a few statements that are at odds with the speaker's evident bias tend to result in greater credibility of the speaker (e.g., McCroskey, 1967). However, a speaker walks a fine line in that regard. Once a source is seen as invalid on one bit of information, his or her credibility may be weakened on other information (Schul & Mayo, 1999). Some research has shown that audience members whose initial position is in agreement with the speaker prefer statistical evidence, while those who oppose the position advanced by the speaker find anecdotal stories to be more persuasive (Slater & Rouner, 1996).

It may be possible to present too much information. Lavasseur and Dean (1996) found this to be the case when they examined the audience reactions to U.S. presidential candidates engaged in debates. However, the authors acknowledged that such candidates are probably already expected to have a great deal of knowledge and to be quick to bring forth that knowledge. The candidates likely had more credibility to lose than to gain, a fact which may have accounted for the effect in their study. Reynolds and Reynolds (2002) took note of the Lavasseur and Dean findings and suggested that, “more everyday speakers may want to include the best evidence possible because, even if the speaker does not have an obvious immediate opponent, most sophisticated audiences are quite capable of generating counterarguments against the claims of even the most highly regarded advocate” (p.434).

Thus, the literature suggests that a relatively sophisticated audience of mental health practitioners would probably be most amenable to changing their beliefs/attitudes under the following conditions: The speaker presents material in a relatively fluent manner, using a “socially powerful” verbal style; the presentation is primarily supported by data, with citations, and includes minimal anecdotal messages; the message is seen as highly relevant by the audience; some mention is made of information that goes against the presenter’s evident bias; and the presenter is careful to avoid data overkill.

With those factors in mind, the present study represents an attempt to change the beliefs of front-line mental health professionals as regards to the evident surge in advocacy of biological causation of mental disorders.

Research Statement

Although there is no dearth of exceptions, when the cause of a mental health disorder is thought to be understood, typically the treatment for that disorder is pursued based upon the

hypothesized cause (Carver, 2000, Fredholm, 2001, & Woodruff, 2005). There is evidence that chemical treatment of mental health disorders has escalated exponentially in recent years (Pincas et al, 1998; Angell, 2000; Glenmullin, 2000; Korcok, 2002; Good, 2003; Edwards, 2003; Vaczek, 2004; Bloice, 2005). Therefore, it is plausible to postulate that an increasingly popular belief system within the mental health community is that many mental health disorders are largely biologically/chemically caused.

However, it is likely that variables such as drug company advertising as well as guild dominance influence both perceptions of causation and scope of chemical treatment interventions. With closer inspection of drug efficacy research, findings are less empirically robust than one would suppose – calling into question the emphasis that has been placed upon the biological causation model in the past several decades. This suggests a cautionary approach be taken in the way in which we view the causation and treatment of mental health disorders, given the impact this can have on treatment interventions.

It is within the mental health community where the catalyst for change likely should arise. It is these experts who are best positioned to influence social debate and public policy in the mental health arena (Amerikaner, 1997). Current thinking in the field of attitude change and persuasion indicates that empirical data can have a powerful influence on an individual's attitude/ belief system (Booth-Butterfield, 2005; Petty & Cacioppo, 1986). Therefore it stands to reason that training such as outlined below, designed to inform listeners of the data relative to biological causation and treatment, would have impact on the mental health professional's belief system. If so, a starting point for public policy revisions and change in treatment interventions may result.

Hypotheses

1. Mental health professionals' reported strength of belief regarding the etiology of many mental health disorders tends toward the biologically based.
2. Mental health professionals' reported strength of belief regarding the etiology of mental health disorders is amenable to change as the result of a 3 hour training program.
3. Change in belief in biological causation is associated with change in belief in five domains (guild; pharmaceutical; layperson; HMO/insurance; empirical).

Chapter 5

Method

The present study examines mental health professionals' strength of belief in biological causation of several syndromes including ADHD, unipolar depression, anxiety disorders, and schizophrenia and whether a three hour educational program will alter their strength of belief.

This study was reviewed and approved by Marshall University's Internal Review Board to assure accordance with research practices and standards.

Overview

Professionals involved in the mental health field attended a three-hour training program that reviewed the influences of the pharmaceutical industry and of organized psychiatry in shaping worldviews about the causes of abnormal behaviors. The training included a critique of studies often cited in support of biological causation. A pre-post survey (see Appendix I & Appendix II) was administered to the participants in order to assess initial strength of belief in biological causation and whether professionals' thinking was changed as a result of the training. Training was conducted with staff at a local inpatient, for-profit psychiatric hospital, and with conference attendees of the West Virginia Psychological Association. A control group comprised of college students completed the pre-post assessment while attending a graduate course dealing with unrelated material (statistics).

Participants

The Treatment Group consisted of 76 mental health professionals ranging in age from 18 to 63+ (see Table 1). The majority of participants (78%) had a master's degree or higher (see Table 2) and 52% were female and 48% were male.

Ninety percent of the participants were identified as non-medical mental health employees (Table 3 & Table 4) and all were recruited through standard announcements about the training opportunity, including that continuing education was available. CE credit was not contingent upon pre-post completion of the assessment form.

The Control Group consisted of 26 graduate and undergraduate students participating in an advanced statistics class. Participation was voluntary. The content of the class included no components of the workshop. Control participants' ages ranged from 18 to 44 with 80% being female and 20% male.

All subjects in both groups completed an informed consent in accordance with the Ethical Principles of Psychologists and Code of Conduct - Principle 6.11.

Materials & Procedure

Strength of Belief Scale (SOBS) is a 38-item survey containing six domains of interest to this research: [1] **Biological Causation (General) Domain:** *Strength of belief in the biological model as etiology for a range of mental health problems (anxiety, addiction, depression, ADHD, & Schizophrenia).* [2] **Layperson Domain:** *Professionals' perceptions of layperson preference for biological explanations.* [3] **Empirical Domain:** *Importance of empirical data to the thinking of professionals regarding causation of mental disorders.* [4] **Pharmaceutical Domain:** *Professionals' perceptions of pharmaceutical industry influence upon belief in biological causation.* [5] **Guild Domain:** *Professionals' views of organized psychiatry's guild interests upon acceptance of biological causation.* [6] **Health Maintenance Organization (HMO) Domain:** *The HMO industry's influence upon professionals' beliefs in biological causation.*

Each domain contains a subset of items that collectively demonstrate the strength of belief regarding that particular category (see Appendix III). Each item is rated on a Likert-type

scale of one (1) to six (6) with one (1) meaning “strongly agree” and six (6) indicating “strongly disagree”. The intervening points on the Likert scale are: two (2) equals agree; three (3) equals somewhat agree; four (4) equals somewhat disagree; and five (5) equals disagree.

The SOBS development entailed a three-fold process. First, an initial set of items was formulated based on intuitive judgment. They were submitted to Marshall University Department of Psychology faculty for general feedback regarding each item. Feedback consisted mainly of editing along with intuitive perception of item relevance to the study at hand. Second, after adjustments were made based on faculty feedback, revised surveys were completed by a small sample of graduate students. Items that correlated weakly with other items within their specified domain(s) were eliminated. Third, a final reliability analysis was conducted with the remaining thirty-eight items from the treatment group data. Coefficient alphas ranged from .57 - .87 for the six domains (see Table 6).

A three-hour training program for mental health professionals was developed. It reviewed the historical roots of organized psychiatry’s increasing embrace of biological causation, and the ways in which the pharmaceutical industry has fostered that aim. Additionally, the training reviewed and critically analyzed research often cited in support of biological causation as well as research on drug trials methodology, drug effectiveness, and influence of placebo effect. Each of the domains, excepting HMO, received emphasis with regard to its connection to acceptance of the biological causation model of mental disorders. The training was conducted in didactic style by a tenured professor of psychology who employed 90 power point slides. The presenter followed closely the Power Point presentation.

The Treatment Group participated in the training program. Prior to the beginning of the training the participants were asked to complete the SOBS (see Appendix I), to assess their

beliefs regarding the causes of mental illness, especially their strength of belief in biological causation. Upon the completion of the training, participants were asked to again complete the SOBS (see Appendix II), which contained the same items as the pre-survey with the items randomly reordered.

The Control Group completed the survey at the beginning and again at the end of their 3 hour statistics class. They were given the same directions as the treatment group but did not participate in the training program.

Design & Analysis

A quasi-experimental non-equivalent groups design was utilized. Paired t-tests (two-tailed) were used to test for pre-post changes within each group separately. A linear regression analysis was conducted to evaluate whether a change in belief regarding the domains (guild; pharmaceutical; layperson; HMO/insurance; empirical) was associated with change in strength of belief in the biological causation domain after controlling for the effect of several demographic variables. An alpha level of .05 was used for all tests.

Chapter 6

Results

Individual Item Analysis

Each item on the SOBS (see Appendix I) was analyzed by assessing the pre-post mean differences. Of the 38 item survey, 22 items indicated that the participants' thinking in the treatment group changed significantly post the treatment intervention (see Table 9). Of particular interest were changes in items indicating that the participants, following training, possessed weaker belief in issues involving claims of biological causation. For example, item two (2) stated, *Anxiety is a biological disorder*. Prior to the training the mean score was 3.34 indicating a slight tendency to agree. However, post training the mean score was 4.11, signifying that the participants beliefs had shifted towards tending to disagree ($t(75) = 4.2, p < .01$).

Item twenty-one (21) stated, *ADHD is a biological disorder*. Prior to the training the mean score was 2.57 indicating a tendency to agree. However, post-training the mean score was 3.79, signifying that the participants thinking changed toward disagreement ($t(74) = 9.3, p < .01$).

Item number 26 stated, *Studies of identical twins who are separated soon after birth and reared apart, that show fairly high levels of concordance for various mental and behavioral disorders, provide strong evidence for biological causation of mental disorders*. The training changed participants mean rating from 2.72 to 4.14 ($t(74) = 8.4, p < .01$). This indicated that the training section which critically examined the twin studies' claims of biological causation resulted in decreased credibility in such studies among the participants.

Item one (1) stated, *Attending pharmaceutical company sponsored workshops is helpful*

for me to understand the benefits of psychotropic medication. Participants' pre-survey mean score was 2.68, signifying they were somewhat in agreement with this statement. However, after the training, participants' mean score was 4.05 signifying greater disagreement with the notion that pharmaceutical company sponsored workshops are reliable and valid sources of information. The training provided evidence that pharmaceutical advertising and research is inherently confounded, largely by the financial interests of the pharmaceutical industry.

As expected and a testament to the strength of the instrument, there were no pattern of change noted in items twenty (20), twenty-four (24), and twenty-seven (27), where participants agreed that psychiatrists, psychologists, and counselors were well suited to diagnose and treat mental disorders. However, mean agreement was stronger for opinions regarding psychologist (1.97) than regarding psychiatrist (2.84) and counselors (3.68), after the training. This is not a surprising finding considering that 59% of the participants identified themselves as psychologists (Table 3).

Domain Analysis

Paired sample t -tests were also conducted to evaluate whether participants showed change in reported strength of belief in biological causation of several mental health disorders (ADHD, anxiety, depression, substance abuse, and schizophrenia). The results indicated that prior to the training participants were in agreement with the biological causation model of those disorders and post-training a shift toward disagreement had occurred ($M_{pre} = 3.02$, $SD = .77$) ($M_{post} = 3.86$, $SD = .88$), $t(75) = 9.48$, $p = <.001$. The standardized effect size index, d was 1.09, (see Figure 1).

A paired sample t -test was also conducted to evaluate whether the training changed the opinions of participants in the treatment group regarding the remaining four domains

(pharmaceutical, empirical, layperson, and guild). The results indicated that for the average ratings on the eight items in the Empirical Domain there was significant change in the mean level of agreement pre ($M_{pre} = 3.29$, $SD = .74$) to post intervention ($M_{post} = 4.0$, $SD = .76$), $t(75) = 9.79$, $p < .001$. Essentially, participant response indicated agreement that there was sufficient empirical evidence to support a biological causation model for abnormal behaviors prior to the training and post training there was a shift toward disagreement.

There was also significant decline noted in the attendees faith in the claims made by the pharmaceutical industry ($M_{pre} = 4.0$, $SD = .69$) to post intervention ($M_{post} = 4.4$, $SD = .69$), $t(75) = 6.92$, $p < .001$. Increased skepticism regarding the psychiatric/medical guild's claims of biological causation resulted as well ($M_{pre} = 3.1$, $SD = .69$) ($M_{post} = 3.2$, $SD = .71$), $t(75) = 3.06$, $p < .01$, although it was a relatively small change. There were significant changes in the perception of the HMO industry's influence ($M_{pre} = 3.2$, $SD = .71$) ($M_{post} = 3.0$, $SD = .61$), $t(75) = 2.48$, $p = .015$. However, there was no noted change in thinking among participants regarding the influence of laypersons' preference for biological explanations ($M_{pre} = 3.4$, $SD = .69$) ($M_{post} = 3.4$, $SD = .67$), $t(75) = .80$, $p = .425$ (see Table 7).

A final set of paired sample t -tests was conducted to evaluate whether participants in the control group showed any pre-post change. Results indicated that no change occurred on any domain (see Table 8).

A standard multiple regression was performed between the pre-post difference in strength of belief of the biological domain as the dependent variable and the pre-post difference in strength of the pharmaceutical domain, empirical domain, and guild domain as the independent variables (IVs). The HMO and Layperson Domain were excluded from further evaluation given Pearson correlations were found to be insignificant. Additional analysis included a hierarchical

regression in which the demographic variables of sex, age, and education were controlled for before assessing the relationship between the pre-post difference in strength of belief of the biological domain as the dependent variable and the pre-post differences in strength of belief of the pharmaceutical domain, empirical domain, and guild domain as the independent variables.

Table 10 displays the results for the regression analyses. R for regression was significantly different from zero $R^2 = .340$, $F(3, 72) = 12.377$ $p < .001$. The combination of the three IVs contributed significantly to prediction of strength of belief in biological causation. Upon closer review of the regression coefficients it seems that of the three variables empirical domain had the greatest influence (see Table 10). Age, sex, and education as predictors for strength of belief in biological domain were not significant, $R^2 = .053$, $F(3, 72) = 1.348$ $p = .266$. After controlling for these demographic variables, the three domains still accounted for a significant proportion of variability $\Delta R^2 = .350$, $F(3, 69) = 13.49$ $p < .001$.

Chapter 7

Discussion

This study was designed to examine mental health professionals' strength of belief in biological causation of several syndromes including ADHD, unipolar depression, anxiety disorders, and schizophrenia and whether a three-hour educational program would alter their thinking. The training focused on critical analyses of research that is usually cited in support of biological causation, as well as an exploration of the economic motives and methods of both organized psychiatry and the pharmaceutical industry, as they have promoted the biological model.

Findings are consistent with the initial hypothesis that pre-training, mental health professionals' reported strength of belief regarding the etiology of many mental health disorders (e.g., ADHD, unipolar depression, anxiety disorders, and schizophrenia) would tend toward the biologically based. Also, this study demonstrated that attendance at a three hour training program is able to reduce that expressed acceptance of biological causation of such disorders.

Statistically, the combination of the three IVs (empirical domain; pharmaceutical domain; & guild domain) contributed significantly to prediction of strength of belief in biological causation. However, it seems that, of the three variables, empirical domain had the greatest influence. These findings suggest that mental health professionals are exposed to social influences that may be contributing to belief systems supporting biological causation (i.e., guild dominance; financial interests of the pharmaceutical industry; direct to consumer advertising, etc.). However, it is challenging the validity of empirical data said to support biological causation that contributes the most robust change in that expressed belief. This finding is consistent with research indicating evidence enhance persuasion (Reinard, 1988).

The workshop reviewed and critiqued studies often cited as evidence of biological causation, including studies of brain structure, function and chemistry. It is plausible to suggest that this part of the training resonated particularly well with the attendees given the significant pre to post change in the empirical domain. That is especially interesting when one considers that the change occurred in experienced professionals, individuals whom one might suppose had become inured against substantial world-view changes. In that sense, the findings are quite encouraging.

Exploration of the connection between the financial interests of the pharmaceutical industry and the growth of the biological causation model had significant impact, even though attendees already possessed some skepticism. Attendees came to the training with some conviction that the financial interests of drug companies have brought about unverified claims of drug effectiveness. However, post training findings indicated a strengthening of that pre-existing skepticism. It appeared that the workshop's attention to pharmaceutical company advertising to both physicians and consumers had impact upon the professionals' thinking. Methodological issues (the wash-out phase, for example) and interpretative difficulties in studies of drug effectiveness were also brought to the attention of participants. Following training, attendees disagreed more strongly with the notion that drug study subjects are representative of patients for whom the drugs are routinely prescribed. Similarly, the placebo effect of psychotropic drugs, while generally well known, was also seen as more powerful, post-training.

By the workshop's end, attendees were less likely to agree that each specific disorder mentioned in the SOBS is caused by biological factors. The disorders and the amount of change on the six-point scale in the "disagree" direction were: anxiety disorders (.77), depressive disorders (.86), ADHD (1.22), schizophrenia (.94) and addiction (.66). Thus, the findings

suggests that greater understanding of the research and of the related phenomena, such as the pharmaceutical industry's advertising practices, tends to significantly weaken the mental health professional's belief in biological causation. That is true generally and for a number of specific disorders and classes of disorders.

A number of attendees informally remarked that the training "had opened their eyes" to research issues that they had not considered and had not been taught in their graduate training. Others pointed out that they had already felt skepticism about claims of drug companies, but that the training helped them gain focus on the specifics. Still others commented that the guild interests of organized psychiatry were not new to them, but that they had been unaware of the extent to which those interests had become highly symbiotic with drug industry interests.

A number of suggestions arise from the study. Given that empirical evidence serves as the food for thought, further research might well start there first. We know that studies can contain significant methodological flaws that may become evident only with close scrutiny. We also know that time constraints and access to data are barriers to such critical review of the body of research published, particularly for busy, front-line treating professionals. At a glance, the randomized double-blind, placebo controlled studies such as those published in the Journal of American Medical Association (JAMA) can appear quite convincing, specifically when it comes to data on drug efficacy. As one journal editor put it, the quality of the journal will bless the quality of the drug (Smith, 2005). Most professionals trust the journal as a peer reviewed reliable and valid source of information. However, some have raised a concern that medical journals are evolving into extensions of the marketing arms of pharmaceutical companies (Smith, 2005). Editors are required to meet budgeting demands as well as provide scholarly articles for professional view. The pharmaceutical industry has become quite skilled at asking the right

question rather than engaging in crude efforts to “fudge” with the results. For example, a comparison study may demonstrate that drug A works better than drugs B and C. However, with closer inspection one might find that either 1) the dosage of B and C are not commensurate with that of drug A; or 2) drugs B and C are already known not to be effective for the disorder under study. Drug companies are able to produce sophisticated models and statistical designs while an editor typically does not have the resources to ferret out such occurrences. The pharmaceutical industry’s financial strength dominates publications in that they underwrite 75% of the studies published in the major journals – Annals of Internal Medicine, JAMA, Lancet, and New England Journal of Medicine (Smith, 2005). On one hand one is hard pressed to fault the pharmaceutical industry for making money. On the other hand it is reasonable to consider that certain health industry practices can create conflicts of interest that require regulation (Brennan; Rothman; Blank; Blumenthal; Chimonas; Cohen; Goldman; Kassirer; Kimball; Naughton; & Smelser, 2006).

There is need for more public funding of trials, particularly of large head-to-head trials of all treatments available for treating a given disorder. A federally regulated web site could house the studies. Journal editors could then concentrate on critically describing them instead of publishing authored reports as presented for submission (Smith, 2005).

We would also do well to re-orient both the professional and popular cultures as to what is, and is not, known about the causes of abnormal behavior. Authors of textbooks, such as textbooks that likely were read by the professionals in this study during their training, should revise their books’ sections dealing with biological causation. They should pay special attention to the data said to support biological causation, and they should offer in-depth, critical analyses of those data.

Additionally, textbook authors and college and university professors would do well to address cultural influences, such as the pharmaceutical industry's direct-to-consumer advertising and advertising to physicians, as those practices influence public and professional views of causation. Research indicates that DTC advertising of prescription drugs via television, magazines and billboards has become one of the hottest revenue producers in the history of mass media in the U.S. and has also given some drugs the kind of instant brand recognition previously reserved for autos, soft drinks and detergents (Korcok, 2002). Research demonstrates that when a consumer responds to an "ask your doctor" commercial, over-prescribing of medication occurs even when the patient presents with minor symptoms (Kravitz et al., 2005). One suggestion that might right the ship of consumer information is for the Federal Trade Commission (FTC) to move more forcefully to replace marketed drug company 'education' with scientifically based, useful information that will stimulate better conversations between doctors and patients.

Studies suggest that the information provided to physicians by drug company representatives can be biased and incorrect, and that physicians often cannot distinguish true statements from false ones as they are presented with sales pitches. Many physicians are not aware of the extent to which commercial sources of information shape their own prescribing practices. For example, most physicians believe gifts given by pharmaceutical representatives do not influence their own prescribing practices, but these same physicians also believe that gifts *do* influence their colleagues (Steinman, Shlipak, & McPhee, 2000; Hopper, Speece, & Musial, 1990).

Improving physicians' awareness of the consequences of gift giving may be enhanced by institution of policies and educational programs that address this topic. Medical school and residency training programs should incorporate training on how to deal with pharmaceutical

representatives. The gift giving “norm” should be challenged and eliminated.

It is possible that improved government regulation of the claims made by the drug industry, mass media organizations, and doctors’ groups may be of help. Recently the government has increased its scrutiny of the claims of the drug industry regarding possible life-threatening effects of anti-depressants with children and youth. More needs to be done to reinforce the reliability and accuracy of information disseminated to the consumer, especially considering the impact it has on the consumers’ decisions about treatment.

The current sets of social and cultural influences seem to validate biological causation. Therefore the need for biological treatment is presently culturally functional. Because without it there would be a void. Competing models may be better brought into focus, for example we know that learning theory is a plausible basis for perspectives on the etiology and maintenance of anxiety disorders (Mineka & Zinbarg, 2006). Similarly, the etiology of depression has long been attributed by cognitive therapists to a negative cognitive or attribution style and some unfortunate, stressful experience (Seligman, 1975; Abramson, Metalsky, & Alloy, 1989). This may appear to be a difficult process given the enormous financial support available to the pharmaceutical industry and to organized medicine. However, large funding resources, such as the National Institute of Mental Health may yet be convinced to support different etiological perspectives of mental health syndromes as well as treatment interventions.

Limitations

One issue in interpretation of this study’s results is that conceptualization of causation as either “biological” or “not biological” leaves open the question of contributions of both biology and environment. The intent of this research was to test the hypothesis that mental health professionals’ belief systems are more aligned with the biological causation of many mental

health disorders as well as whether their beliefs were amenable to change. In an attempt to calibrate participant response the SOBS allowed only for six options (1 through 6 with 1 = Strongly Agree: 6 = Strongly Disagree). As a result, the middle ground posture became more clearly defined, at least numerically speaking. However, it is difficult to gain a true sense or source for participant agreement or disagreement by way of metric design. This study did not explore the psychological realities surrounding the different scores on this scale; therefore the SOBS response metric is vulnerable to subjective inferences.

A second concern arises when considering the presentation of data and inferred change as a result of such presentation. It is difficult to extract the influence of expert power (factual information provided by a skilled presenter) from prestige or referent power (well known professor and likeable figure) when inferring subject response to items (French & Raven, 1959, Aronson & Golden, 1962; Berlo, Lemest & Martin, 1969; Eagly, Wood & Chaiken, 1978; Haughtvedt, 1997). Therefore leaving open for speculation, is it the message or the messenger that brought about change?

A third consideration in interpretation of this study's conclusion lies in the measuring of change. One must be cautious not to make inferences regarding the magnitude of change on a true psychological dimension based simply on the magnitude of observed change on the observed metric. It is impossible to translate just how much one unit of change toward disagreement actually converts to, especially in terms of change in actual practice. All that can be said is that it reflects some degree of change, but how much is unknown (Blanton & Jaccard, 2006).

A fourth consideration should also be given to the how long will the observed change last? This could be a spring board for additional research.

Conclusion

There exists within the US culture a dynamic relationship between the pharmaceutical industry, the medical industry, regulatory bodies, mass media organizations, non-medical mental health practitioners and the mental health patient that is so strong that change in it will require a major pendulum swing away from biological causation as it currently is perceived. Although it was not this study's mandate to modulate the debate between etiological bases of behavior and treatment practices, it is a premise for starting such debate. This was an effort to heighten awareness that there are social influences such as money, marketing, and guild dominance that are impacting the mental health professionals' belief systems. A change in the professional attitude and understanding is possible and with sustained effort it is encouraging that certain growth [*and change*] can occur in the treatment for many mental health problems.

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Appendix I

PRE SURVEY _____ Last 4 Digits of SSN

STRENGTH OF BELIEF SCALE (SOBS)**Identifying Data:**

Discipline Psychologist Social Worker Counselor
 Psychiatrist Other (describe) _____

Education High School Associate BA
 Masters Doctoral BS
 Presently in school/training in _____ (program)

Sex Female Male

Age Group 18 – 26 27 – 35 36 – 44
 45 – 53 54 – 62 63+

Primary Job Location Community Mental Health State Hospital
 Private Practice General Hospital
 Full Time
 Part Time For Profit Psych Hospital University
 Other (describe) _____

Directions: Please read each question carefully and respond by circling a number on the scale at right with one (1) **Strongly Agree** to six (6) **Strongly Disagree**

- | | SA | SD |
|--|-----------------------|-----------|
| 1. Attending pharmaceutical company sponsored workshops is helpful for me to understand the benefits of psychotropic medication. | 1---2---3---4---5---6 | |
| 2. Anxiety is a biological disorder. | 1---2---3---4---5---6 | |

	SA	SD
3. In studies of effectiveness of psychotropic drugs, the people who take the experimental drugs are representative of the general population.	1---2---3---4---5---6	
4. Medication is less costly than psychotherapy in the eyes of Health Maintenance Organizations (HMO) and other health insurance agencies.	1---2---3---4---5---6	
5. Doctors are experts.	1---2---3---4---5---6	
6. Most people in America think that a diagnosis of a mental illness implies a person is weak.	1---2---3---4---5---6	
7. Family physicians acquire their practical knowledge about psychotropic medication from the pharmaceutical company representatives.	1---2---3---4---5---6	
8. A mental illness believed to be biologically treated offers greater hope for recovery than non-biologically caused mental illnesses.	1---2---3---4---5---6	
9. Health Maintenance Organizations (HMO) and other health insurance agencies limit coverage of the number of psychotherapy sessions much more so than the number of office visits for medication refills.	1---2---3---4---5---6	
10. Social workers are well suited to diagnose and treat mental disorders.	1---2---3---4---5---6	
11. Financial interests of pharmaceutical companies have brought about unverified claims of causation of mental disorders	1---2---3---4---5---6	
12. Medical doctors are figures of authority.	1---2---3---4---5---6	
13. Unipolar depression is a biological disorder.	1---2---3---4---5---6	
14. Studies of identical twins who were separated soon after birth and reared apart show fairly high levels of concordance for various mental and behavioral disorders. (Concordance means if one twin develops a disorder such as depression or schizophrenia later in life, then the other develops it too).	1---2---3---4---5---6	
15. Studies have shown that people with psychological problems have more or less of certain brain chemicals called neurotransmitters.	1---2---3---4---5---6	
16. Most people in America think that a diagnosis of a mental illness implies a person has not tried to overcome his or her problem.	1---2---3---4---5---6	

	SA	SD
17. Pharmaceutical company television advertisements for psychotropic medications are believable.	1---2---3---4---5---6	
18. Health Maintenance Organizations (HMO) and other health insurance agencies put the patient first.	1---2---3---4---5---6	
19. Medical doctors should be believed.	1---2---3---4---5---6	
20. Psychiatrists are well suited to diagnose and treat mental disorders.	1---2---3---4---5---6	
21. ADHD is a biological disorder.	1---2---3---4---5---6	
22. The majority of mental disorders are biological illnesses rather than the result of poorly learned coping skills.	1---2---3---4---5---6	
23. Schizophrenia is a biological disorder.	1---2---3---4---5---6	
24. Psychologists are well suited to diagnose and treat mental disorders.	1---2---3---4---5---6	
25. Most of my knowledge about psychotropic medication comes from pharmaceutical company representatives.	1---2---3---4---5---6	
26. Studies of identical twins who were separated soon after birth and reared apart that show fairly high levels of concordance for various mental and behavioral disorders provides strong evidence for biological causation of mental disorders.	1---2---3---4---5---6	
27. Counselors are well suited to diagnose and treat mental disorders.	1---2---3---4---5---6	
28. Psychiatrists acquire a significant amount of their practical knowledge about psychotropic medication from the pharmaceutical company representatives.	1---2---3---4---5---6	
29. Addiction is a biological disorder.	1---2---3---4---5---6	
30. It is important to listen to those of authority.	1---2---3---4---5---6	
31. There is evidence that biological abnormalities such as chemical imbalances, brain lesions or genetic abnormalities cause most mental disorders.	1---2---3---4---5---6	
32. When depressed patients are given an antidepressant a large percentage of the patients improvement is due to the placebo effect.	1---2---3---4---5---6	
33. Asking my doctor about medications advertised on television can be helpful in finding the right medication that will meet my needs.	1---2---3---4---5---6	

	SA	SD
34. If in the future, scientists identify a specific gene that pre-disposes people to become mentally ill, this would prove that mental illness is a disease.	1---2---3---4---5---6	
35. Studies that show people with psychological problems who have more or less of certain brain chemicals provides strong evidence for biological causation of mental disorders.	1---2---3---4---5---6	
36. I trust that the medication prescribed to me by my doctor is what I need.	1---2---3---4---5---6	
37. If an expert said so it must be true.	1---2---3---4---5---6	
38. The majority of mental disorders are biological illnesses rather than habit disorders .	1---2---3---4---5---6	

	SA	SD
3. Medication is less costly than psychotherapy in the eyes of Health Maintenance Organizations (HMO) and other health insurance agencies.	1---2---3---4---5---6	
4. Attending pharmaceutical company sponsored workshops is helpful for me to understand the benefits of psychotropic medication.	1---2---3---4---5---6	
5. Most people in America think that a diagnosis of a mental illness implies a person is weak.	1---2---3---4---5---6	
6. Family physicians acquire their practical knowledge about psychotropic medication from the pharmaceutical company representatives.	1---2---3---4---5---6	
7. A mental illness believed to be biologically treated offers greater hope for recovery than non-biologically caused mental illnesses.	1---2---3---4---5---6	
8. Health Maintenance Organizations (HMO) and other health insurance agencies limit coverage of the number of psychotherapy sessions much more so than the number of office visits for medication refills.	1---2---3---4---5---6	
9. Social workers are well suited to diagnose and treat mental disorders.	1---2---3---4---5---6	
10. Anxiety is a biological disorder.	1---2---3---4---5---6	
11. Financial interests of pharmaceutical companies have brought about unverified claims of causation of mental disorders	1---2---3---4---5---6	
12. Medical doctors should be believed.	1---2---3---4---5---6	
13. Unipolar depression is a biological disorder.	1---2---3---4---5---6	
14. Studies of identical twins who were separated soon after birth and reared apart show fairly high levels of concordance for various mental and behavioral disorders. (Concordance means if one twin develops a disorder such as depression or schizophrenia later in life, then the other develops it too).	1---2---3---4---5---6	
15. Studies have shown that people with psychological problems have more or less of certain brain chemicals called neurotransmitters.	1---2---3---4---5---6	
16. Most people in America think that a diagnosis of a mental illness implies a person has not tried	1---2---3---4---5---6	

	SA	SD
to overcome his or her problem.		
17. Pharmaceutical company television advertisements for psychotropic medications are believable.	1---2---3---4---5---6	
18. Health Maintenance Organizations (HMO) and other health insurance agencies put the patient first.	1---2---3---4---5---6	
19. Psychiatrists are well suited to diagnose and treat mental disorders.	1---2---3---4---5---6	
20. Medical doctors are figures of authority.	1---2---3---4---5---6	
21. ADHD is a biological disorder.	1---2---3---4---5---6	
22. The majority of mental disorders are biological illnesses rather than the result of poorly learned coping skills.	1---2---3---4---5---6	
23. The majority of mental disorders are biological illnesses rather than habit disorders .	1---2---3---4---5---6	
24. Schizophrenia is a biological disorder.	1---2---3---4---5---6	
25. Psychologists are well suited to diagnose and treat mental disorders.	1---2---3---4---5---6	
26. Most of my knowledge about psychotropic medication comes from pharmaceutical company representatives.	1---2---3---4---5---6	
27. Studies of identical twins who were separated soon after birth and reared apart that show fairly high levels of concordance for various mental and behavioral disorders provides strong evidence for biological causation of mental disorders.	1---2---3---4---5---6	
28. If an expert said so it must be true.	1---2---3---4---5---6	
29. Psychiatrists acquire a significant amount of their practical knowledge about psychotropic medication from the pharmaceutical company representatives.	1---2---3---4---5---6	
30. Addiction is a biological disorder.	1---2---3---4---5---6	
31. It is important to listen to those of authority.	1---2---3---4---5---6	
32. There is evidence that biological abnormalities such as chemical imbalances, brain lesions or genetic abnormalities cause most mental disorders.	1---2---3---4---5---6	
33. When depressed patients are given an antidepressant a large percentage of the patients improvement is due to the placebo effect.	1---2---3---4---5---6	
34. Asking my doctor about medications advertised on	1---2---3---4---5---6	

television can be helpful in finding the right medication that will meet my needs.

- | | SA | SD |
|--|-----------------------|-----------|
| 35. If in the future, scientists identify a specific gene that pre-disposes people to become mentally ill, this would prove that mental illness is a disease. | 1---2---3---4---5---6 | |
| 36. Studies that show people with psychological problems who have more or less of certain brain chemicals provides strong evidence for biological causation of mental disorders. | 1---2---3---4---5---6 | |
| 37. I trust that the medication prescribed to me by my doctor is what I need. | 1---2---3---4---5---6 | |
| 38. Counselors are well suited to diagnose and treat mental disorders. | 1---2---3---4---5---6 | |

Appendix III

BIOLOGICAL DOMAIN (7 Items)

1. The majority of mental disorders are biological illnesses, rather than habit disorders.
2. The majority of mental disorders are biological illnesses, rather than the result of poorly learned coping skills.
3. Unipolar depression is a biological disorder.
4. Addiction is a biological disorder.
5. Schizophrenia is a biological disorder.
6. ADHD is a biological disorder.
7. Anxiety is a biological disorder.

LAYPERSON PREFERENCE (5 Items)

39. Most people in America think that a diagnosis of a mental illness implies a person is weak.
40. If an expert said so it must be true.
41. Most people in America think that a diagnosis of a mental illness implies a person has not tried to overcome his or her problem.
42. Doctors are experts.
43. A mental illness believed to be biologically treated offers greater hope for recovery than non-biologically caused mental illnesses.

EMPIRICAL DOMAIN (8 Items)

1. Studies of identical twins who were separated soon after birth and reared apart show fairly high levels of concordance for various mental and behavioral disorders. (Concordance means if one twin develops a disorder such as depression or schizophrenia later in life, then the other develops it too).
2. Studies of identical twins who were separated soon after birth and reared apart that show fairly high levels of concordance for various mental and behavioral disorders provides strong evidence for biological causation of mental disorders.
3. Studies that show people with psychological problems who have more or less of certain brain chemicals provides strong evidence for biological causation of mental disorders.
4. Studies have shown that people with psychological problems have more or less of certain brain chemicals called neurotransmitters.

5. If in the future, scientists identify a specific gene that pre-disposes people to become mentally ill, this would prove that mental illness is a disease.
6. In studies of effectiveness of psychotropic drugs, the people who take the experimental drugs are representative of the general population.
7. When depressed patients are given antidepressant a large percentage of the patients improvement is due to the placebo effect.
8. There is strong evidence that biological abnormalities such as chemical imbalances, brain lesions or genetic

PHARMACEUTICAL INFLUENCE (7 Items)

1. Attending pharmaceutical company sponsored workshops is helpful for me to understand the benefits of psychotropic medication.
2. Pharmaceutical company television advertisements for psychotropic medications are believable.
3. Most of my knowledge about psychotropic medication comes from pharmaceutical company representatives.
4. Asking my doctor about medications advertised on television can be helpful in finding the right medication that will meet my needs.
5. Financial interests of pharmaceutical companies have brought about unverified claims of causation of mental disorders.
6. Family physicians acquire a significant amount of their practical knowledge about psychotropic medication from the pharmaceutical company representatives.
7. Psychiatrists acquire a significant amount of their practical knowledge about psychotropic medication from the pharmaceutical company representatives.

GUILD INFLUENCE (8 Items)

1. Medical doctors should be believed.
2. Psychiatrists are well suited to diagnose and treat mental disorders.
3. Counselors are well suited to diagnose and treat mental disorders.
4. Social workers are well suited to diagnose and treat mental disorders.
5. Medical doctors are figures of authority.
6. It is important to listen to those of authority.
7. I trust that the medical advice given to me by my doctor is true.
8. Psychologists are well suited to diagnose and treat mental disorders.

HEALTH MAINTENANCE ORGANIZATION (HMO) DOMAIN (3 Items)

1. Health Maintenance Organizations (HMO) and other health insurance agencies put the patient first.

2. Health Maintenance Organizations (HMO) and other health insurance agencies limit coverage of the number of psychotherapy sessions much more so than the number of office visits for medication refills.
3. Medication is less costly than psychotherapy in the eyes of Health Maintenance Organizations (HMO) and other health insurance agencies.

Table Caption

Table 1 *Frequency of Age*

Age	Frequency	Percent
18-26	2	2.6
27-35	14	18.4
36-44	8	10.5
45-53	25	32.9
54-62	20	26.3
63+	76	9.2

Table 2 *Frequency of Education*

Highest Grade Completed	Frequency	Percent
High School	2	2.6
Associate	2	2.6
Bachelor	13	17.1
Masters	31	40.8
Doctoral	28	36.8

Table 3 *Frequency of Discipline*

Discipline	Frequency	Percent
Psychologist	45	59.2
Social Worker	11	14.5
Counselor	12	15.8
Other	8	10.5

Table 4 *Frequency of Employment*

	Frequency	Percent
Community Mental Health	7	9.2
State Hospital	2	2.6
Private Practice	28	36.8
General Hospital	2	2.6
For Profit Psychiatric Hospital	11	14.5
University	6	7.9
Other	20	26.3

Table 5 *2001 to 2002 Psychotropic Sales Growth*

Drug	Percent Sales Growth	Revenue (Billions)
Zyprexa	17%	\$2.8
Zoloft	14.2%	\$2.5
Paxil	10.7%	\$2.3
Neuronton	20.4%	\$2.0
Risperdal	12.9%	\$1.8

Table 6 *Reliability Analysis of Each Domain*

Domain	<i>r</i>
Biological Domain	.73
Layperson Domain	.76
Empirical Domain	.77
Pharmaceutical Domain	.82
Guild Domain	.87
HMO Domain	.57

r = coefficient alpha

Table 7 *Pre and Post Training Means of Treatment Group.*

Domain	\underline{M}_{pre}	\underline{M}_{post}	\underline{M}_{diff}	\underline{SD}_{diff}
Biological Domain	3.02	3.86	-.83**	.8
Layperson Domain	3.4	3.5	-.1	.6
Empirical Domain	3.3	4.0	-.7**	.7
Pharmaceutical Domain	4.0	4.4	-.44**	.55
Guild Domain	3.1	3.2	-.2*	.5
HMO Domain	3.2	3.1	.2	.7

\underline{M}_{pre} = pretest mean

\underline{M}_{post} = posttest mean

\underline{M}_{diff} = \underline{M}_{pre} - \underline{M}_{post}

\underline{SD}_{diff} = standard deviation of \underline{M}_{diff}

\underline{d} = Cohen's measure of effect size

**p* < .01

***p* < .001

Table 8 *Pre and Post Training Means of Control Group*

Domain	\underline{M}_{pre}	\underline{M}_{post}	\underline{M}_{diff}	\underline{SD}_{diff}
Biological Domain	3.1	3.0	.1	.5
Layperson Domain	2.9	2.7	.1	.4
Empirical Domain	2.9	2.8	.1	.5
Pharmaceutical Domain	3.9	4.0	-.1	.4
Guild Domain	3.2	3.2	-.03	.4
HMO Domain	3.2	3.0	.2	.6

\underline{M}_{pre} = pretest mean

\underline{M}_{post} = posttest mean

\underline{M}_{diff} = \underline{M}_{pre} - \underline{M}_{post}

\underline{SD}_{diff} = standard deviation of \underline{M}_{diff}

**p* < .01

***p* < .001

Table 9 Individual Item Comparison of Means (Items are in Appendix I order)

SOBS Item	\underline{M}_{pre}	\underline{M}_{post}	\underline{M}_{diff}
Item 1 Attending pharmaceutical is helpful ...	2.68	4.05	-1.37*
Item 2 Anxiety is a biological disorder ...	3.34	4.11	-.77*
Item 3 In studies of effectiveness people represent..	4.12	4.78	-.66*
Item 4 HMO sees meds as less costly than ...	2.48	2.12	.36*
Item 5 Doctors are experts ...	3.34	4.02	-.68
Item 6 Mental illness implies weak ...	2.68	2.32	.36
Item 7 General doc & drug knowledge comes ...	4.58	4.61	-.03
Item 8 Biological model offers hope ...	3.78	3.76	.02
Item 9 HMO limits psychotherapy...	1.97	1.84	.13
Item 10 SW are well suited to dx & tx ...	4.10	3.80	.30
Item 11 Financial interest & drug co = ? claim .	4.40	5.08	-.68*
Item 12 Medical doctors are figures of auth...	2.59	2.93	-.34
Item 13 Depression is a biological disorder ...	2.96	3.82	-.86*
Item 14 Studies of identical twins ...	2.75	3.72	-.97*
Item 15 Studies have shown ...	3.00	3.57	-.57*
Item 16 Most people in America ...	2.74	2.46	.28
Item 17 Drug co. tv ads are believable ...	3.63	4.17	-.54*
Item 18 HMOs put the patient first ...	5.30	5.25	.05
Item 19 Med docs should be believed	3.45	3.61	-.16
Item 20 Psychiatrist are well suited to dx & tx ...	2.36	2.84	-.48*
Item 21 ADHD is a biological disorder ...	2.57	3.79	-1.22*
Item 22 The majority of MI are bio illness...	3.62	4.32	-.70*
Item 23 Schizophrenia is a biological disorder...	1.91	2.85	-.94*
Item 24 Psychologists are well suited to dx & tx ...	1.86	1.97	-.11
Item 25 My knowledge about drugs comes from...	4.20	4.05	.15
Item 26 High concordance rates is strong evidence..	2.72	4.14	-1.42*
Item 27 Counselors are well suited to dx & tx...	3.74	3.68	.06
Item 28 Psychiatrist knowledge of drugs come ...	4.45	4.53	-.08
Item 29 Addiction is a biological disorder ...	3.21	3.87	-.66*
Item 30 It is important to listen to authority ...	3.32	3.77	-.45*
Item 31 There is evidence that bio abnormalities ...	3.59	4.55	-.96*
Item 32 Depressed patients improve due to placebo.	3.37	4.24	-.87*
Item 33 Asking my doc about drug tv ads helps ...	3.84	4.33	-.49*
Item 34 ID of a gene means MI is a disease...	3.57	3.97	-.40*
Item 35 Studies show more or less of brain chem...	3.23	4.19	-.96*
Item 36 I trust the meds prescribed is what I need...	3.22	3.44	-.22
Item 37 If an expert said so it must be true ...	4.69	4.77	-.08
Item 38 Majority of MI are biological ...	3.57	4.17	-.60*

\underline{M}_{pre} = pretest mean

\underline{M}_{post} = posttest mean

\underline{M}_{diff} = \underline{M}_{pre} - \underline{M}_{post}

*p < .01

Table 10 *Standard Multiple Regression of Guild, Empirical & Pharmaceutical Influences on the Strength of Belief (SOB) in Biological Causation.*

Variables	SOB BDMN DV	G-INF	E-INF	P-INF	B	β
G-INF	.355				.216	.137
E-INF	.530	.409			.464**	.396
P-INF	.395	.271	.380		.288	.207
MEANS	.8302	.1702	.7319	.4359		
STANDARD DEVIATIONS	.76367	.48437	.65137	.54921	Adjusted	R ² = .340 R ² = .313 R = .583**

*p < .01

**p < .001

SOB = Strength of Belief Scale

BDMN = Biological Domain

G-INF = Guild Influence

E-INF = Empirical Influence

P-INF = Pharmaceutical Influence

Numbers in upper left corner = Pearson Correlations