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Depathologizing Psychopathology

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Preface

Recently, we were sitting in a workshop that was describing the effects of toxic stress on the development of young children. As you can imagine, these effects were not good. The presenter did an impressive job of detailing the neurophysiological reaction of developing brain networks to continuous stress. Problems with both connectivity and recruitment of white matter connections in brain networks and the deleterious impact that stress has on their development were discussed. There was a clear and convincing demonstration of the interaction of an environmentally based stressful experience (learning) and neural physiology detailing how the damage was caused and what the long-term cognitive and emotional sequelae were.

After the presenter finished the formal presentation and called for questions, the inevitable question arrived, "What can we do to fix this damage once it occurs?" "Therapy" came as the answer. Just therapy. Nothing else was provided. While some examples of things such as play therapy or even swaddling were shown, there was no discussion as to why a particular technique should be selected or what changes in an individual's neural network functioning could be expected from its utilization. There was no review of the science and discussion of a model behind a particular intervention practice. Apparently all therapies were equal and valuable and all were OK.

In almost any other branch of science that involves itself in the clinical treatment of people, this answer would be wholly unacceptable. Imagine yourself confronted with any of a number of medical issues. In those situations, we would all ask why a particular treatment was being suggested and what the reasonable expectations of success were.

This discussion highlighted a lack of symmetry in the field of mental health today. Why is it that, in the mental health arena, the cause of an issue is usually unrelated to its treatment? It is apparent that while our knowledge concerning the neurophysiological presentation of many disorders of mental health is increasing exponentially, we know far less about the impact of therapy on these same neural networks. This is in large part true because the existing therapy models were developed independently of the issues they were designed to address. They were also developed without an integrated understanding of the etiology of mental disorders.

They were developed in response to questions regarding why people became dysfunctional, but developed within a universe that was in many respects free of the constraint of the physical sciences, and in some cases represent philosophical positions as opposed to empirically verifiable facts.

To us, it appears that the sciences exploring the development and operation of the human connectome advanced by recognizing the epigenetic interaction between the individual and the environment in a manner that respected the neurophysiology of the laws of learning, while in many respects, the field of therapy continued to develop without recognizing these same facts. The current situation results in us being certain in our recommendation for therapy as a general construct, while professional courtesy and the lack of solid empirical proof as to a particular form of therapeutic efficacy demand that many types of treatment are treated as if they all have the same functional outcomes.

We recognize that there are numerous clinical outcome studies that show efficacy for particular forms of treatment. These are often aggregate in nature. Groups of people receive varying treatments for a particular disorder, and one group of people does statistically better than another. While this has enabled practitioners to offer treatment that is statistically better than chance, it does not tell us why a particular technique is effective or how it changes the neural architecture of the individual to whom it is provided. In particular, it does not specify how the person's neural network for learning, processing information, and behavior has been altered by the intervention.

There are other problems as well. Ofttimes, varying forms of highly differentiated treatment approaches can claim outcome studies supporting their efficacy for the same types of difficulties. This is true even though within the statistically significant samples there are those individuals that do not improve and individuals within the nonsignificant samples that do. Finally, even though there might be data suggesting that one therapeutic technique is superior to the others in the treatment of specific mental health issues, there remains constituencies of practitioners that continue to utilize scientifically unsupported models based on case studies or their own philosophical positions.

The result of this is that within the existing therapeutic paradigms, therapists still have wide latitude, often free of empirical justification, in deciding what technique they will use to address an issue. The zeitgeist of the field in general expects that all of these choices must be respected. In fact it is true that training programs still train therapeutic models that do not have and never had robust empirical justification for their use. This would make some sense if all models of therapy were all equally effective, but there is considerable research that suggests that this is not the case. To us this situation is no longer acceptable.

We will show that this state of affairs was brought about because the research into the etiology of most disorders of mental health was clearly not able to clarify causation, and as a result, a system for classifying disorders based upon what behaviors they were comprised of was developed. As a result of this phenotypical type of clustering of symptoms, physiologically heterogeneous problems were grouped together solely because they produced the same or similar overt behavior. For exam-

ple, any child that failed to pay attention had a form of attention deficit hyperactivity disorder. This less than perfect solution caused difficulties that continue to persist and handicap the ability of the science to move forward.

One of the ongoing consequences for the failure to develop unifying models of causation is the continuing absence of an underlying metric of causation against which to compare the efficacy of various treatment models. Treatments were able to be relatively nonspecific because they were targeting behaviorally defined criteria as opposed to an integrated whole. For example, there are many ways to get a child with attention deficit hyperactivity disorder to stop fidgeting, and if they all worked, they would all be valid. There continues to be no central conceptualization for developing treatment protocols.

We believe that it is time that this changed and that there is now sufficient information available that will allow us to posit an underlying neurophysiologically based learning model that accounts for a significant portion of those things currently called disorders of mental health. We believe that many of the issues that confront individuals in the mental health arena represent the interaction between the individual neural network that regulates learning and the environment and that the results of this interaction represent learned behavior. While it is true that each individual brings to the situation a uniquely variable (as defined by patterns of connectivity) neural network, it is also very true that each of these individualized networks processes information according to the same rules. It would be possible then to demonstrate how this learning occurs over an individual's neural networks and develop ways of impacting these networks that correct for faulty learning and establishing more adaptive patterns of association.

Simply stated, the laws of learning are not suspended for issues related to mental health. If that is true, then it is possible to develop a system of learning that should explain the etiology of mental health issues while at the same time underpinning all therapeutic endeavors. In other words, a unifying model is now possible. It would take the fusion of several fields to accomplish this. Contributions from psychology, neurology, physiology, and epigenetics are all required.

This book represents the fruition of 10 years of discussion, learning, and research. These discussions were not just between ourselves. They included colleagues in many areas of academic study including the aforementioned neuropsychology, neurophysiology, genetics, and neurology. Writing this book meant challenging many of the foundational beliefs about what we had been told were the core pillars of psychology as it pertains to the treatment of issues related to mental health. As we developed our thinking and our model, we grew in the recognition that there was something seriously wrong with the current concept of mental illness, and because of that, treatment for individuals who were experiencing difficulty in adjusting to the world around them was not as effective as it should be.

Without a fundamental redesign in our conceptualization regarding mental health research, meaningful advancement in the field would not occur. That is largely because, when we seek to investigate the etiology of heterogeneous disorders, results get obscured. The same can be said for investigating effective treatment approaches. Is it possible that the same intervention will be effective for a youngster

who fails to sustain attention and one who fails to pay attention to one stimulus because his attention is captured by another? Even though they both might be labeled with attention deficit disorder under the current system, we believe we could answer that above question in the negative. Yet, in an aggregate treatment design, a successful treatment intervention for one of the possibilities might be lost.

Although not the subject of this book, it should suffice to say that there has been sustained criticism of the research on mental health. Much of the early work concerned itself with methods that compared treatments to untreated control groups. One major criticism is that, when you have just a treatment and a control group and the treatment group shows greater improvement, you do not know why that occurred. Something happened but just what it was is not articulated. Another of the major criticisms is that the major method of investigation, controlled trials, has also failed to be informed sufficiently by theory. This is largely because no integrated theory of the factors related to the development and maintenance of mental health is universally accepted.

So, we arrive at last to the reason we wrote this book. We wrote this book to propose a new model to conceptualize the neuropsychological nature of mental health, its development, and its treatment when things go awry. The model we propose is based on the recognition that all human learning, even the learning involved in development of skills related to mental health, is based on the epigenetic interaction between the individual's neural architecture and the environment that impinges upon and shapes it. The model recognizes that there are clear principles that govern how humans learn. These principles are not suspended and should not be ignored, when the learning to be done is in the context of gaining skills related to mental health or changing skills in the context of the therapeutic treatment of mental illness.

When the mental health of the individual is compromised and treatment becomes necessary, the implications of this model are clear. These principles effect learning regardless of the therapeutic model being utilized or the therapeutic orientation of the therapist. We believe therefore that it is incumbent for every therapist to be cognizant of these principles and know how to incorporate them into their work. It is incumbent on every therapist to understand how the learning experiences provided as part of therapy interact with an individual's neural architecture to create new connections associated with, and supportive of, adaptive behavior. Finally it is incumbent on every therapist to understand the principles by which the connectionist networks that lead to maladaptive behavior are reengineered. Without this knowledge and its infusion into the everyday practice of treatment for mental health-related issues, therapeutic practice will remain open to, and increasingly susceptible to, scientific scrutiny and perhaps relegation to the judgment of history.

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Chapter 1
Paradigm Shifts

Q. Oh, oh, I'm sorry, you testified earlier that the boys went into the store and you had just begun to make breakfast, you were just ready to eat and you heard a gunshot, so obviously it takes you five minutes to make breakfast.
A. That's right
Q. So you knew that. Do you remember what you had?
A. Eggs and grits.
Q. Eggs and grits. I like grits too. How do you cook your grits? You like 'em regular, creamy, or al dente?
A. Just regular, I guess.
Q. Regular? Hmm. Instant grits?
A. No self-respecting southerner uses instant grits. I take pride in my grits.
Q. So, Mr. Tipton, how could it take you five minutes to cook your grits, when it takes the entire grit-eating world twenty minutes?
A. I don't know. I'm a fast cook I guess.
Q. I'm sorry, I was all the way over here, I couldn't here you. Are we to believe that boiling water soaks into a grit faster in your kitchen than in any place on the face of the earth?
A. I don't know.
Q. Perhaps the laws of physics cease to exist on your stove? Were these magic grits? Did you buy them from the same guy who sold Jack his beanstalk beans?

(My Cousin Vinny, 1990)

All of us, at one time or another, want to believe things that we were taught to be true, or wish were true, would always remain true. Oftentimes these very same things are in fact not true. They were never true, but they were in fact things that we merely thought were true based on the science and understanding of the times. Science and spiritual beliefs are replete with such examples. The homunculus, the belief that the world is flat, or that the sun orbits the earth are examples of erroneous beliefs consistent with knowledge available at the time. The belief that the sun was carried by a chariot is now recognized as a myth. In a world of turmoil and uncertainty, it is certainly comforting to have reasons and answers to things, even if the particular set of answers are wrong. People tend to hold onto their beliefs with a passion reserved for few things. In fact, research suggests that misinformed people

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rarely change their minds when presented with the contravening facts and, in the alternative, often become even more attached to their beliefs as they are threatened (National Public Radio, 2010). As in the grits example above, even though we know the laws of physics preclude certain possibilities, we hold onto our explanations and attempt to mold new facts into our preexisting schema or data. This is true even in the circumstance when our ability to explain the new phenomena requires us to rethink some of our basic and passionately held premises. Ofttimes we save the premise and throw out that inconvenient fact.

The science of mental illness and its treatment has had its fair share of beliefs that were once popular, but later found to be inaccurate or just plain wrong. The idea that autism was caused by "refrigerator mothers" is one example. Homosexuality was only declassified as a mental disorder in 1973. While not an example of a specific diagnosis, this book, in part, addresses several beliefs about mental illness that have outlived their usefulness. One such belief is that disorders of mental health might be meaningfully classified based on co-occurring behaviors or that that classification would lead to a productive science of understanding the etiology of issues related to mental health. A second belief is that consistently effective and predictable treatment can be developed for disorders that were created using such a system. Still another is that issues related to mental health occurred in a universe somehow independent of the laws of learning and neurophysiology. The final belief that might have outlived its usefulness, or at least overextended its reach, is the idea that medicalization of issues related to mental health would lead to the most efficacious treatment interventions.

When Paradigms Shift

It is usually the case that in the fullness of time, science progresses, and the truth, or something closer to the truth about a particular issue, presents itself. When this occurs, these new ideas are not always easily embraced, and they are in many cases resisted. We believe that just such a circumstance currently presents itself in our understanding of mental health and mental disorders. We, among others (Insel, 2013), believe that the older models and understandings of the construct called "mental Illness" are no longer sufficient and no longer match the available research and should no longer serve as the basis of future research.

We believe that this opportunity of fundamental change in conception was created when the worlds of neuroscience, genetics, mental health, and mental health treatment, long separated by scientific custom, finally and appropriately began to merge. By merging we do not mean just the recognition that altering certain neurotransmitters can produce altered mood states. Although this was a tremendous advancement in the field of treatment of issues related to mental health, the understanding that "brain chemistry" played a role in addressing mental health concerns for some people did not bring about a fundamental paradigm shift. What we are referring to is the idea that neurophysiology, genetics, and environment all operate together to affect the individualized development of neural network architecture,

and the behavior that is based upon it and that the concept of mental health should be understood from this perspective. Understanding mental health, and the genesis of mental disorders in this way, requires a fundamental paradigm shift in the way we conceptualize the construct of "mental illness."

We believe 1. that there exists sufficient evidence, from a variety of fields that demands that this existing therapy paradigm has seen its day and should be changed. 2. That there are rules of learning that govern all learning: emotional, physiological, and biological. Every therapeutic technique should be cognizant of these rules in order to understand how the neurophysiology of learning is being affected.

We wrote this book to outline the thinking required of this paradigm shift and discuss what it would mean for the concepts of mental health and mental illness. It is no small matter.

The Mind–Body Problem for Psychology

As we have suggested, paradigm shifts are a slow process as old beliefs tend to remain quite vibrant. This is very true in the field of mental health treatment. Giving testimony to this statement is the fact that for many people in the world of mental health, treatment and research, the mind–body problem is alive and well. Stated simply, the mind–body problem (Radner, 1971) is a philosophical one, asking how we understand the relationship between the mind and the body. The mind is about mental processes, thought, and consciousness. The body is about the physical aspects of the neural architecture and how the brain is structured. The mind–body problem is about understanding how these two interact. Historically, they were considered different and separate constructs that either operated independently or interdependently. The mind was where emotions resided, and when these emotions became disrupted somehow, many mental health problems resulted. While it is clear that the two are closely related, mental processes often were conceptualized as distinct from physical processes and somehow independent of the physiology where they nevertheless resided. Some philosophers held that mental properties involving conscious experience had fundamental properties that were not governed by the laws of physics, while the body had fundamental properties identified by a completed physics. We do not intend to examine the complexities of the mind–body problem. What we would like to emphasize is that this separation has persisted and has allowed mental health professionals to develop treatment strategies that ignored the neurophysiology of learning and the neurology that underpins it. This, in ours and others' opinion, resulted in inefficient treatment approaches and compromised therapeutic outcomes that did not stand the scrutiny of outcome-based verification (National Institute of Mental Health, 2015).

Finally and appropriately, according to the National Institute for Mental Health, the landscape for mental health intervention is now changing rapidly. New tools and discoveries from genomics, neuroscience, and cognitive science have led to emerging and quite different ideas about mental health in general and treatment targets across

mental illnesses in specific. Although it could be said that we are in the golden years of psychopharmacology, the pharmacology industry has begun to back away from investing in research and development for new medications. At the same time, insurance companies have increasingly raised questions about the evidence base for non-pharmacological treatments. Indicative of this increasing recognition of the inadequacy of investigational models based on the existing mental health paradigm, the National Institute of Mental Health (NIMH) has begun shifting its clinical trial portfolio toward studies with defined targets and milestones in contrast to previous studies that looked only for statistical differences in efficacy. This new NIMH experimental medicine approach seeks trials that will also reveal more about the actual neurophysiological or epigenetic mechanisms of disorders of mental health. There is then increasing awareness that the mind–body distinction is a barrier to understanding mental health, rather than a necessary precondition to understanding it. This is because it has become increasingly clear that the dichotomy is a false one. Whatever the monitoring and executive processes are that constitute the mind, they are conducted over the same neural circuitry as everything else that is learned and processed in the human brain (Bremner, 2002). It is surprising that it took so long to get to this point. The paradigm is beginning to shift. What will replace it?

An Old Idea Reimagined

Adopting a paradigm shift inevitably means reevaluating long-held beliefs as they relate to the new model. Historically, therapeutic intervention for mental health problems placed great emphasis on the clearly established fact that the nature of the relationship between the client and their therapist is an essential element to the therapeutic process. Some (Rogers, Client Centered Therapy, 2003) argue that it is the only thing that is meaningful. We do not seek to take issue with the value of the therapeutic relationship. We do seek to point out that what occurs in the context of this relationship is governed by the same laws of learning as any other interaction between an individual and their environment. We believe that in the therapeutic relationship as it exists, it is the role of the therapist to choose which ideas and behaviors are, or are not, reinforced. This occurs in all therapeutic relationships, although in some the therapist is quite directive and in others the therapist is less overt about the activity. Even in nondirective treatments, the questions we ask, or the client phrases that the therapist seizes upon to explore, shape through the process of reinforcement (using the approval earned in the relationship) the direction of the conversation. All learning is learning, and learning is governed by the same principles whether it is learning how to drive an automobile, learning about the history of our country, or learning about ourselves.

In addition to introducing the reader to the new paradigm shift and outlining the physiologically based principles of learning, this book is designed to teach both therapists and their clients how these principles govern the way we learn and, by extension, learn about our behavior and our mental health. Regardless of the type of

therapeutic relationship one prefers, all learning that occurs is over brain networks that are recruited for specific tasks, but the connective properties of these networks are always the same. Learning about ourselves in therapy is not different than any other kind of learning in this regard. It is a synthesis of our neurophysiologically based learning networks and the environment in which it operates.

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Chapter 2
Pathologizing Everyday Life

In chaos, there is fertility.

Anaïs Nin

The world of mental health is in chaos. Ok, maybe not major chaos just yet, but maybe it should be. So let's call it impending chaos. Akin to the beginning of an earthquake tremor, or the dark clouds of a hurricane on the horizon, the recent publication of the American Psychiatric Association Diagnostic and Statistical Manual (*Diagnostic and Statistical Manual of Mental Disorders*, 2013) has in many ways crystallized a growing chorus of criticism not only of the DSM system itself, but on the science on which it stands and the definition of mental health that devolves from it. This criticism raises questions about the very nature of what we define as mental illness. For example, recently, there has been a number of works that challenge existing assumptions about psychopathology. From *Crazy Like Us* (Watters, 2010) which speaks about the spread of the American interpretation of mental illness overtaking the views of other societies often with disastrous consequences to *What Is Mental Illness?* (McNally, 2011), which directly questions the diagnostic systems we use to identify problems with mental health, scientists are increasingly challenging the status quo concerning how we as a society define mental illness.

The Medicalization of Mental Health

In *What Is Mental Illness?* McNally highlights the increasing difficulty in distinguishing the concept of "mental disorder" and all that the classification includes, from the differing degrees of what he termed "mental distress" in response to the emotional enmeshments, breaks, or situational predicaments of everyday life. Increasingly, he points out, these everyday problems that cause stress are being made into medical disorders which then require a form of medical intervention to resolve. The issues of the over-medicalization of mental illness have been the

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subject of numerous articles and books. McNally also points out the deleterious consequences of being classified with a disorder. He identifies certain mental illnesses, like multiple personality disorder, as representatives of an "interactive kind." These are disorders where psychiatric classification has a feedback effect on the behavior of the people being classified, as well as beliefs, institutions, and practices. His book, as well as others, decries the increasing medicalization of the concept mental health or, more specifically, mental illness. Medicalization is not necessarily a positive term. It describes the practice by which medical knowledge and perspective are applied to human conditions and problems which become increasingly defined and treated as medical conditions, and thus become the subject of medical study, diagnosis, prevention, or treatment. In its most pernicious form, it has been described as disease mongering (Payer, 1992), which is a pejorative term describing the practice of incessantly widening the diagnostic boundaries of illnesses and encouraging public awareness of these new diseases. This is done in order to expand the markets for those who sell and deliver treatments, which may include pharmaceutical companies, physicians, and other professional or consumer organizations.

The Boom in the Number of Mental Disorders

The effect of the medicalization is that there are increasing numbers of mental illnesses and increasing numbers of individuals being diagnosed with medically defined mental illnesses. For example, the most recent iteration of the DSM nosology (DSM 5) added 15 new diagnoses to the 297 disorders in the DSM IV. In contrast, the original DSM listed only 106 disorders. With the increased number of disorders comes the natural consequence of increased number of people reaching criteria for diagnosis. Whitaker (2010) points out that the number of people disabled by mental illness in the United States tripled over the past two decades. In 2010, when his book *Anatomy of an Epidemic* was published, 1100 adults and children were being added to the government disability rolls because they had become newly disabled by mental illness. Angell (2011) reports that a large survey of randomly selected adults, sponsored by the National Institute of Mental Health (NIMH) between 2001 and 2003, found that an astronomical 46 % of them met established DSM criteria for having had at least one mental illness within four major categories at some point in their lives. The categories were "anxiety disorders," including, among other subcategories, phobias and post-traumatic stress disorder (PTSD); "mood disorders," including major depression and bipolar disorders; "impulse-control disorders," including various behavioral problems and attention deficit/hyperactivity disorder (ADHD); and "substance use disorders," including alcohol and drug abuse. Most met criteria for more than one diagnosis. Other studies have not yielded as high a percentage, but still indicate that more than 25 % of the American public could be identified with a mental illness (McLean, 2012). This study by Substance Abuse and Mental Health Services Administration (SAMHSA), which did not include individuals with primary drug or alcohol problems, reported an overall rate of 20 % with individuals

between the ages of 18 and 25 experiencing the greatest number of instances of mental illness, at 29.9 %. Twenty-two percent of adults ages 26–49 and 14.3 % of adults 50 and older experienced mental illness. McNally identifies the problem that many of us see when we realize that perhaps nearly 50 % of the American population is classified or classifiable as having a mental disorder when he talks about "pathologizing everyday life." Wakefield (2007) described the problem thusly; "What do we mean when we say that a problematic mental condition, such as adolescent antisocial behavior, a child's defiant behavior toward a parent, intense sadness, intense worry, intense shyness, failure to learn to read, or heavy use of illicit drugs, is not merely a form of normal, albeit undesirable and painful, human functioning, but indicative of psychiatric disorder?" (p. 149). We would add the following; is it necessary to conceptualize all of these issues of everyday life as reflective of an illness in order to devise effective treatment approaches? To that question we will answer with a resounding "No." For example, recent research supports the idea that disorders, such as obsessive–compulsive disorder, are the result of learned behavior and cognitive labeling as opposed to a disease process (Gillan & Robbins, 2014). Gilliam and Robbins conclude that research evidence suggests that rather than goal-directed avoidance behaviors, compulsions in OCD may derive from manifestations of excessive habit formation. They proposed that the irrational threat beliefs (obsessions) characteristic of OCD may be a consequence, rather than an instigator, of compulsive behavior.

Does Something Have to Be Broken in Order to Improve It?

While it arguably can be true that nearly 46 % of Americans are mentally ill, a counterargument is also possible. As we have indicated, this counterargument would state that we have incorrectly made everyday distress and stress into a medically defined mental illness. This counterargument states that we have overreached and extended the idea of diagnosis too far. This counterargument would begin with correcting a definitional problem in that everything labeled as a mental illness would be considered as being caused by a medical condition. This does not have to be so, but in practice, it is what is done. It is important to note that the diagnostic nomenclature systems, either the DSM or the International Statistical Classification of Diseases and Related Health Problems (ICD), are etiologically silent as they make no statement as to causality in the field of mental health. Historically, the ICD was developed to provide physicians with uniformity in the description of diseases for statistical purposes (Moriyama, Loy, Robb-Smith, & Robb-Smith 2011). The assumption that mental health disorders identified through these systems represent medical conditions are then made by the users once the diagnosis has been made. We in fact assume that we are looking for a type of illness when we commence the diagnostic process by collecting symptoms to compare to the criteria of the diagnostic system. We diagnose mental illness by the use of observable behavior or by verbal report. In medicine this would be akin to diagnosing all individuals with a pattern of red bumps on their chest as having measles.

While we do not for a minute doubt or dispute that there are certain conditions of mental disturbance that represent medical conditions requiring medical intervention, we do seriously doubt that the majority of individuals diagnosed as ill under the current system are indeed ill as a result of a medically determined disease process. While we do not doubt that individuals experience stress, distress, and discomfort in their everyday lives, we would point out that there is increasing evidence that these problems do not require a medical procedure to correct them. What is more, the process by which these behaviors have become problematic had nothing to do with disease progression, but rather reflected a predictable pattern of learned interaction between the individual and the environment.

Medicalization Is Not the Only Way to Understand Problems with Mental Health

While we would add our voices to those who believe that the current system which understands that problems with adjustment as medical issues is outdated, we also recognize that it is not sufficient or productive to carp. If our current models of mental illness and the treatments that are based on them are in part in error, then it is the obligation of science to develop better models. This is because there remains societal need for a uniform language that describes mental illness. Until a new system is created, the old one will have to do (Jabr, 2013). While we do not pretend to be able to replace the entire system, we are prepared to offer what we believe to be an effective alternative to understanding the genesis of mental problems, the diagnostic system used to describe them, and the treatments that devolve from the system. The model we propose is based on an understanding of neural networks and their interaction with the environment based on connectionist learning theory (Thorndike, 1932). Our model integrates genetic predisposition and the development of integrated neural networks from a vertical brain perspective (Koziol & Budding, 2009). For example, it is now well understood that genetic programming in utero can interact with the uterine environment in an epigenetic manner to produce adverse neuropsychiatric outcomes (Bale & Erperson, 2015). Further understanding regarding how these areas work together to produce behavior would contribute to a reconceptualization of the concept of mental illness.

While we will raise many issues, one thing is central to our discussion. Stated simply, it is that the concept of an illness is not required to understand the etiology of a large number of problems currently considered to represent some form of illness, nor to formulate effective treatment options for many of the issues that present themselves for treatment.

Elements of Another Way

There are many elements that will be recognizable in the work. In some senses our model has elements of a diathesis (vulnerability)-stress model (Ingram & Luxton, 2005) in that we will explain certain elements of behavior as occurring because of a