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RESTORING WHOLENESS TO PSYCHIATRY: MODELS OF UNDERSTANDING

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Abstract

Psychiatric practice is at a critical juncture in its evolution. Its identified model for understanding the complexity of individuals and their conditions has been the bio-psycho-social-spiritual model since it was first proposed nearly half a century ago. In practice, this construct is being challenged by a biomedical model which asserts all psychiatric conditions can be reduced to either neurotransmitter or gene-based causation. We explore how models are used in science to approximate larger reality, with a focus on Systems Theory, which is the philosophical foundation for the bio-psycho-social-spiritual model to describe why this model is necessarily more complete than the biomedical model. Several examples are presented to illustrate the practical limitations of the reductionist biomedical model and illuminate the impact of its narrow lens upon the assessment and treatment of patients. We argue that the biomedical model is inadequate as it prevents empowerment of the individual and it fails to recognize top-down causation, which are two identifiable strengths of the bio-psycho-social-spiritual model.

Key Words: biopsychosocial, biomedical, psychopharmacology, psychiatry

Introduction

Psychiatry has moved through a series of three philosophical phases of development since its infancy. The first phase was largely focused upon psychodynamic principles in the form of psychoanalysis and psychodynamic therapy, as elucidated by Freud and his theories related to the unconscious (Freud S., 1965). The benefits of this paradigm included depth, understanding, and meaning imparted through symptoms. The weakness of this model was that treatment interventions were limited in severely ill patients suffering from psychotic symptoms, and observations that insight alone did not necessarily result in behavioral change (Prochaska & Norcross, 2018).

By the mid-1950's, the advent of biological psychiatry created the second developmental phase. This began with the observation that certain chemical compounds, like Reserpine and later Thorazine, had remarkable abilities to alter perceptions, emotions and behavior (Ramchandani et al., 2006). Strengths of this model included an emerging biological understanding of psychiatric symptoms and an increasingly targeted method of reducing debilitating symptoms. The weakness of this model was a lack of appreciation that symptoms may have meaning for the patient beyond biological events (Ross & Pam, 1995).

These two foundational models of human experience and suffering were historically in direct conflict. The psychological model argued for top-down causation (meaning and insight leading to eventual biological change), while the biomedical model argued for a bottom up causation (changing biological conditions for symptom relief) (Rocca & Anjum, 2020) (Kendler & Woodward, 2021).

The third phase in psychiatry was an attempt to resolve the dichotomous thinking of symptoms being primarily biological or psychological. It made efforts to integrate the psychotherapeutic and biomedical approaches into a more inclusive model. This model began in the 1960's and was initially referred to as the bio-psycho-social model (Engel, 1977). It was later modified into the bio-psycho-social-spiritual model to include yet another facet of human experience.

During the 1990's, prominent leaders believed that a means of increasing access to mental health treatment was socially desirable. (Kessler et al., 2005) They argued this would be best achieved by reducing stigma and introducing the metaphor that equated psychiatric illness with medical illness (Chakravarty, 2011). This "medicalization" was not without costs, however. An unfortunate side effect from this perceptual shift has been that patients, families, and clinicians fall short in ascribing meaning to symptoms, diagnoses, and life because they have been reduced to biological processes alone. This in essence is a drift back towards biomedicalism, placing psychiatry in the unfortunate position of suggesting that suffering lacks the capacity for meaning – a highly questionable conclusion for a field that was originally focused upon meaning as the instrument of therapeutic change.

The bio-psycho-social-spiritual model remains the predominant conceptual model taught in psychiatry training programs and is referenced in textbooks of general psychiatry (Pies, 2016). The model is articulated as a standard of assessment throughout the United States and Europe and serves as a foundation for understanding child and adolescent interactions, including family, peer and societal influences on both behavior and development (White, 2005). In the specialty of child and adolescent psychiatry as well as general psychiatry, a focus on biology alone cannot account for the multi-layered intricacies of an individual's life and is too narrow a lens for the creation of comprehensive treatment planning.

The history of purely biological explanations for complex psychiatric conditions has often fallen short of being complete. Proponents of biological "cures" touted practices such as ice baths, insulin shock therapy, pre-frontal lobotomies, removal of teeth, and aberrant applications of ECT in earlier eras of psychiatric treatment (Caruso & Sheehan, 2017). Any fair examination of the attempted cures in retrospect would conclude they caused as much harm as good. More modern versions of this narrative, such as Dr. Peter D. Kramer's (1994) suggestion in "Listening to Prozac" that enough serotonin in the brain sufficient to cure to everything from depression to borderline personality, falls short of the more complex realities of the lives of patients. Although there are likely elements of the biological model which accurately represent aspects of a condition, the model has not proven as effective in healing individuals as the original proponents claimed (Ross & Pam, 1995). We suggest that the limitations of the biomedical model in psychiatry simply cannot account for all levels of the experience of the individual. Our aim is not to refute the biological model, as the biology is one element within the richer description available in the bio-psycho-social-spiritual model; but rather to assert that the biomedical model is necessarily incomplete in comparison to the larger model. This incompleteness then reduces therapeutic understanding and therapeutic choice.

As many clinicians move philosophically towards biomedicalism, the risk that psychiatry may become a subsidiary of neurology becomes a major concern. One solution to this identity diffusion is to advocate for a higher value of physician-delivered bio-psycho-social-spiritual assessment and treatment. Re-focusing our field upon the rich bio-psycho-social-spiritual model over a purely biomedical model would redefine the scope of our field for future generations of psychiatrists and patients.

Philosopher of science, Sir Karl Popper, noted that the basic assumptions of scientific models must be reexamined over time and modified to match reality (Popper, K. R., 1959). We propose that psychiatry is at such a juncture requiring self-examination (Ross & Pam, 1995). The increasingly common standard of brief "medication check" visits is an implicit and insidious confirmation demonstrating support of a narrow biomedical view. This is positively reinforced by an insurance industry focused on productivity and profit rather than on patient care. As substantial subgroups within psychiatry appear to move more towards simple psychopharmacology in daily practice, what will distinguish psychiatry from care provided by psychiatric nurse practitioners and physician assistants who also prescribe medications at a lower cost? In terms of patient

care, what is being lost as the larger understanding shrinks into biomedicalism? How does the loss of depth and meaning affect the understanding of an individual? What tools are lost to the clinician, when the scope of interventions shrinks to the purely pharmacological?

To explore these questions and argue for a more inclusive model of psychiatry, we will examine how we make models of the world and what the two prominent models suggest about psychiatric care.

Models of the World

Immanuel Kant lamented in his book, “Critique of Pure Reason,” that it is impossible to know anything “in and of itself” (Kant, I., 2003). Rather, we are trapped within ourselves, looking out at objects in the world that can be measured but not truly known (Kant, I., 2003). His reference leads to the conclusion that we cannot understand the complexity of the world as a whole, and therefore we must simplify our observations by creating models which are simpler than the complexity of the world.

A good model simplifies enough to reasonably describe and potentially predict but will always lack completeness (Korzybski, A., 1941). The simplification of any observed phenomena, including a patient or their symptoms, requires the breakdown of the whole into a simplified model in order to make sense of the larger information set (Lezotte, D. & Scheinok, P.A., 1981). One simplification of this nature is a diagnosis based upon an agreed set of symptoms, such as articulated in the Diagnostic and Statistical Manual (DSM), published by the American Psychiatric Association. However, no model, irrespective of how complete, will approach the complexity of life. If the model was as complex as life, it would no longer simplify the world enough to be useful. Alfred Korzybski (1941) created the field of General Semantics on this observation. When describing the concept of models, Korzybski emphasized that a “map is not the territory it describes” (Korzybski, A., 1941). All of the descriptions, diagnoses, and systems of treatment within psychiatry [and mental health more generally] are models, including the Diagnostic and Statistical Manual.

Use of the diagnostic criteria sets is an example of how psychiatry has created an imperfect framework in classifying individual conditions, leading to a cookbook-like set of prescriptions and interventions. However, no two individual patients who fulfill a diagnostic criteria set for Major Depressive Disorder from the DSM are identical, nor do they necessarily respond to the same treatment. For individual patients, the map of options must be far more expansive. Treatment could include psychopharmacological interventions for one individual but for another, the possibilities could include interventions such as cognitive behavioral therapy, EMDR (eye movement desensitization and reprocessing) therapy for trauma, changing social environments, exercise, or contemplative practice. The simplification provided by the diagnostic model allows for general assumptions and communication between providers, but specific interventions require more attention to individual patient needs.

Mathematician Kurt Gödel discovered a logical proof that no model has the capacity to be both complete and consistent (Nagel et al., 2008). Gödel's incompleteness theorem proves that there exists no possible set of rules and no set of modeling conditions that can correctly and completely identify all truths within any system (Nagel et al., 2008). Hoffstader and Nagel opine his work demonstrated the "chasm between the true and the provable" (Nagel et al., 2008). Gödel's work in formal logic is another demonstration that models cannot completely represent that which they are modeling, quite in congruence with the observation of Kant and Korzybski.

An example of complexity in models is evident in computer-generated games. Pong, for instance, was the first computer game that represented table tennis: a simple element resembling a two-dimensional ball clicked between opposite ends of the television screen. Although revolutionary at the time, its simplistic rendering has made it an historical amusement. Newer technology has allowed for simulations that model photorealism for roleplaying games and training for pilots in flight simulators. Modern simulators are now being tested in psychiatry through means of virtual reality systems for the treatment of phobias and PTSD with positive results (Kothgassner O.D. et al., 2019) (Reger, G.M. et al., 2016). The usefulness of these systems is in the detail and complexity they bring to the experience of the patient working through past trauma. The simplicity of Pong would not suffice for effective treatment.

We would argue that the biomedical approach to modeling human experience is roughly equivalent to Pong in completeness of modeling, whereas the bio-psycho-social-spiritual model of assessing human experience is more closely aligned to the completeness of a virtual reality experience. Why then, is the field of psychiatry so engaged in focusing on models of individuals that are metaphorical equivalents of Pong?

This idea is demonstrated in Figures 1 and 2. Note, in Figure 1, biomedicalism is the only element of explanation for what is a substantially larger field of information. From within the model of biomedicalism, it becomes necessary for the biomedicalist to conclude they are accurately describing the patient and the psychopathology with a degree of completeness not actually possible. This is Pong in action. The elements of the bio-psycho-social-spiritual model, as noted in Figure 2, also do not contain the entirety of detail about the patient or the psychopathology. Nevertheless, by logical necessity, it at least describes a larger cross section of reality than the biomedical perspective, making it a more complete and, thereby, more accurate model of experience on that basis.

As a concrete example, a quick overview of the model of dreaming is instructive. From the dreamer's perspective, the dream appears and feels like a complex world full of interaction and potential meaning, which leads the dreamer to both report and describe dreams as a narrative sequence or story. Dream material may be associated with deeply complex emotional responses and ethical choices, or simple residue from the day. Clinically, as observed by all four authors, patients are often quite interested in what their dream might mean. From a biomedical model, the dream is considered a random firing of neurons or potentially a means of housekeeping neural connections (Crick, F., & Mitchison, G., 1983). This biomedical view cannot account for the experiential

observation that dreams follow narrative sequences for the dreamer and does not account for the possibility that meaning could be derived from exploring the dream content (Nir, Y & Tononi, G., 2009). A cognitive behavioral model of dreaming has not been fully articulated because the phenomenon of dreaming is thought to derive from a level of the mind that does not exist within cognitive theory (Freud, S., & Strachey, J., 1965). The psychodynamic model of the dream makes its exploration the “royal road” to making the unconscious conscious by exploring themes of emotions and meaning. With this example of various models of dreaming simplifying the larger reality of the dream experience, a clinician’s chosen model of understanding would influence how symptoms are interpreted and filtered in a therapeutic session, and even if the dream were discussed at all. The dream exists for the dreamer, however, irrespective of the clinician’s model of understanding dream phenomenon.

This brief examination of how models bring both simplicity and understanding requires focus into the way science uses its model of observed reality. Is the scientific model supportive of biomedicalism or is it supportive of the bio-psycho-social-spiritual model?

Models in Science

Science is a specific method of determining truth through defining models based on observable reality. Science employs a method, but the conclusions of science also develop a model of the world. Science creates models for the same purpose described above, to simplify a larger reality into easily accessible units. As the scientific model developed, three key ingredients evolved as the method of identifying truth: measurability, repeatability, and verifiability. Science began to apply this method of observation to determine interactions in the physical world, where it excelled in supporting incredible technological progress. This method of observation expanded to include the universe on a larger scale and subatomic events on a smaller scale.

Science is, therefore, a model that contains a process for assessing claims of truth within the physical world, specifically with repeatable observable phenomena. However, it is not a perfect means of defining what is real versus unreal. The danger of equating scientific models with reality is the loss of the ability to question the model's veracity. Each of the major scientific advances in the past two centuries has been discovered at the boundary of where existing scientific models could no longer fully explain observed phenomena (Kuhn, T., 2012).

Einstein, as an example, used an unexplainable observation related to photon release from dark objects to suggest photons could be particles rather than waves, which led to the foundations of quantum mechanics (Einstein, A., 2014). Looking back at many of the then counterintuitive discoveries in quantum mechanics, this suggestion now seems obvious. At the time, however, Newtonian physicists were unwilling to “believe” those findings despite better described physical observations; this type of paradigm change when new models are required to explain observable phenomenon is articulated by Kuhn (2012). With the benefit of time, it is clear the model of Newtonian mechanics was not

complete. The model Einstein created was more complex, and thereby more complete in its ability to predict the behavior of subatomic particles. Expanding models to higher levels of accuracy and completeness, rather than shrinking them to the metaphorical level of Pong, is the means by which understanding progresses.

While science is excellent at describing mechanisms and actions, certain aspects of existence are difficult for science to describe. For example, science does not model direct experience from the subjective standpoint of an individual, because such is not verifiable. Two individuals may observe the same sunrise, with one of them dismissing it as another morning and another describing it as a deeply mystical experience becoming life changing. This variance in personal experience is poorly explained by the biomedical model which would only describe the optic tracts passing through the occipital lobe to register the stimulus.

Similar limitations are observed in the study of psychotherapy. The focus on workbook versions of interventions makes them more standardized and are easier to examine than more spontaneous or intuitive therapeutic interventions. The studies ignore the intuitive insights, the “aha” experiences, that cause potential core changes in the individual’s experiences and worldview. Since these “aha” experiences are not predictable and may occur spontaneously during a therapeutic process, they cannot be directly studied.

The biomedical perspective's limitations are particularly highlighted in the field of child and adolescent psychiatry. To attempt to view a child's presentation of psychological symptoms in a vacuum ignores the reality that children live within systems. Bronfenbrenner's model of socio-ecological systems describes multiple layers of interactions, from micro- to macro-systems with early childhood development (Bronfenbrenner, U., 1981). No two children, even within the same household, likely experience the same events shaping their development. Yet, the biomedical model ignores this foundational perspective on early development and takes the view of the hammer - each individual is a nail and is to be viewed through the narrow lens of the hammer.

Science has historically been a down-up model in that it draws general conclusions from observable phenomena, but it stops short of assigning meaning. For example, it is unable to quantify aesthetic beauty that human beings experience. As an illustration, consider the measurement of the average sound frequency in a Bach Fugue, with no appreciation for the musicality, the theme, or the counterpoint. While science is friendly to the concepts of biomedicalism, within the complexity of a person and their symptoms, the parts missing from this description provide for a Pong level of modeling. An updated understanding of our world emerged as necessary in science in general and was introduced with the development of Systems Theory (Bateson, G., 1972). It was this advance that gave rise to the third phase of modeling in psychiatry: the bio-psycho-social-spiritual model.

Systems Theory

Over the course of scientific method from the seventeenth century forward, certain levels of phenomenon could be naturally observed or measured. However, there were intermediate steps between observable layers of causation that seemed less clear. The behavior and attributes of hydrogen and oxygen are reasonably known. Predicting that water could be the result of combining those two elements, however, is not possible based upon the physical characteristics of hydrogen and oxygen alone. The level of observation and qualities of a molecule follow a different rule set than that of the atoms alone.

Likewise, at the level of a nerve cell, there exist clear definable rules for predicting whether a cell is likely to fire or not (Sporns, O. et al., 2005). Large functioning neural nets in which hundreds of thousands of neurons fire in patterns can also be identified with brain imaging studies. (Sporns, O. et al., 2005). However, there is substantially less knowledge of the intermediate steps between an individual neuron's activity and a functional neural net activity due to ambiguity about how many neurons are required to make a neural net (Sporns, O. et al., 2005). The processes involved in changing a neural net size and connectivity are also unclear. Even less connection is identified between the activation of a particular neural net and the emotional state of the person at hand.

Gregory Bateson provided an answer to this observational problem within general science. The answer is termed "systems theory" and is articulated in his book, *Steps to an Ecology of Mind* (Bateson, G., 1972). Bateson described that each level of observable reality has a set of rules that science can study and often model effectively. For example, there is a distinct set of rules for subatomic particles, another set of rules for molecules, cells, organs, the bodily systems together, the psychology of how perception occurs, the social interactions around others, the planet, the solar system, the galaxy, etc (Bateson, G., 1972).

Within a level, cause and effect is often identifiable. However, between levels of observation, there is no simple cause-and-effect relationship. The levels of these systems are instead connected by correlation. A change in one level may correlate with change in the levels below and above it, but that change is not as reliable or predictable as changes within a layer of the system being studied. This allows for a semi-connected and semi-independent connection between the observable levels of existence without discounting the levels above and below (Bateson, G., 1972).

This notion of graded levels of reality can be described in Figure 3 as a simple layering effect or in Figure 4 as a set of interlacing boxes with the understanding that within each box is a reasonable level of scientific observation and understanding. However, jumping from one box to the next is not possible using the same scientific principles within a level (Bateson, G., 1972). This is congruent with Gödel's perspective that, within a single level of rule-set, not all information can be fully understood (Nagel et al., 2008). In essence, a higher order level is necessary to explain some of the

happenings within the lower levels. This model also requires that causation move in both directions: down up, and top down.

To date, Systems Theory has not been successfully challenged as lacking in truth or usefulness in scientific application. Systems Theory is the theoretical basis of the bio-psycho-social-spiritual model within psychiatry. Thus, it can be inferred that this more inclusive model is congruent with scientific observation which can be measured and observed, and which enhances the scientific model through correlation between layers, a key element missing in biomedicalism.

Bio-Psycho-Social-Spiritual Model

Systems theory provided a scientifically compatible answer to the two opposing movements within mid-twentieth century psychiatry: the psychodynamic and the biomedical. George Engel, in 1977, proposed the bio-psycho-social model as the best description of what was being observed in the field of psychiatry (Engel, G. L., 1977).

The bio-psycho-social-spiritual model is a direct outcome of systems theory. As such, it describes that each person functions on every level and that each symptom or disease state has some element from each of these levels (see Figure 2 above). As symptoms affect all levels, this model allows for potential interventions from each of these levels concurrently to gain greater leverage for treatment. If our only model is biomedicalism, the other layers lose importance, both in terms of diagnosis and treatment.

Meta-analyses of psychotherapy ranging through the mid-2000s statistically demonstrate wide effectiveness of many therapeutic techniques ranging from psychotherapy to psychopharmacology (Smith, M.L & Glass, G.V., 1977) . Cognitive-behavioral therapy is well studied and acknowledged to treat wide-ranging conditions from mood disorders to anxiety disorders and, in modified forms, eating disorders and borderline personality disorders (Miller, R.C. & Berman, J.S., 1983) (Hofmann, S.G et al., 2012). EMDR has thousands of studies to demonstrate efficacy in removing traumatic emotion from past memories. No psychotherapy is conceived of in a purely biomedical model; by the very nature of psychotherapy, treatment is typically explained using psychological models. If one were to look at symptoms from a purely biomedical perspective, there would be no purpose or benefit from any form of psychotherapy because biomedicalism demands bottom-up causation. Based on data showing efficacy of psychotherapy, this is deemed not to be the case. Each level within the bio-psycho-social-spiritual model affects the levels above and below it; the model allows for both bottom-up causation, which is friendly to biomedicalism, and a top-down causation, which is required in psychotherapy (Engel, G. L., 1977).

If we examine the functional MRI scans of the brain that demonstrate brain states rather than brain traits, there is ample evidence of changes in brain functioning as a result of taking antidepressant medications for the treatment of depression (Wessa, M. & Lois, G., 2015), changes in brain functioning when people respond to placebos (Wager, T.D. &

Atlas, L.Y., 2015), and changes in the brain when people have responded to any form of psychotherapy (Linden, D.E.J., 2006). Using imaging tools that helped validate portions of the biomedical hypothesis, the top-down causation in the latter two examples proves biomedicalism incomplete as a model. In the placebo studies, there is no biological causation from the substance itself. Thus, the change in brain functioning is associated with a belief that the pill caused a change, which then causes neuronal changes that in turn accelerate further biological change.

In the case of response to psychotherapy, the intervention level being introduced is that of a change in psychology, not a change primarily in biology. It is the change in psychological perspective that leads to changes in the connections within the neural net, ultimately leading to changes in biology. This effect is another direct refutation of biomedicalism. Biomedicalism's lack of ability to explain any of these observed effects supports its similarities to the incompleteness of the Pong model.

One model of biomedicalism within psychopharmacology is the biogenic amine hypothesis of depression and anxiety (Aguirell, S., 1981). In short, it explains that depression and/or anxiety are the result of relative lack of norepinephrine, serotonin, or dopamine at the level of the synapse (Aguirell, S., 1981). The medications used based upon this model have helped depressed patients for nearly half a century, which generally cause increases in the amount of one or more of the biogenic amines at the level of the synaptic cleft. However, the model does fail to describe exactly how down regulation of postsynaptic receptors "causes" a patient to feel less depressed. [This is an example of the inability of biomedicalism to explain the experience of any qualia at all, and is termed the "Big Problem of Consciousness" best articulated by David Chalmers (1996). It applies to basic perception, basic experience, and changes in neural functioning. He argues that there is no biological model which can account for the ability to experience anything in his seminal work on the topic]. The actual role of serotonin is less clear, as some studies do not confirm that actual reduction of serotonin in depression (Andrews, P.W, et al., 2015), but this discussion ranges beyond the purpose of this article.

The biogenic amine model has strengths and weaknesses, like any model of reality in that it simplifies. The problem begins when the biomedicalist creates the identity between the biogenic amine hypotheses and depression. At that instant they have confused what is a model [biogenic amine based causation] from its territory [the state or experience of depression]. Depression has aspects of experience in biology, psychology, social interaction, and spiritual elements that are uniquely different for each patient. To argue it is "only" biomedical ignores the larger complexity present. Equating any single model with the larger reality is akin to eating a menu rather than waiting for the food ordered from it. The menu is a modeling of the future food to come, but it is not the food.

Another danger in equating the model with reality is adding certainty to a model that may or may not stand the test of time. This may result in prevention of further scientific inquiry into possible other biological mechanisms using different biological substrates. Ketamine, as an alternative antidepressant, would not have been considered a

possible antidepressant based solely on the biogenic amine model. Ketamine is not a biogenic amine, thus it would not have been considered a likely useful antidepressant type medication based upon either structure or mechanism of action. Its history was of being used as an anesthetic which had some dissociative properties. The discovery of its unique qualities in treating depression was incidental, not planned based upon the biogenic amine hypothesis. It is now considered an effective antidepressant with a “unique” mechanism of action (Kraus, C. Et al. 2012).

For the purpose of helping to separate the model of a larger reality from that reality itself can be accomplished by a linguistic tool which automatically creates a degree of cognitive separation. The tool to remind reframe our observations to reflect the presence of a model by means of conceptualizing description using an “as if” form of statement, even when it is imagined the model is beyond reasonable question. The following are examples of such rephrasing: Depression contains a biological component “as if” there was a relative depletion of biogenic amines in the synapse. Depression contains cognitive elements “as if” one believes a negative cognitive schema of the world. Depression in some psychodynamic manner seems “as if” it acts as a psychological defense against rage. In the family system, depression in the family member is “as if” they are holding the emotions of the group. Depression for some people acts “as if” a fertile ground for creative thought and writing. Examples are endless, but by taking the one simple step back from identifying the condition as equal to the model, it protects the psychiatrist and the patient from identifying an incomplete model as the only operative element in a much larger reality.

Child and Adolescent Psychiatry and the Bio-Psycho-Social-Spiritual Model

Lev Vygotsky, a Russian psychologist, developed the theory of the ‘Zone of Proximal Development’ to describe the distance between what the child can accomplish on their own, and what they can accomplish with the support of a master of the topic (Rieber, R.W. et al., 1997). His theories of development differ from those of Piaget (pioneer of cognitive developmental theory) in that Vygotsky theorizes socio-cultural learning precedes cognitive development. In Vygotsky’s model, infants are born with the capacity for basic learning; all other development is influenced by internalization of language and cultural context. Thus, development cannot occur without consideration of the influences of culture and social context (Rieber, R.W. et al., 1997).

Similarly, Uri Bronfenbrenner’s (an American psychologist) developmental theories center around the influence of the ecological systems surrounding a child (Bronfenbrenner, U., 1981). He expands Bandura’s social learning theory to encompass the multiple layers of an individual’s ecology, and how those layers impact overall development (Bronfenbrenner, U., 1981). Bronfenbrenner’s model describes a bi-directional influence between the individual and five layers, or systems, surrounding the individual: the microsystem (family and school), mesosystem, exosystem (including extended family, government and school agencies, parents’ economic status), macrosystem (cultural attitudes and beliefs) and chronosystem (the impact of time over the course of development) (Bronfenbrenner, U., 1981).

Both Bronfenbrenner and Vygotsky's models of development take a departure from the purely biological theory (Bronfenbrenner, U., 1981). Their models can account for the differences seen in adopted twin studies, where two monozygotic or genetically same individuals can be adopted into and raised in different environments. The twin studies help shed light on the importance of non-biologic factors in one's overall development, including development of medical and psychiatric problems.

Children and adolescents are unique beings. Neurologically, their brains are growing and developing, creating and editing circuitry. Most importantly, children don't live independently. They are beholden to the layers of systems from their primary caregivers, to their schools, peers, and community, as described by both Bronfenbrenner and Vygotsky's developmental constructs (Bronfenbrenner, U., 1981). Given these factors, how can we apply a biomedical model in a reproducible fashion to youth who all experience completely different early developmental trajectories?

Seven Examples of Note

Example 1

Studies have established that if a monkey is removed from his role as dominant male within a clan and forced into a new clan where he becomes a subservient monkey, there are massive changes in the biochemistry associated in that male monkey (Mendonca-Furtado, O. et al., 2014). There are reductions in serotonin and serum testosterone as well as an increase in cortisol. These measured changes are not created by a primary change in biological functioning. The dramatic change in social structure affiliated with the loss of dominance is the social causation which then affects the biology of the monkey (Robbins, M.M. & Czekala, N.M., 1997). The natural "treatment" for this condition would be to return the monkey to a dominant status, which was associated with the biomarkers returning to baseline.

Were a similar circumstance to occur in a human patient, the biomedicalist could only suggest medications as a potential treatment modality to restore more effective functioning by means of altering neurotransmitters in the synapse. Biological treatment could, in fact potentially be an element of treatment for the human patient, but additionally the psychological and social elements associated with such a massive change in environment could not be ignored to reach optimal outcomes. And the associated trauma likely experienced as part of the losses involved could also require examination of that effect.

This is an unambiguous documented observation of biology changing as a result of social setting. The change cannot be reduced to a biomedical understanding arising primarily from neurotransmitter release as a particular etiology. An attempt to do so would distort the circumstance to make it unrecognizable. This is the error of attempting to use a simplistic Pong-based model when a more photorealistic model would provide more data relevant to an assessment and treatment plan.

Example 2

It has long been argued that meditative states of consciousness allow for the individual meditator to remain consciously aware as brainwave patterns begin to slow. For non-meditators, the experience of slower brain wave frequency tends to be limited to sleep.

Waking brain states typically are in the beta range when we go to work, perform logical activities, and make decisions. In early phases of meditative practice, they begin to drop into an alpha brainwave state, which seems to relate to a sense of wellbeing and relaxation leading to easier learning patterns (Lutz, A. et al., 2004). This initial brainwave state has been replicated by many scientific studies. If meditative practice continues, people can begin to experience spontaneous imagery and other experiences including inner dreamscapes and out-of-body experiences that are consistent with theta brainwave functioning. The deep formless meditative experience that is absent of content is consistent with individuals who have remained conscious at delta brainwaves (Braboszcz, C. et al., 2017).

In 2004 with the introduction of newer technology and selective brain scans of Tibetan monks practicing compassion-based meditation, an entirely new result was discovered. The monks demonstrated a specific pattern of gamma brainwaves, in excess of 40 Hertz, while in the midst of the meditation. This brainwave pattern had not been observed in any non-pathological state prior to this study. The study provided careful controls within the group and the only variable that accounted for the intensity and frequency of gamma brainwaves was the number of years the individual monk had engaged in meditative practice (Lutz, A. et al., 2004).

Furthermore, the monks were able to turn on and turn off the gamma brainwave patterns by entering or exiting the meditative state (Lutz, A. et al., 2004). This is a clear biologically measured example of the creation of novel brainwave patterns based on purposeful meditative practice. The meditative practice created a biological state of elevated gamma wave activity through long term practice effects. These data are not reducible to a biomedical model, even in theory, nor can a biomedical model explain what would lead a person to engage in meditative practice in order to eventually create a brainwave state unknown to the brain prior to decades of practice. These findings demonstrate a level of neuroplasticity that is also not explainable from a biomedical perspective. The biomedicalist would only have the cognitive set to view these spiritual experiences as a deviation from the norm. In this example, biomedicalism is not even as sophisticated as Pong as a model for reality as it would confuse profundity with pathology.

Example 3

Author GB attended the American College of Psychiatrists meeting in the winter of 2020 where the first day of the conference was focused upon psychedelic-enhanced psychotherapy research. Stan Grof (1985) had applied research protocols in the 1960s using psychedelic substances, psychotherapy focusing on processing experiences as they occurred, and then following up with the patients to discover that many of their traumatic

experiences had been resolved in a manner not consistent with traditional psychotherapeutic processes. Grof described an entire bio-psycho-social-spiritual model for the transformations he observed in psychedelic-assisted psychotherapy prior to its being outlawed in the late 1960s (Grof S., 1985).

The researchers who presented at the American College of Psychiatrists (nearly fifty years post Grof's work) described the chemical structures of the psychedelic substances, the half-life, the interactions in the brain, and acknowledged that they did not sit with the patient throughout any of the transformative experience as therapists were assigned to that role. They reported on the statistical positive outcomes, the resolution of symptoms, but nothing on the process.

There is no current theoretical model that would allow a psychedelic substance to cure depression or any other condition as rapidly as it has occurred in research protocols. Thus, the curative experience may very well occur at a level beyond the biological. Looking only at the biochemistry of a psychedelic substance is mismatching in the bio-psycho-social-spiritual model, the likely catalyst for change with the causation for change. It is almost as radical an error as eating the menu rather than the food.

The psychedelic substance creates a change in perception and consciousness, and that observation and interaction at the psychological level introduces changes in symptoms, beyond the fact that a psychedelic substance was introduced. Grof (1985) discovered that he could support similar changes for patients with the use of certain breathing practices from yogic traditions. He incorporated these breathing practices in his therapeutic model of Holotropic Breathwork. He never confused the biology of breathing techniques (and associated changes in blood and brain chemistry) with the psychological transformation; he realized that the breathing acted as a catalyst in the same manner that psychedelic substances do.

Example 4

Imagine you are a 14-year-old. You are at the cusp of high school, and you play on the softball team. It is March 2020. In an instant, school is closed due to a pandemic. You can no longer practice or play with your team. You have gone from daily interactions with your friends in and after school to a life confined to your bedroom and laptop. Instead of normal peer conversations, you have to 'tune in' to Zoom sessions, where your teacher mutes you and your classmates. On top of all of this, your mom lost her job in the hospitality industry, and dad is nowhere to be seen, it seems. You start to become irritable and withdrawn, and you wonder what life holds. This was not the high school experience you expected. You become snappier with your parents, isolate yourself in your room, stop taking care of yourself as diligently as you did in the past, because 'who cares.' Then one day, Mom becomes concerned. She takes you to see a psychiatrist and tells the psychiatrist that you've become more irritable and isolated. You have stopped showering daily, withdrawn from other self-care activities, and rarely engage with the family. A diagnosis of depression is made, and a pill is prescribed.

Our medicalized view of symptom presentation fails the young 14-year-old in this scenario. From the 1000-foot view, it's obvious that the impact of COVID-19

restrictions have led to this adolescent's struggles. Unfortunately, our 'symptom checklists' and 'depression rating scales' fail to incorporate these real-world contextual nuances that are critical for understanding and addressing the struggles our adolescents face. Relying on these rating scales alone does an enormous disservice to our patients and our field of medicine by excluding the practice of absorbing the big picture. The entire family is likely to be struggling due to the overarching impact of a global pandemic on the family's life experience. Empathy, connection, and problem-solving real-world interventions is the key to improvement - not merely a pill.

Example 5

We summarize a case of two sisters, five years apart in age. The older of the two struggled with mild anxiety, for which psychotherapy was helpful. The younger of the two struggled with severe obsessive-compulsive disorder and required both psychotherapeutic and pharmacotherapeutic interventions. Why was the presentation more severe for the younger sibling?

Taking the purely biological model again, both have the same parents, both were products of healthy pregnancies with complete pre- and perinatal care. Both were breastfed, achieved developmental milestones on time and both had attentive caregivers. The girls were both born to married, professional parents who were hard-charging individuals with anxious/driven personalities. In 2008, our economy shifted and the US entered a recession. These parents lost their business as a result of the economic downturn, and that stressor (and the ensuing financial stresses) led to a divorce with plans to share custody of their girls. At this time, the older sibling was thirteen, and the younger one was eight.

It is LD's clinical interpretation that the impact of the social and life stresses, impacting the microsystem (the parents), the mesosystem (the neighborhood, the change in school from private to public), the exosystem and the overall macrosystem (with constant stories of economic crash in the news) together contributed to the evolution of the younger sibling's worsened expression of anxiety and development of obsessive-compulsive disorder. In the land of child and adolescent psychiatry, a focus on biology alone cannot account for the layered intricacies of an individual's life and certainly is too narrow a lens for the creation of treatment planning. The point of the description is that with a barrage of stressors and triggers it is nearly impossible to model the full experience of this child by means of a biomedical explanation only.

Example 6

Consider two young boys referred to the clinic for treatment of ADHD. Both are nine years of age and meet the DSM-5 criteria for ADHD. However, a more in-depth assessment of the two boys reveals two very different humans. The first, is the product of a full term pregnancy, born to supportive parents. He has no siblings, has been raised in a moderately well-to-do family, and has not been exposed to adverse childhood events. His dad has struggled with attention, focus, and organization throughout his life, and has parlayed his difficulties into a creative career that does not demand structure. The other boy is a product of a pregnancy which involved in-utero exposure to nicotine. He was

born to a single mom and raised in a chaotic environment with frequent moves, inconsistent caregivers, and economic distress. When he was a toddler, his mom met a man, moved in, and had two more children. This man disliked our patient and became physically abusive towards the young boy. Eventually the boy was taken into protective custody, and at the time of our assessment, was living with a distant relative.

Two boys, presenting with the same symptoms that meet criteria for ADHD according to the DSM 5. If we trust the DSM and biological model of assessment, treatment with medications including psychostimulants would be the easily formulated plan. However, taking their individual histories into account, it becomes necessary to take a deeper system-focused view of understanding the patients as distinctly different humans who arrived at these behavioral difficulties through distinctly different pathways. As such, they require individualized interventions to address their psychopathology.

Example 7

Consider a 28-year-old male who presented to the VA outpatient mental health clinic with depression and anxiety. His psychotherapist advised him to consider medications after a long history of failed trials and fired providers. He had been out of work and largely inactive for the past ten years. He reported various medical issues during this time, all of which shared a common symptom complex of debilitating fatigue, but the cause of which remained mysteriously elusive.

He agreed to start medication and improved to the point of deciding to return to school full-time. Within the first month of starting school however, he experienced several alarming physical symptoms, prompting visits to the emergency room, which again ended in workups that lacked any readily identifiable physical cause. He then dropped out of school, reporting intolerable anxiety. He saw no connection between his ambitions, anxiety, and physical symptoms, and instead focused on his continued frustration with the inadequacy of the medical profession and what he perceived to be their failure to identify an accurate diagnosis.

Grappling with an entanglement of symptoms that became more and more disabling, with careful questioning he was able for the first time to construct a connection between his anxiety and the frequency of emergency room visits. This new realization opened the conceptual door to explore earlier life experiences. Previously, he had rejected such introspection, dismissing it as “complaining” and written off as “irrelevant” because, as he put it, “I knew what I signed up for.” He then identified the seminal moment in boot camp, where after being injured one day, he was allowed to sit out the remaining training exercises. Prior to this injury he had been a standout and model recruit. He recalled anxious doubt about his ability to sustain such efforts long-term. Through continued collaborative dialogue he arrived at a point of radical breakthrough. He realized that somatic symptoms functioned as a form of self-preservation in response to stress. While this unconscious pattern served to protect him in the military, he realized it later robbed him of the last decade of his life.

Without the radical change in meaning and understanding for this individual, what could have moved him beyond his stuck point of over a decade? Meaning was the controlling force of his predicament and his key to moving towards greater degrees of freedom. A maladaptive unconscious pattern in self-preservation hastily assembled in a time of unprecedented stress had lasting consequences well beyond usefulness. A biomedical viewpoint could not have attended to the interplay between emotional and physical symptoms and their personal meaning. But beyond the bio-psycho-social-spiritual conceptualization, and in fact to Engel's further point of emphasis in his original work: the therapeutic alliance operates as the primary agent of change, a conclusion shared with Michael Balint, M.D., whose creation of Balint Groups for physicians focused on the therapeutic alliance as the mechanism of change (Bonomi, C. 2003).

The examples above describe the limitations of the biomedical model within psychiatry in its attempts to describe and categorize symptoms. There exist countless other examples. The distortion at the level of diagnosis is then only magnified when discussing potential treatments. From the modeling perspective, however, psychiatry must become aware that, should we collectively choose to devolve into biomedicalism, our model accuracy will develop the resolution of Pong in terms of the whole person. Then, in doing so, we would lose the richness of our patient's experiences which could be far better approached with a more diverse modeling system.

Conclusion

Although psychiatry has been moving towards a biomedical approach in the description of humans and psychopathology, this model is by necessity a less complete and thereby less accurate model than the bio-psycho-social-spiritual model designed from elements of systems theory. The practice models and insurance reimbursement models have influenced this change in perspective without the necessary self-reflection of the field. The initial consideration of biomedical explanations to reduce stigma appears to have unintentionally caused as many problems as it may have solved, the loss of meaning being a primary casualty in the process. Paradoxically, this loss of stigma seems to also disempower the very people it was meant to help; placing cures in the realm of pills, absent deeper understanding of the pathology and individuality, is actually removing personal power and choice from the patient. In contrast, psychotherapy, in theory, at least focuses on empowering the individual seeking help as one of its values.

The primary strength of the bio-psycho-social-spiritual model is that it allows for bottom-up causation to explain how pharmacological interventions may change psychological, social, and spiritual perspectives. The model also allows for top-down causation through spiritual, social, and psychological interventions. Bottom-up causation alone as an explanatory model has failed in general philosophy and logic. Given this failure at more general levels, it is unlikely to succeed in medicine or psychiatry in creating accurate and relatively complete models.

There has been no scientific rejection of the systems theory upon which the bio-psycho-social-spiritual model was developed, and there has been no reasonable refutation

of the bio-psycho-social-spiritual model to date. The model is indeed a true hallmark of individualized medicine, allowing for deeper understanding and treatment of psychopathology. It is a model that sustains a future for our field. Thus, it is these authors' opinions that returning to the larger, more inclusive model is the only means of restoring psychiatry to its full promise of wholeness in the service of understanding and helping our patients.



Figure 1: Biomedicalism

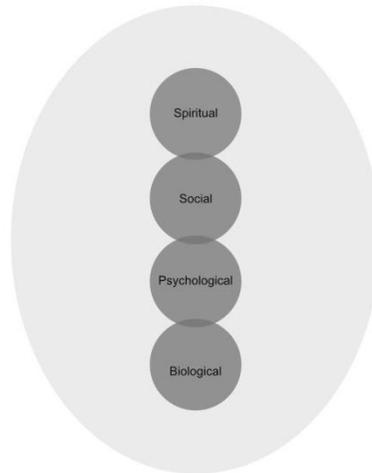


Figure 2: BioPsychoSocialSpiritual

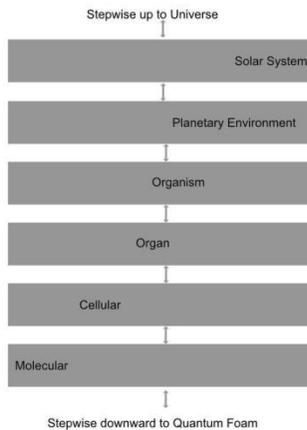


Figure 3: Layers of System's Theory

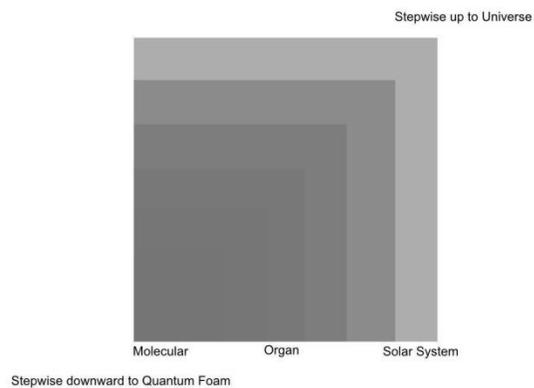


Figure 4: Nested Boxes System's Theory

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