

Towards Embracing a Complex Systems Model

The chiropractic academy should recognize the multivariable nature of the human experience. We should recognize the current scientific understanding of the interconnections between the mind, body and society. However, we should not embrace the biopsychosocial model. The biopsychosocial model, as currently applied, does not best encompass the needs of the chiropractic academy. It fails to fully meet our needs in two ways. First, it focuses on clinical, and therefore non-academic, aspects of health care. Second, it focuses on the soft science of “wellness,” at the detriment of the current research on health and healing. The chiropractic academy needs a model of the human experience that recognizes healing and disease are expressed on many levels simultaneously. As such, we should employ a Complex Systems model based on General Systems Theory. We should recognize that health is a complex and dynamic system in which the cells, the organs, the personality and the society interact with each other. The chiropractic academy should adopt a Complex Systems model rather than the biopsychosocial model.

When examining the question of the chiropractic academy and the biopsychosocial model (BPSM), a clear definition of the chiropractic academy is as important as a clear definition of the BPSM. In educational settings, a distinction is made between academic and clinical. Clinical work focuses on patient care, methods of delivery and doctor-patient interactions. Clinical

ventures focus on the hands-on, practice of health care. Work in these areas is done in a clinic, thus the name clinical.

Clinical care is separate and distinct from the academic pursuits of the same health care fields. Academic pursuits focus on disciplines such as physiology, pathology and epidemiology. Work is done in a classroom, in a laboratory and in a library. And so the question of the chiropractic academy embracing the BPSM is separate from the question of chiropractic practitioners embracing the model. There is a relationship between the two; and they do not exist in isolation. However, there is a fundamental difference. When a chiropractor is acting as an academic, he examines a disease in terms of biology, physiology and psychology. The very same chiropractor, when acting as a clinician, will consider issues of patient communication, managing expectations and illness beliefs. The distinction between the two is necessary and important. As dictated by the essay topic, this paper will examine the biopsychosocial model within the confines of academic chiropractic.

The biopsychosocial model was formulated by George Engel in his seminal 1977 article in *Science* (1). The biopsychosocial model was Engel's attempt to reunite psychiatry with medicine. It was his effort to "broaden the approach to disease without sacrificing the enormous advantages of the biomedical approach" (Engel 131). However, the biopsychosocial model has evolved into something somewhat different. By many accounts, the biopsychosocial model is now a clinical model (2-5). It speaks not to physiology or pathology, but to how a physician interacts with a patient. Clinical care models

focus on question asking, time spent listening, modes of presenting information, empathy and cultural sensitivity (6). In this context, the BPSM is contrasted with a biomedical or a patient-centered communication style. The “biopsychosocially oriented clinical practice” model focuses on assuring that the patient is being understood and heard¹. It focuses on creating trust and openness. Its success or failure as a model depends on which style of communication a patient prefers and which results in patient compliance. It does not examine the ways disease is expressed in anatomy, physiology, psychology and society. As a model for patient interaction, the BPSM may be valuable. However, clinical models are not the purview of academia. As such, the BPSM should not be embraced by the chiropractic academy.

A frequent argument against the BPSM is that it is not hard science. The critics claim that the BPSM it is based on illusory and fleeting experiences. They point to the laboratory research of the academic biomedical model. And say that the BPSM, with its focus on trust, openness and understanding cannot offer equally rigorous science. Much of this criticism comes from a misunderstanding between the research-based academic BPSM model and the biopsychosocially oriented clinical practice model. This view of the BPSM arises when doctors apply the clinical model of care to the academic analysis of pathology and disease. The study of pathology does not, nor should it, include questions about how best to communicate with a patient. Take for example, diabetes mellitus. Research indicates a relationship between women’s sense of control in their lives

¹ The term, “biopsychosocially oriented clinical practice,” was introduced by Borrell-Carrio et al on page 579 of the article *The biopsychosocial model 25 years later: principles, practice, and scientific inquiry*.

and their control over glucose levels (7, 8). In studying the pathology of diabetes, it is relevant that psychological control plays a role in the disease. However, it is not relevant to examine the best way to address issues of control with a patient. That is a clinical issue, not an academic one. Applying the clinical aspects of the BPSM to academic study is out of place and inappropriate. Clinical models are out of place in an academic setting. That is not unique to the BPSM. However, the biopsychosocially oriented clinical practice model is inserted into academic discussions more often than other clinical models. And the model suffers greatly for these insertions.

The second problem with the BPSM is that it often employs a vague model of wellness and fails to recognize the significant research on the nature of disease (4). Take for example, low back pain and neck pain. Both low back pain and neck pain express on a tissue level with infiltration of fat into the musculature. In the low back it is fat in the piriformis muscle (9, 10). In the neck it is fat in the rectus capitus posterior major and minor muscles (11). However, in the neck, the superficial neck musculature is recruited to compensate for weakened deep cervical muscles. In contrast, in the low back supportive low back musculature displays a reduced likelihood of activity (12, 13). On a physiological level, spine pain is not all the same.

These subtle differences are equally present on a psychological and social level. Low back pain occurs on a psychological level as a dissatisfaction with one's job (14). Yet, job dissatisfaction does not contribute to neck pain (15). Socially, there is a much stronger correlation between decreased social support

at work and neck pain than decreased social support and low back pain (16). Low back pain and neck pain express themselves in very specific ways in the biological, emotional and societal spheres. The BPSM rarely speaks in such analytical terms about the nature of disease. Adherents to the model tend to treat the model as a soft science. They speak in undefined and vague terms of wholeness and wellness. These terms do not do justice to the complexity or the specificity of the human experience of disease. The chiropractic academy should not embrace the BPSM because often it does not incorporate the current body of research.

The BPSM arose out of a recognized need to alter the landscape of the biomedical model. However, the model evolved into a clinical model, rather than an academic one. Furthermore, it has been co-opted by those who speak of wellness as a vague and general term. It is not often associated with the rigorous research that is unlocking the interplay between the mind, body and society. The chiropractic academy needs to acknowledge that the person is a complex system. Current research supports this belief. The academy should view health as a unified experience that expresses itself on a variety of micro and macro levels, all of which can be understood and investigated thoroughly. The BPSM may not be the best vehicle by which to do this.

There is a better vehicle by which to understand the interrelationship between physical, emotional and sociological expressions of health. That vehicle is the General Systems Theory. Engel derived the BPSM from General Systems Theory (1, 3, 5). General Systems Theory is a method of understanding complex

systems. The term “General” applies to the model referring to systems in general, rather than any one specific system. As chiropractors, we are speaking specifically of the complex system that is humanity. Therefore, the term Complex System is a more appropriate term.

In his text General System Theory, Ludwig von Bertalanffy stated the intention of the theory was to examine fields “that are concerned with what is somewhat vaguely termed 'wholeness', i.e. phenomena not resolvable into local events” (17). As discussed earlier, health care models use terms like holistic very vaguely. Systems theory aims to give structure to these otherwise vague and imprecise notions of holistic care. The phenomena of human life, disease and illness cannot be reduced, and resolved, into specific local events. Low back pain is not an isolated event that can be traced to a single injury (18-20). Diabetes is not a disease that remains in pancreas. The human expression and experience of disease is far more complex. General Systems Theory attempts to allow for rigorous analysis of systems without suffering the costs of reductionism.

According to Bertalanffy, “A system may be defined as a set of elements standing in interrelation among themselves and with environment” (17). This definition can certainly be applied to the human body standing in interrelation with the human mind and in interrelation with society. Furthermore, Bertalanffy states:

“Living systems are not closed systems in true equilibrium but open systems in a steady state. An open system is defined as a system in exchange of matter with its environment, presenting

import and export, building-up and breaking-down of its material components” (17).

The experience of seeking the steady state of homeostasis, and exchanging with the world, is an excellent description of the human experience of health.

Depression is a prime example of a set of elements in an open system standing in interrelation. Depression is the biology of decreased serotonin uptake (21). However, it is interrelated with the psychology of decreased mood and the social experience of isolation. One cannot isolate of the biological event of depression from the emotional or social one. The event of depression impacts the entire system. It may begin in one patient as a physiological decrease in serotonin uptake. In another patient it may begin with the loss of a loved one. However, the circular nature, or the “open state,” of the system means the three aspects quickly build on each other. The event of depression arises out of the relationship between the mind, body and society. The biological system will exchange with the emotional and the social. The biological experience will be exported as an emotional experience. In an open system, isolating the parts is as useless as attempting to isolate the biological experience of depression from the sociological one. A Complex System model, based on General Systems Theory, should be adopted by the chiropractic academy.

The BPSM is not the best model for the academy. It is too often confused with the biopsychosocially oriented clinical practice model. And it has adopted the vague concept of wellness at the detriment of the rigorous science available on the specificity of emotional and societal factors on disease. The BPSM could

rebound from these failings. However, a Complex Systems model would serve us better. General Systems Theory connects the chiropractic academy with rigorous scientists and academics on the front line of the movement away from reductionism. General Systems Theory is not burdened by the past biomedical thinking of biology as separate from psychology and separate from society. General Systems Theory recognizes that the interrelatedness of systems cannot, and should not, be reduced. And it recognizes the need for rigorous investigation, serious research and quantitative analysis of their subjects. The chiropractic academy should embrace a Complex Systems model.

Word count: 1,940

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