

Demanding excellence in the 21st century¹

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Chiropractic theory and development is briefly explored and compared with contemporary medical theory. Theoretical and philosophical assumptions in chiropractic, this writer predicts, may be challenged and altered in the 21st century. Technological advances and a slow trend in chiropractic toward a more scientific basis may result in improved theory, practice, and utilization in the next century. In order for such advances to occur, however, the profession must change some deeply rooted attitudes regarding scientific research and practice, adopt new attitudes regarding the need for clinical research, and ultimately become consumers of chiropractic research and of chiropractic techniques that have been subject to research.

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KEY WORDS: chiropractic philosophy, clinical research, manipulation.

"Should we ideally all be sympathectomized at birth, or at least preoperatively?" writes a medical editorialist.¹ He proceeds to support such a view by pointing out that patients treated with beta-adrenergic blockers, as premedication to surgery, have a significantly reduced incidence of brief ischemic episodes if they are even mildly hypertensive. Support for sympathectomy at birth, he continues, comes from observations that in addition to less myocardial ischemia, less hemodynamic alterations, and less arthritis, one might experience less inflammatory bowel disease, and improved small vessel flow allowing less arteriolar and arterial thromboses in the extremities. Although the medical writer is apparently more interested in the role of sympathectomy as a preparation for surgery, he does admit that his ques-

L'article explore brièvement la théorie et le développement de la chiropratique et les compare à la théorie médicale contemporaine. L'auteur prédit que les hypothèses théoriques et philosophiques en chiropratique pourraient être remises en question et modifiées au cours du XXI^e siècle. Nous pourrions alors être témoins de progrès dans la théorie, la pratique et l'utilisation de la chiropratique, grâce aux progrès technologiques et aux tendances progressives vers une base plus scientifique de cette discipline. Pour y parvenir, il faudra cependant que la profession modifie des attitudes profondément ancrées, vis-à-vis de la recherche et de la pratique scientifiques et qu'elle en adopte de nouvelles envers le besoin de recherche clinique et, en fin de compte, qu'elle fasse siennes la recherche et les techniques chiropratiques actuelles.

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MOTS CLÉS: philosophie de la chiropratique, recherche clinique, manipulation.

tion regarding sympathectomy at birth is really "... not so tongue in cheek. . . ."

Is there a difference between chiropractic and medical theory nearly 100 years after the inception of chiropractic? Is there a need for chiropractic theory? What changes have occurred in chiropractic theory over the past century? Should we ideally all, as the medical writer proposes, be sympathectomized at birth in the 21st century? Or should we all get adjustments instead? Can we demand anything less than excellence in chiropractic clinical research, if we are in pursuit of valid chiropractic theory in the 21st century? What will the future hold for chiropractic research and practice? This paper will attempt to address these and other issues, and provide some strategies for the improvement of attitudes about chiropractic research, which ultimately will affect the development of chiropractic research and theory.

Development of chiropractic theory

Sir William Gowers, a prominent physician at the London Hospital stated: "function depends upon the release of force - nerve force."² Although it sounds like he may have copied that statement from one of the Palmers' early writings, in fact he wrote that in 1894, the year before the inception of chiropractic.

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D.D. Palmer appears to have been strongly influenced by 19th century medical thought, as was A.T. Still, who earlier had founded osteopathy.^{3,4} Palmer admitted that he was not the first to utilize manipulation for the correction of human ailments, but he did claim to be the first to utilize the spinous and transverse processes to "rack" the bones back to their normal juxtaposition.⁵

A 'bone-out-of-place' mentality dominated the early chiropractic experience. With a paradigm that was at odds with the germ theory, chiropractic faced an uphill struggle for licensure in the various states and provinces, which proved difficult for our pioneers, who responded by digging in for the fight. Unfortunately, rather than the profession examining itself or accepting the criticisms of the government, as did organized medicine after the Flexner Report, chiropractic appears to have allowed dogma to replace logic and theosophy to replace theory in its development.^{6,7} For example B.J. Palmer stated:

"Man has 100 percent of matter and 100 percent of current. Can a germ, with its 100 percent of matter and 50 percent of current, change man?"

Can the inferior change the superior? If you say yes, then man can change his God. The ratio is proportionate. Your admission says that inferiors change superiors."⁸

No one would dispute the instrumental role the Palmers played in the early development of chiropractic. Their continuing reliance on almost religious adherence to dogma, however, did prevent the profession from establishing an organized, systematic approach to scientific education and research, early on in its development.

Modern clinical research in chiropractic is just beginning to create a base of knowledge that was previously lacking. Furthermore, there is now enough research in the profession that its largest annual research conference, the International Conference of Spinal Manipulation, is becoming discretionary in presenting research. In 1990 only 75 of approximately 124 abstracts were accepted for presentation at the ICSM. Furthermore, the Foundation for Chiropractic Education and Research now funds more than \$400,000 worth of research annually. This is a giant leap for a profession that 30 years ago was essentially unwilling to fund or participate in legitimate research. With the exception of a few outstanding individuals like C.O. Watkins, Henry J. Gillet, Fred Illi, Joseph Janse, the fellows of the College of Chiropractic Science in Canada, and others in the profession who called for legitimate scientific research, the support for research was almost non-existent. Today this is truly changing, and the profession appears to have accepted the necessity for research production.

Medical theory today

In practice, the medical doctor prescribes medications, the surgeon operates, the physiotherapist stretches or strengthens muscles, and the chiropractor manipulates the spine. It would

appear that we are beginning to agree in theory at least somewhat. Germ theory had to be revised to accommodate stress theory.⁹ Bone-out-of-place chiropractic theory had to shift somewhat to allow room for fixation theory.¹⁰ Yet practice often is ahead of, or behind, the application of science in a healing profession.

Early in this century, traditional medical theory held that germs played a supreme role in health and disease. While the work of Selye⁹ did much to broaden that perspective to include host resistance and adaptive mechanisms, medical theorists today continue to downplay a role for the nervous system in health and disease, much as chiropractors have tried to downplay a role for germs. When Arthur C. Guyton wrote a paper summarizing his lifetime of work entitled, "Hypertension - A Neural Disease?" for example, it was listed under the heading: "Controversies in Neurology".¹¹ Despite overwhelming evidence of sympathetic interactions and direct feedback loops with the immune system from a number of different researchers,¹² traditional medical thought again neglects to include a significant, or indeed any role, for the nervous system.¹³ On this, Antonio Coutinho writes:

"Thus, while we can today manipulate genes, engineer molecules and control cellular behaviors, we are quite disarmed when trying to manipulate the system. Surprisingly, perhaps, we continue to treat allergy as we did before IgE was known, we have no specific therapy for autoimmune diseases, we are unable to tolerize the recipient of an organ to the tissues of the donor, and we seem incompetent to derive vaccines to protect the larger part of the world population from parasite infections."¹³

Thus when medical research suggests a sympathetic role in health and disease, it appears to be relegated to a subject of secondary importance. It would appear that in practice too, while medical researchers have clearly an understanding of the importance of stress in disease processes, this only translates clinically to increasing prescriptions for beta-blockers.

Chiropractic theory today and tomorrow

Currently, chiropractic theory evolves from the concept that structure affects function, and that the spine primarily affects the nervous system in a significant way. Moreover, two concepts, vertebral subluxation complex (VSC) and segmental dysfunction (SDF) have a central role in chiropractic theory.¹⁰ Around these axioms, that are common to all chiropractic hypotheses, we have secondary effects including vertebralbasilar arterial insufficiency, myelopathy, neuropathy, and segmental facilitation. Other hypothesized effects include somatoautonomic, somatosomatic, and neurodystrophic phenomena.

Vertebral subluxation complex, roughly analogous to bone-out-of-place, has been questioned and no longer holds the status as the prominent hypothesis to explain the clinical effects of chiropractic. Indeed, although Leach¹⁴ and Owens and Leach¹⁵

have been able to provide initial evidence for a role of chiropractic in the correction of cervical hypolordosis, a distinct form of VSC, others have been troubled by a lack of agreement in finding or treating VSC utilizing radiographs and by other methods.^{16,17}

In contrast SDF, commonly referred to as fixation, spinal lesion or manipulable lesion, is now considered the most logical mechanism to explain the effects of chiropractic treatment in promoting improved spinal function.

Undoubtedly chiropractic theory will continue to undergo transformation as new technologies and advances permit more sensitive patient assessments. The 21st century will bring exciting advances to chiropractic research and practice, as the profession embraces scientific methods while continuing to ask why some patients improve while others do not. Technological breakthroughs will, this author predicts, occur in two primary ways. First, new as yet undeveloped technologies will permit more accurate patient assessments, including spinal structural and physiological measures relevant to chiropractic theory and practice. Second, enhancements and innovations in computer assessments will permit multiple diagnostic measures, including for example, simultaneous surface electromyography (EMG), electrodermal activity (EDA), and infrared scanning, that will more accurately document the spinal lesion.

Working definitions of the chiropractic hypotheses first developed by Janse and others, have been modified by this author.¹⁰ A brief discussion of the hypotheses follows, including some predictions for tomorrow:

Segmental dysfunction – Although reliability and validity studies to detect SDF have met with mixed results, this appears to be the primary lesion that chiropractors treat. There is good evidence that lessened joint play or motion, evidence of muscle spasm or hypertonicity, point tenderness and altered pressure threshold are evidence of the lesion. Research in the coming century will quantitatively and qualitatively describe the lesion clinically. Surface electromyography in static and dynamic exams, pressure threshold detection, as well as accurate motion detection are hopeful techniques for 21st century research and diagnosis.

Facilitation – Research in the coming century will hopefully determine at what point SDF causes facilitation, and to what degree. Osteopathic researchers have determined that SDF is associated with lowered skin resistance, aberrant sudomotor responses, and high vasomotor and sudomotor activity, owing to afferent bombardment of the dorsal horn setting up an area of permanently altered, or facilitated, neural activity.

Somatoautonomic reflexes – This author predicts that early anecdotal evidence for the effectiveness of chiropractic in treating a wide variety of stress syndrome disorders will be established through research of this hypothesis in the coming century. Now as yet undeveloped technologies will finally quantitatively and qualitatively reveal somatoautonomic activity

clinically. Direct measure of somatoautonomic activity coupled with accurate measure of SDF will finally explain the role for manipulation in the treatment of such diverse disorders as hyperactivity in children, hypertension in adults, colitis and a broad spectrum of other sympathetic syndromes, long after clinical studies have established the effectiveness of the treatment.

Subluxation – It can be predicted that 'bone-out-of-place', as we knew it, will vanish as a hypothesis in the 21st century. However, a refined approach in which VSC is defined as abnormal curvatures and radiographically demonstrable translations and motion lesions will survive. Research will determine which abnormal curvatures and motion lesions respond to chiropractic manipulation.

Nerve compression – This is probably a poorly chosen explanation for the clinical effects seen in the average chiropractic patient. The chiropractor generally faces pain syndromes and rarely is confronted with neurologic deficits that would herald true nerve compression. It is likely that technological advances will make a new class of computer assisted EMG equipment the ideal choice for the chiropractic office. Technological advances in thermography will provide the future chiropractor with the ability to combine the best of both diagnostic modalities. However, simple clinical and neurologic tests will still be the first diagnostic methods for determination of true nerve compression.

Cord compression – Myelopathy is clearly associated with subluxation. However, this too appears to be an unlikely mechanism to explain cases chiropractors typically treat. Continuing cooperation between chiropractors and physicians, and inclusion in chiropractic curricula of magnetic resonance imaging (MRI), and computerized axial tomography (CAT) interpretation, will ultimately lead to common usage of these modalities in chiropractic practice through referral. When myelopathy is presented to the chiropractic office, it will be more likely to be accurately diagnosed in the 21st century.

Vertebrobasilar arterial insufficiency – Improvements in sonography will ultimately lead to more accurate diagnosis and research of this lesion in the chiropractic setting. It is this author's prediction, based on private practice experience, that as many as one in five cases of post-traumatic cervicocranial symptomatology will be documented as having some element of this lesion in the 21st century.

Neurodystrophy – Advances in immune testing and enzyme research will lead to quick tests to confirm the level of one's immunologic competence in the coming century. In turn, this will permit chiropractic researchers to more readily assess the role of chiropractic in alleviating spinal stresses, and in increasing immunologic competence. It will be established that chiropractic is helpful in helping one overcome infectious disorders, but antibiotics and medications will continue to be the treatment

of choice. However, evidence will mount that regular chiropractic does indeed improve one's resistance to infectious diseases.

21st century chiropractic: demanding excellence

Several bold steps must occur for chiropractic to make strides toward increased utilization in the coming century. They basically hinge on one factor: developing an attitude of excellence. The individual steps include:

- a developing and maintaining high academic standards in all chiropractic institutions;
- b developing high goals and expectations for research production in the average chiropractor, who will in turn demand excellence in research of his chiropractic associations and academic institutions;
- c disseminating information gained by research to the average chiropractor, thereby developing a scientific base for patient care; and finally
- d marketing the new and improved 21st century chiropractic practice to the media and academics, who ultimately control public attitudes.

There are significant barriers to the development of such a scenario. Not the least of which is a gamut of attitudes within the profession that run counter to the development and application of scientific method to chiropractic practice and research.¹⁹ Of these attitudes, perhaps the most common theme that this author has heard is something like, "Chiropractic works – our patient's prove it everyday." There is an underlying assumption that research should be conducted primarily for public relations (PR) purposes. This view assumes that we already know which chiropractic techniques work best for which conditions. Which conditions and disorders respond best to chiropractic? What are the contraindications for chiropractic manipulation? At what point do so called, "limitations of matter", prevent chiropractic from being clinically effective? Certainly we are only now beginning to develop research that can answer these questions, and we must reject old attitudes that research is unnecessary, or is only for PR purposes, before we can begin to demand excellence in research as a profession.

What steps can we take to educate our colleagues? How can we develop a consensus of opinion that we need research to improve chiropractic practice, and not merely as a PR gimmick? How can we begin to demand excellence in the 21st century? The following are a few examples of steps that can be taken to reposition the thinking of the profession, improve the demand for excellence, and thereby create a more scientific 21st century chiropractic practice:

1 Talk frequently about chiropractic science. Leaders of the profession including association directors, presidents, academics, postgraduate instructors, and researchers must persistently take every opportunity to publicly support the need for a more scientific chiropractic, and consistently read and discuss new

chiropractic research findings. Discuss positive and negative research findings, flaws in research, and ways to improve research.

2 Increase research visibility. At the colleges, researcher of the year awards, bonuses and other perks to researchers who are truly productive and innovative could be implemented. Since colleges complain of limited funding for research, researchers who produce innovative trials with limited funding should receive special recognition. In each state or province, clinician of the year awards should be a high honor bestowed upon practitioners who have published case studies or research while in practice. In the past, we have made "chiropractor of the year" an honor to those who were politically active. Now we must honor those in our profession who would advance the fledgling science of chiropractic. These are the new chiropractic pioneers.

3 Dispel the myths regarding research. Some in our profession still feel threatened by research. We simply must use every means available through articles, media presentations, and one on one contacts to persuade our colleagues that research is the only viable guarantee that our profession will grow and prosper. For example, when a practitioner states that if we publish research then physiotherapists will see how effective chiropractic is and begin to practice it, point out that 18% of all physiotherapists are already in private practice.²⁰ Moreover, 21 U.S. states have enacted legislation that permits direct patient access to physical therapists. These therapists are already dabbling in manipulation. Indeed, perhaps the only way chiropractic can survive the competition of physical therapy, is by doing excellent research so often that one must be a full-time chiropractor to keep up with advances in chiropractic science and practice.

4 Be a smart consumer of chiropractic products. Ask questions. Expect whoever is selling a chiropractic technique or instrument to be able to show you case studies, anecdotal evidence and controlled trials establishing the reliability and validity of the product. If they can't produce, don't buy! Dr. James Cox and Dr. Arlan Fuhr are examples of chiropractors who are seriously interested in establishing the validity of their techniques.^{21,22} We should demand no less from others who attempt to sell us their products.

Conclusion

What will the chiropractic practice of the 21st century be like? Of course we can only speculate. Provided that we continue to lay a positive framework for development of the profession, practice may continue to be truly exciting and fulfilling. The 21st century chiropractor will be highly educated and dedicated to the principles of wholism and wellness care. He or she will utilize technologies, not yet available, to detect and correct motion abnormalities, abnormal spinal curvatures, and other types of segmental dysfunction that we now refer to as subluxation. These technologies will probably include scanners that

combine two or three diagnostic modalities into one device, for example electromyography, infrared thermography, and skin conductance or resistance. Such sophistication will have a profound impact on the way chiropractic is practiced; yet much of chiropractic may continue to be a hands on experience well into the 21st century, before automated adjusting becomes more established due to increasing reliability. Chiropractic theory and philosophy, like chiropractic practice, will advance as technologies allow researchers to more precisely elucidate the mechanisms of manipulative therapy.

Our history is rich with pioneers who sacrificed greatly, so that we might advance our profession and reach out to a suffering humanity. Perhaps they may have erred in their approach to the science, philosophy and theory of chiropractic, but their dogma and struggle was important in its contribution to our position in the health care field today. Our very survival into the next century, however, may hinge on our rejection of the very dogmas and attitudes that have brought us this far in our development.

While we should hold in high esteem those pioneers of the past that were jailed and ridiculed for offering chiropractic care to the public, we now must turn to honor the new pioneers of the future. Those chiropractic scientist-practitioners and researchers who keep asking questions and finding answers, so that the next generations will benefit from their endeavors. Then we may finally reject sympathectomy at birth, in favor of regular adjustments instead.

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