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Referencing and Quotation accuracy in four Manual Therapy Journals

The accuracy of both referencing and quotation in peer-reviewed articles is important for the scholarly progress of any profession. The responsibility for accuracy lies with the authors. Correct and accurate uses of reference lists and quotations reflect on the authors' credibility, allow for verification of claims and provide a resource for readers and researchers. A limited number of articles have investigated the quotation accuracy within biomedical journals ([De Lacey et al (1985)]; [Evans et al (1990)] [Schulmeister (1998)]). Reported rates of quotation error have ranged from 0% for *Image: Journal of Nursing Scholarship* ([Schulmeister (1998)]) to 44.4% for *The American Journal of Surgery* ([Evans et al (1990)]).

The aim of this study ([Gosling (2004)]) was to investigate the reference and quotation accuracy in four peer-reviewed manual therapy journals:

- Journal of Bodywork and Movement Therapies (JBWMT),
- Journal of Manipulative and Physiological Therapeutics (JMPT),
- Journal of Osteopathic Medicine (JOM)
- Manual Therapy (MT).

A stratified random sample of original research ($n=7$) was collected from each of the journals spanning the years January 2000 to December 2001. A further random selection of 80 references from each journal paper sampled was then reviewed (Total $N=320$) for citation and quotation accuracy. Numbers of citations with errors were determined, then classified as either major or minor and categorized by bibliographic headings (author, title, journal, year, volume, page and irretrievable). Each quotation was individually assessed for accuracy and judged to be either correct or incorrect. A quotation was deemed correct if it accurately substantiated and reported the original authors assertions.

One hundred and fifteen citations across all journals contained errors (35.9%). Some citations exhibited multiple major and minor errors. Bibliographically classified errors for all journals showed 61 author, 51 title, 6 journal, 4 year, 12 volume and 25 page errors. **JMPT showed the lowest referencing error rate (20%)** while JBWMT recorded the highest (58.8%). The total number of quotation errors across all journals was 69 (12.3%). **JMPT showed the lowest quotation error rate of 6 (4.7%)**, MT had 12 errors (7.3%), JOM produced 21 errors (13.3%), while JBWMT recorded the highest error rate with 32 (27.6%).

Most errors that the researchers observed for bibliographical classifications occurred in the author or title sections of the citations. These two areas of error, which in the most part were minor spelling or order errors, did not hamper retrieval of the articles but did reflect poorly upon the authors.

The combined referencing error rate for all four journals studied (35.9%) is about the mid-range for the error rates reported for other journals in previous research however all four journals showed a significant difference ($P<0.01$) when compared to the best rate of 4.1% reported for the New England Journal of Medicine.

Poor citation and quotation is a reflection on the scholarly work of the authors and the journal. The trend for errors in quotation is more worrying than citation errors as it reflects poor diligence on the part of the investigators.

References:

De Lacey G, Record C, Wade J. How accurate are quotations and references in medical journals?. *British Medical Journal* 1985;291:884-6.

Evans JT, Nadjari HI, Burchell SA. Quotational and reference accuracy in surgical journals. A continuing peer review problem. *Journal of the American Medical Association* 1990;263:1353-1354.

Schulmeister L. Quotation and referencing accuracy of three nursing journals. *Image: Journal of Nursing Scholarship* 1998;30:143-6.

Gosling C, Cameron M, Gibbons PF. Referencing and quotation accuracy in four manual therapy journals. *Manual Therapy* 2004; 9:36-40.

The future: putting Humpty-Dumpty together again

Denis Noble is professor of Physiology at Oxford University and Chairman of the Advisory Board of Physiome Sciences. He is the discoverer of a number of ionic channels in cardiac muscle cells, including the channels responsible for repolarization. He was the first to develop a computer model of cardiac cells and pacemaker rhythm in a paper published in *Nature* in 1960. Since then his research team has been a world leader in modelling the electrical activity of the heart.

In his latest paper he contends that successful biological analysis requires that we understand the functional interactions between key components of cells, organs and systems, and how these interactions change in disease. Professor Noble contends that this information does not reside in the genome, or in the individual proteins that genes code for, it is to be found at a higher level. The genome is sometimes described as 'the Book of Life'. This colourful analogy has served us well in exciting public interest in sequencing genomes, but like many metaphors, it has some drawbacks. In the context of the future of biological science, it is important to recognize these -

- First, the function of a gene is not specified in the DNA language.
- Secondly, each gene plays a role in multiple functions.
- Thirdly, each function arises from the co-operation of many genes.
- Fourthly, functionality also depends on important properties that are not encoded by genes, for example, the properties of water, lipids and the self-assembly of molecules. For this reason, the genome must be an incomplete specification of the logic of life.
- Finally, Nature has built in fail-safe redundancy, particularly where it concerns important functions, like cardiac pacemaker rhythm, which are vital for the continued survival of the individual.

Professor Noble goes on to suggest that we can read the 'Book of Life' only when we have succeeded in understanding how genes, and the proteins they code for, interact in co-operative ways in complex systems. This means that we must unravel and understand biological complexity, which requires integration, at all levels, from gene networks to whole physiological systems. The author points out that one of the reasons that this is necessary is that there are feed-down effects (e.g. properties at a systems level can determine events right down at lower levels, including which genes are switched on and what their expression levels are), as well as upward causation from genes and proteins. Action is not all one way; there is interaction at and between all levels of organization of biological systems.

Professor Noble contends that those who think that we can start from the bottom and work upwards from the molecular level (the 'bottom-up' approach) need to face two awkward problems -

- The first is computability: there simply won't be enough computing power to achieve this, even if we had all the information and kinetic equations necessary.
- The second is the interaction between levels: a full-scale bottom-up approach would need to know about the higher levels, even to characterize the lower levels fully. It is therefore impossible, even in principle, to work from the bottom level only.

The author concludes by observing that, “these are important questions that require a larger canvas on which to explore the detailed picture”, and that, “The last decades of the 20th century saw the great success of the reductive approach. We have broken Humpty-Dumpty down into his smallest fragments: his genes and proteins. We now have the monumental task of putting him back together again. I see this as being one of the great challenges for biology in the 21st century. Integrative work will come to have increasing importance. Moreover, it will be by understanding biological systems at a higher level that we will also come to understand how to complete the reductionist agenda. In the last analysis, reduction and integration are just two complementary sides of the same grand project: to unravel and understand the ‘Logic of Life’.”

Reference:

Noble D. The future: putting Humpty-Dumpty together again *Biochem Soc Trans.* 2003;31:156-8.

The Relationship between Tinnitus and Cervical ROM:

A pilot study

The authors, from Welsh Institute of Chiropractic, UK, observe that ever since the first chiropractic adjustment was made on Harvey Lillard by DD Palmer, there has been an interest in how chiropractic adjustments can affect hearing. Furthermore, they contend that there is a wealth of anecdotal evidence in the literature to connect the neck and hearing problems such as tinnitus.

The present authors decided to look for a relationship between cervical range of motion (CROM), ie. rotation, and the symptomatology of tinnitus.

A questionnaire, designed to elicit details regarding participant's tinnitus, was completed by 35 tinnitus sufferers who were recruited from members of the British Tinnitus Association. Subsequently CROM was assessed using the CROM device (Activator Instruments, Phoenix, AZ, USA). Stat analysis was conducted using the Microsoft Excel computer program, and include paired and unpaired t-tests.

Results -

- Right-side rotation was significantly reduced in the right-side tinnitus group.
- Left-side rotation was also significantly reduced in the left-side tinnitus group.
- Overall cervical rotation was lower in the combined tinnitus group when compared with the group who had bilateral tinnitus.

The authors believe that, “There appears to be a relationship between the predominant side affected by tinnitus symptoms and a decreased CROM in rotation. This can be directly seen in people with unilateral tinnitus, where the affected side has lower ROM than the unaffected side. In people with bilateral tinnitus symptoms, overall rotation is significantly lower than unilaterally affected tinnitus patients.”

The authors conclude, “Since there is a biomechanical change related to tinnitus, this data supports a role for the chiropractic intervention in the treatment of this disorder.”

Reference: George S, McCarthy PW. The relationship between tinnitus and cervical range of motion: a pilot study. [Abstract] European Journal Chiropractic 2003;51:131-2.

Placebo Effect: Harnessing Your Mind's Power to Heal

It's true that some people who participate in research studies and take inactive medications called placebos do see health improvements. People taking placebos have experienced reduced pain, healed ulcers, eased nausea and even warts disappeared. The January issue of Mayo Clinic Women's Health Source details several theories on how the placebo effect might work:

Benefit from attention: In a placebo-controlled research study, patients often have frequent and intensive medical attention. Some people respond favourably.

Stimulus response: People may have a trained positive response to taking a pill or receiving treatment, whether it's real or not.

Beliefs or expectations, including the meaning you attach to a treatment: A person with positive expectations of the treatment may experience the placebo effect more than someone with lower expectations.

Relationship with your doctor: A person whose doctor is supportive and positive may experience more benefit from a placebo -- or the standard treatment -- than someone who doesn't have that relationship.

Pleasing your doctor: You feel better because -- consciously or unconsciously -- you want to show your doctor that you're a good patient and you appreciate the care.

It is concluded that a combination of many psychological and physiological mechanisms are at work. Research studies and theories hold important clues to solve the mystery behind the placebo effect, but more research is needed to examine how these factors interplay to produce this healing force.

Consumer Health Tips and Products Tuesday, December 30, 2003.

<http://www.mayoclinic.org/news2003-mchi/2077.html>

Evaluating the effect of a screening protocol on vertebral artery blood flow

General and isolated cervical positional tests are used to screen for potential vertebro-basilar insufficiency (VBI). A recent literature review ([Mann and Refshauge (2001)]) reported that in 16 out of 20 Doppler studies, there was diminished blood flow in the contra-lateral artery during cervical rotation whether extension was added or not. However, it is difficult to reach a consensus from these studies, as there are considerable differences in methodology. The purpose of this study was:

- (1) to measure blood flow velocity in the contra- and ipsi-lateral vertebral arteries during commonly used stress tests,
- (2) compare blood flow changes in a full deKleyn's position compared to a modified extension-rotation position with the head remaining on the bed with and without traction applied,
- (3) measure blood flow in a pre-manipulative hold at C1-C2 and
- (4) pilot the ability to measure flow in these positions in a healthy population with no known vascular pathology prior to conducting the sequence on a symptomatic population.

A comprehensive cervical assessment was conducted on 22 men and women (mean age 35) with no known vascular pathology. Vertebral artery peak systolic (PS), end diastolic (ED) flow rates and

resistive index were measured using duplex colour Doppler sonography (sampling at C3-C5) in neutral, rotation, extension, combined rotation-extension, combined rotation-extension-traction, deKelyn's position and a C1-C2 pre-manipulative hold.

Results showed there was a significant decrease in PS and ED in the contra-lateral artery during the pre-manipulative hold, and a decrease in ED in the contra-lateral artery during rotation. There was no effect of age, gender or mobility restriction on these blood flow changes. The pre-manipulative hold had the greatest response with 34% of the arteries demonstrating a complete cessation of ED flow.

In conclusion the pre-manipulative hold and rotation created the greatest mechanical stress to the contra-lateral vertebral artery. These two positions may be useful screening positions to identify individuals at risk for VBI due to inadequate collateral blood flow.

References:

Mann T, Refshauge K. Causes of complications from cervical spine manipulation. *Australian Journal of Physiology* 2001;47:255-66.

Arnold C, Bourassa R, Langer T, Stoneham G. Doppler studies evaluating the effect of a physical therapy screening protocol on vertebral artery blood flow. *Man Ther.* 2004; 9: 13-21. <http://www.sciencedirect.com/science>

Post-polio syndrome recognised by European Parliament

Xavier Bosch, Barcelona, Spain.

Representatives of patients with post-polio syndrome (PPS) gathered on Nov 12 at the European Parliament in Brussels to bring this poorly understood disorder to the attention of health professionals and policy-makers. At the meeting--which was supported by 20 members of the European Parliament--PPS organisations agreed to create the European Polio Union (EPU) with the aim of obtaining recognition and funding from the European Parliament and Commission. There are thought to be around 250000 patients with PPS in Europe and 20 million worldwide.

Over the past few years several attempts have been made to put PPS on the European political agenda. But these requests have not resulted in specific actions so far, says Johann Bijttebier, chairman of the Belgian PPS organisation. For this reason, he says, national organisations have had to act mostly on their own.

Jim Costello, the chairman of the Irish PPS group--the only EU country where PPS associations receive public funds--says "our mission is to create awareness and to provide information regarding PPS among both polio survivors and the wider medical profession".

The delegates agreed that a "comprehensive evaluation" of potential PPS patients should include a detailed clinical history and physical examination, laboratory tests, nerve-conduction studies, high-resolution MRI, pulmonary-function tests, and sleep studies. However, Elisabeth Farbu (Department of Neurology, Haukeland University Hospital, Bergen, Norway) notes that PPS is a clinical diagnosis without any specific biochemical or physiological marker.

ASRF Update Editor's comments - Of Relevance to the above discussion are the findings from one survey carried out in Australia in the late 80's and published in the peer-reviewed journal, the *Journal of the Australian Chiropractic Association* - See abstract below.

Clients' Evaluation of Chiropractic Treatment for Post Polio Syndrome

MARY T. WESTBROOK

The late effects of poliomyelitis were virtually unrecognised until recently. The rapidly expanding medical and self-help literature have ignored chiropractic as a potential treatment. A survey of 304 people with post polio symptoms revealed that after medical practitioners and physiotherapists, chiropractors were the health practitioners most frequently consulted. **Chiropractors were significantly more likely than other practitioners to be rated as very helpful.** Chiropractic provided symptom relief for relatively more clients. Chiropractic was more likely to be sought later, and through lay referral, than were other treatments. It is suggested that information about post polio syndrome and clinical experiences with clients needs to be more widely disseminated among chiropractors so that treatment outcomes for the many thousands with this chronic disability can be maximised.

Reference:

Westbrook MT. Clients' Evaluation of Chiropractic Treatment for Post Polio Syndrome *J Aust Chiropr Assoc* 1990;20:143-51.

Depression as a risk factor for onset of troublesome neck and low back problems

There is growing evidence that pain problems increase the risk of depression. However, the evidence about the role of depression as a risk factor for onset of pain problems is contradictory. This lack of consistency in research findings may be due in part to methodological weaknesses in existing studies, for example, use of an inappropriate study design and inadequate consideration of confounding.

The objective of this study was to determine whether depression is an independent risk factor for onset of an episode of troublesome neck and low back pain.

A population-based random sample of adults was surveyed and followed at 6 and 12 months. Individuals at risk of troublesome (intense and/or disabling) neck or low back pain are the subjects of this report ($n=790$). The authors used Cox proportional hazards models to measure the time-varying effect of depression on the onset of troublesome neck and low back pain. The multivariable analysis considered the possible confounding effects of demographic and socio-economic factors, health status, co-morbid medical conditions and injuries to the neck or low back.

The authors found an independent and robust relationship between depression and the onset of an episode of pain. In comparison with the lowest quartile of scores (the least depressed), those in the highest quartile of depression scores had a four-fold increased risk of troublesome neck and low back pain (adjusted HRR 3.97; 95% CI 1.81-8.72).

A prior history of neck or low back injuries was not an important confounder, although injury during follow-up did explain some of the relationship between depression and onset of pain. However, even adjusting for these variables had relatively little impact on the relationship between depression and pain. This suggests that the association is relatively robust. Moreover, it was shown that depression is an independent risk factor for troubling pain in both those without pain at baseline and for those with mild pain at baseline. Furthermore, the finding that depression is an independent risk factor for any pain (mild, moderate or severe) serves as further evidence of a strong, independent effect of depression on pain development.

The authors conclude, "Depression is a strong and independent predictor for the onset of an episode of intense and/or disabling neck and low back pain."

Reference:

Carroll LJ, Cassidy DJ, Côté P. Depression as a risk factor for onset of an episode of troublesome neck and low back pain. *Pain* 2004;107:134-9.

A thermodynamic model of the sympathetic and parasympathetic nervous systems

The autonomic nervous system (ANS) as a whole may be viewed as a dissipative structure (utilizes (i.e. dissipates) energy to do a biological work) progressively assembled in the course of evolution, plastically and rhythmically interfaced between forebrain, internal and external environments, to regulate energy, matter and information exchanges.

In the present paper, this hypothesis is further pursued to verify whether the two main divisions of the ANS, the sympathetic and parasympathetic systems, may support different types of exchange with the external environment.

Previous data from hypothalamic stimulation experiments indicate that,

- (1) tight engagement with the external environment,
- (2) high level of energy mobilization and utilization and
- (3) information mainly related to exteroceptive sensory stimulation characterize a behavioral prevalence of sympathoadrenal activation.

On the other hand,

- (1) disengagement from the external environment,
- (2) low levels of internal energy and
- (3) dominance of proprioceptive information,

characterize a behavioral prevalence of vagal tone.

Behavioral matter exchanges such as feeding, drinking, micturition and defecation are equally absent at the extreme of sympathoadrenal and vagally driven behaviors. The autonomic nervous system as a whole is genetically determined, but the sympathoadrenal system has been mainly designed to organize the visceral apparatus for an action to be performed by the biological system in the external environment and to deal with the novelty of task and of the environment, while the functional role of the parasympathetic is to prepare the visceral apparatus for an action to be performed by the biological system on itself, for recovery and self-protection (homeostasis), and is reinforced by repetition of phylo- and ontogenetically determined patterns.

The available clinical data further support this interpretation indicating that an increased sympathetic and a decreased vagal tone may represent a consistent risk factor for cardiovascular diseases.

Owing to the plastic neuronal properties of the ANS, inputs from forebrain areas, fluid matrix and external environment may contribute to shaping the functional organization of the system and to modifying its output to visceral organs. The inherent and entrained rhythmicity of the autonomic nervous system, together with the wide range of visceral functional expression it may induce, allow us to view the functional organization of the system as the result of a continuous interplay between structure, function and fluctuations.

The present proposal contrasts with the homeostatic theory of Cannon (1929) which describes the constancy of the internal variable as the main objective of the autonomic nervous system in general and of the sympathetic in particular. As seen in the present review, the sympathetic nervous system promotes changes in the visceral apparatus, increases gradients, mobilizes energies and markedly alters many, if not all, measurable variables of the internal environment. The parasympathetic, on the other hand, as clearly recognized by Cannon (1953) in his last book, is the autonomic nervous system division that promotes restitution and recovery. As already suggested, it is the parasympathetic, not the sympathetic, which is the true homeostatic agent, the sympathetic action being better described by its "emergency" function.

The authors conclude,

“A thermodynamic approach to the biological system may help to formulate a coherent hypothesis about the autonomic nervous system development and about the reciprocal functional specificity acquired by the sympathetic and parasympathetic divisions in the course of evolution.”

Reference:

Recordati G. A thermodynamic model of the sympathetic and parasympathetic nervous systems
Autonomic Neuroscience 2003;103:1-12.

Innate immunity at the forefront of psychoneuroimmunology

This address, by the president of the Psychoneuroimmunology Research Society, points out that in the last 15 years, research into psychoneuroimmunology has been marked by a renewed interest in the mechanisms of inflammation and participation of the brain in these mechanisms. The author details how communication between the periphery and brain takes place via both neural and humoral pathways. Recognition of the role of local production of cytokines and their downstream messengers in the central nervous system opens important new vistas for understanding and treating nonspecific neurovegetative and psychiatric symptoms of diseases.

In this presidential address the main methodological and conceptual developments that have allowed such progress are outlined.

The president summarises,

“We have come a long way during the last fifteen years or so, from descriptive phenomenology of cytokine-induced sickness behavior to molecular mechanisms of ligand-receptor interactions and activation of intracellular signaling pathways. This is the way science proceeds, but the ultimate goal remains to not only alleviate suffering but also to maintain health and well-being. As aptly pointed out by René Leriche, a successor to Claude Bernard in the Experimental Medicine Department in College de France, Paris, “Health is life accompanied by silence from the vital organs, etc. A state of health is a subject’s unawareness of his body. Inversely, awareness of the body derives from a sense of limits, threats, obstacles to health”. Worded in more modern psychoneuroimmunological terms, this means that a healthy subject is a one whose immune system remains quiet and **does not interfere with brain processing of external information**. This is at least a concept of health that has the advantage of being translatable into achievable progress.”

References:

Dantzer R. Innate immunity at the forefront of psychoneuroimmunology Brain, Behavior, and Immunity 2004;18:1-6.