

THE ORTHOPAEDIC FORUM



IN THE BEGINNING WAS THE WORD

BY JOSEPH BERNSTEIN, MD, MS

In the early part of the twentieth century, The Hartford Accident and Indemnity Company was one of the largest insurance companies in the country, employing scores of accountants, adjusters, and actuaries. It was also home to two great American intellectuals¹. The more renowned of the pair was Wallace Stevens. Stevens was a lawyer and a vice president at Hartford, but he stands in the history books as a poet. In 1955, he received the National Book Award for *The Collected Poems of Wallace Stevens* and the Pulitzer Prize for Poetry.

Less well known, but formidable in his own right, was a fire-prevention specialist at Hartford, Benjamin Lee Whorf. Whorf trained at the Massachusetts Institute of Technology as a chemical engineer; his avocational pursuits included anthropology, archaeology, and linguistics. It is for his contributions to linguistics that he is remembered.

Whorf, along with Edward Sapir of Yale, developed the theory of linguistic determinism. This theory asserts that the words we use determine—and constrain—the way we think. As Whorf put it, “We dissect nature along lines laid down by our native languages . . . and ascribe significances as we do largely because we are parties to an agreement that . . . is codified in the patterns of our language.”² Eskimos, Whorf stated, can have more nuanced thought about snow than non-Eskimos because they have a greater

variety of words for the types of snow they encounter.

George Orwell, in his novel *1984*, expounded on this idea that language could control thought. In Newspeak, the language developed by The Party, words such as “free” and “equal” were stripped of their original meanings to the point that concepts like political freedom were made to be “literally unthinkable, at least as far as thought is dependent on words.”³

Happily, many of the scary notions of *1984* did not come to pass, and pure linguistic determinism, the idea that language controls thought, is not accepted by linguists today. Indeed, the concept has been debunked—as has the idea that Eskimo languages include more words for snow than does the English language⁴. On the other hand, scientific studies have shown that some thoughts are dependent on the words that express them. For instance, the perception of certain color differences depends on whether a person’s language has words that acknowledge the difference⁵: it is hard to reliably recognize the color orange if one’s native language has words for red and yellow and nothing in between. Likewise, speakers of tribal languages that do not have words for numbers perform poorly on tasks that require simple counting⁶.

Thus, we are left with an attenuated form of linguistic determinism: words can be said to influence, but not

precisely determine, our conception of the world. Yet even this weaker version of the theory may hold significant implications for medical practice.

The power of words in medicine may be intuitively obvious. As Woody Allen quipped in the movie *Deconstructing Harry*, the most important words in the English language are not “I love you,” but “It’s benign.” It has also been suggested that the metaphorical connotation of disease names influences thinking. This concept was advanced by Susan Sontag in her essays, “Illness as Metaphor” and “AIDS and Its Metaphors.”⁷ Sontag proposed that people with tuberculosis, cancer, and AIDS are treated by society differently than patients with other diseases of equal severity—and accordingly suffer more—because of the “magic power” held by these disease names.

Sontag’s concept of illness as metaphor speaks to the understanding of lay people. To a physician, tuberculosis is an infectious disease, not a “mysterious malevolence”; cancer represents uncontrolled neoplasia rather than a flaw in personality; and AIDS is a syndrome of acquired immune deficiency, not a plague of punishment. Nevertheless, even for physicians, some medical terms may evoke certain unspoken thoughts regarding the object of the term. It may therefore be worthwhile to investigate the implications of linguistic determinism in the realm of

medical nomenclature.

The word *nomenclature* itself comes from the Latin word *nomenclator*. The nomenclator was a slave who announced visitors. This nomenclator merely described what was there: clearly, the visitor already had a name. Medical nomenclators, coiners of medical terms, are permitted a more imaginative role. For instance, the carpal navicular bone was so named because some medical nomenclator thought it resembled a ship. (Navicular means “like a boat”; the word navy shares the same root.) Other medical terms are not simply physically descriptive but begin to outline theories of pathogenesis. Hysteria, for example, was thought to emanate from the womb (*hystera* in Greek), and melancholia was a disease of too much black bile (*melas khole* in Greek). Today, these roots are deemed nothing more than artifacts of prior ignorance: after all, nobody treats clinical depression with biliary drainage. Yet if Whorf is right, even well-formed medical terms may skew thinking about treatment.

Consider three orthopaedic terms: tendinitis, osteoporosis, and impingement syndrome. These are common words, all constituents of the *International Classification of Diseases*. Many of us have used these words without particular thought regarding their origin and the meaning invested in them by their creators. Yet each of these terms represents a theory of disease. Although the theories contained in the names are far less outlandish than the assertion that psychosis brews in the uterus, they are nonetheless (and to varying degrees) imperfect. The names of the diseases, one might argue, set the bounds on our thought, possibly to the detriment of patients.

Tendinitis

Tendinitis is easily parsed into *itis* (inflammation) of *tendon*. Yet many forms of tendon disorders that are denoted as tendinitis (e.g., patellar tendinitis and Achilles tendinitis) are not inflammatory conditions. Rather, they are overuse injuries in the setting of aging and

decreased vascularity^{8,9}. As stated by Kraushaar and Nirschl¹⁰, “Although the term tendinitis is used frequently and often indiscriminately, histopathological studies have shown that specimens of tendon obtained from areas of chronic overuse do not contain large numbers of macrophages, lymphocytes, or neutrophils.”

Incorrectly naming a degenerative condition of tendon *tendinitis* may likewise invite certain incorrect thoughts regarding treatment. Whereas a truly inflammatory condition may demand an anti-inflammatory medication, a painful condition lacking inflammation may be best treated with a pure pain reliever. According to Khan et al.¹¹, “A critical review of the role of various anti-inflammatory medications in soft tissue conditions found limited evidence of short term pain relief and no evidence of their effectiveness in providing even medium term clinical resolution of clearly diagnosed tendon disorders.” To be sure, nonsteroidal anti-inflammatory drugs may help to relieve the painful symptoms of tendinosis, although it must be recalled that prostaglandin inhibitors are also analgesics. Moreover, this analgesic effect may be obtained at excessive cost. Prostaglandin inhibitors are associated with gastrointestinal bleeding and cardiovascular complications. Neither of these are features of pure analgesics such as acetaminophen. Thinking about tendinosis in terms of inflammation—as the name tendinitis would have us do—may point us to the wrong remedies.

Osteoporosis

Osteoporosis means porous bones. Unlike tendinitis, this term at least has the benefit of being technically correct: osteoporotic bones are more porous than normal ones. Nevertheless, this (perhaps optimal) term, by alluding to the bone and only the bone, may steer our thinking away from other important aspects of this disease.

The true condition of interest in osteoporosis is fracture. Of concern is not so much that the bones are porous, per se, but that patients with osteoporosis

are at risk for fracture. Calling the disease osteoporosis, although technically correct, may cause us (in a Whorfian sense) to concentrate on the porous nature of the bone and not other, extraosseous, risk factors for fracture. Lotz and Hayes¹², for example, noted that “the measured work to fracture for the isolated femur was an order of magnitude smaller than estimates of the energy available during a typical fall (about 450 joules), suggesting that energy absorbed during falling and impact, rather than bone strength, may be the dominant factors in the biomechanics of fracture of the hip.” Grisso et al.¹³ showed that medical conditions that increase the risk for falls are themselves risks for hip fracture, independent of bone mass. Other work¹⁴ has suggested that body fat protects against hip fractures not so much as a source for estrogen (thereby mitigating the osteoporosis), but rather as a direct soft-tissue pad. As such, patients with osteoporosis might be well treated with programs to prevent falls or to pad the bones at risk in addition to, or perhaps instead of, treatments to make the bones less porous. These responses may not come to mind if only the porous nature of the bone is contemplated.

Along those lines, Heaney¹⁵ wrote: “Although bone mass is certainly the most extensively studied of the fragility factors, low bone mass is not the whole of the osteoporosis story and may not even be its most important component (despite frequent assertions to the contrary). If one could magically normalize bone mass in everyone, would one eliminate osteoporotic fractures? The best answer that can be given today is ‘no.’ There would be fewer such fractures, but there would still be many, especially hip fractures.” Heaney concludes by saying: “Simply put, our approach to this disorder must be as multifaceted as the condition itself is multifactorial”—that is, not just bone (osteo) that is porous.

Impingement Syndrome

The term *impingement syndrome* was first used by Neer¹⁶ in 1972 to describe a

condition of shoulder pain associated with chronic bursitis and partial tearing of the rotator cuff. Impingement comes from a Latin root *impingo*, which means “to strike against.” Neer explicitly stated that in this pathological state, the anterior acromion was striking against (and damaging) the underlying rotator cuff. He described the anterior acromion as “the rough surface on which the supraspinatus tendon is rubbing.”

Neer further described the lateral acromion as “an innocent part,” and recommended removing only the anterior edge. But what if *all* of the acromion is “innocent”? McCallister et al.¹⁷ were able to show good results of rotator cuff repair performed without acromioplasty, and Budoff et al.¹⁸ noted that débridement of partial-thickness tears of the rotator cuff without acromioplasty is clinically beneficial as well.

In his recent commentary on Neer¹⁹, Zarins stated: “Neer believed that impingement causes rotator cuff tears. This hypothesis does not appear to have withstood the test of time. It is more likely that rotator cuff dysfunction results in upward displacement of the humeral head and causes impingement of the humeral head against the acromion with shoulder use rather than the reverse.”

To call rotator cuff tendinopathy “impingement syndrome” is to explicitly blame extrinsic tendon compression and to implicitly discount a vast body of evidence that cites intrinsic factors such as avascularity, aging, and overuse. Neer himself described operating on only fifty shoulders over a five-year period, demonstrating his great discretion regarding the removal of “impinging” bone. Surgeons who perform fifty acromioplasty procedures in a season or two may be taking this phrase perhaps too literally.

Conclusions

The three examples above can be dismissed as simple curiosities. No sane physician will choose a treatment on the basis of etymology. The doctor treats the condition, not the name of the condition. Proponents of this view

could quote from Shakespeare’s *Romeo and Juliet*: “That which we call a rose / By any other name would smell as sweet.” On the other hand, those propounding the supremacy of words could cite the only text that has been read more than the works of Shakespeare: the Bible. In biblical Hebrew, the same word, *davar*, means both “word” and “thing”—words and things are seemingly interchangeable. There are thus powerful authorities on both sides of the debate regarding linguistic determinism, and it is not for us to resolve it.

Still, there is a lesson in these examples: namely, we must be careful how we speak. Specifically, we must be mindful that, as physicians, our words can have powerful consequences. When we label patients as having a disease, we are inviting them—and in some cases instructing them—to assume a sick role. As detailed by the sociologist Talcott Parsons in the 1950s, when people assume a sick role, they are taken out of their normal place within family and work. This role may even alter one’s sense of self.

Parsons’ view sounds abstract, but the consequences of labeling are practical. As detailed by Rubin and Cummings²⁰, designating women as patients with osteoporosis may induce them to limit their activity out of fear of fractures, and “paradoxically, limiting activity might accelerate bone loss and even increase the risk for fracture.” It is not the meaning of the word osteoporosis which does this; it is the nomination of the individual as a patient. Thus, even when we use medical jargon that has no occult meaning (such as *coccydynia* for “coccyx pain,” its literal translation), we may induce people to think of themselves as patients more than they should. Using a Greek name may allow us to seem more learned, but at a price. As noted by Hadler²¹, “If all I know about your backache is that your back aches, what right do I have to label you as having disk or facet disease or some other hypothetical disease? Perhaps your complaint should be ‘my back aches’ and my diagnosis should be

‘you have a backache’ . . . it allows the conversation to move toward coping and away from causality based cure.”

We surgeons are men and women of action. The word *surgeon* in fact takes its root from Greek words, *cheir* and *ergon*, meaning “work of the hand.” But more important than what we do with our hands is what we say with our mouths. Our choice of words should be as precise as our incisions; our phrases should be placed with the same care as our retractors. What we say matters²². We should be careful about what we say and how we say it.

Joseph Bernstein, MD, MS
Department of Orthopaedic Surgery, Veterans Hospital, University of Pennsylvania School of Medicine, 424 Stemmler Hall, Philadelphia, PA 19104-6081. E-mail address: orthodoc@post.harvard.edu

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References

1. Lavery D. Imagination and insurance. Wallace Stevens and Benjamin Lee Whorf at the Hartford. *Legal Studies Forum*. 2000;24(3 and 4):481-93.
2. Whorf BL. *Language, thought, and reality; selected writings*. Carroll JB, editor. Cambridge: MIT Press; 1964.
3. Orwell G. 1984. New York: Harcourt; 2000.
4. Hartill L. Snow, by many other names. *Christian Science Monitor*. 1999;4:18.
5. Pilling M, Davies IR. Linguistic relativism and colour cognition. *Br J Psychol*. 2004;95:429-55.
6. Gordon P. Numerical cognition without words: evidence from Amazonia. *Science*. 2004;306:496-9.
7. Sontag S. *Illness as metaphor and AIDS and its metaphors*. New York: Doubleday; 1990.
8. Khan KM, Cook JL, Taunton JE, Bonar F. Overuse tendinosis, not tendinitis. Part 1: A new paradigm for a difficult clinical problem. *Phys Sportsmed*.

2000;28(5). www.physsportsmed.com/issues/2000/05_00/khan.htm. Accessed 19 Aug 2005.

- 9.** Almekinders LC, Temple JD. Etiology, diagnosis, and treatment of tendonitis: an analysis of the literature. *Med Sci Sports Exerc.* 1998;30:1183-90.
- 10.** Kraushaar BS, Nirschl RP. Tendinosis of the elbow (tennis elbow). Clinical features and findings of histological, immunohistochemical, and electron microscopy studies. *J Bone Joint Surg Am.* 1999;81:259-78.
- 11.** Khan KM, Cook JL, Kannus P, Maffulli N, Bonar SF. Time to abandon the "tendinitis" myth. *BMJ.* 2002;324:626-7.
- 12.** Lotz JC, Hayes WC. The use of quantitative computed tomography to estimate risk of fracture of the hip from falls. *J Bone Joint Surg Am.* 1990;72:689-700.
- 13.** Grisso JA, Kelsey JL, Strom BL, Chiu GY, Maislin G, O'Brien LA, Hoffman S, Kaplan F. Risk factors for falls as a cause of hip fracture in women. The Northeast Hip Fracture Study Group. *N Engl J Med.* 1991;324:1326-31.
- 14.** Bernstein J, Grisso JA, Kaplan FS. Body mass and fracture risk. A study of 330 patients. *Clin Orthop Relat Res.* 1999;364:227-30.
- 15.** Heaney RP. Bone mass, bone loss, and osteoporosis prophylaxis. *Ann Intern Med.* 1998;128:313-4.
- 16.** Neer CS 2nd. Anterior acromioplasty for the chronic impingement syndrome in the shoulder: a preliminary report. *J Bone Joint Surg Am.* 1972;54:41-50.
- 17.** McCallister WV, Parsons IM, Titelman RM, Matzen FA 3rd. Open rotator cuff repair without acromioplasty. *J Bone Joint Surg Am.* 2005;87:1278-83.
- 18.** Budoff JE, Nirschl RP, Guidi EJ. Débridement of partial-thickness tears of the rotator cuff without acromioplasty. Long-term follow-up and review of the literature. *J Bone Joint Surg Am.* 1998;80:733-48.
- 19.** Neer CS 2nd. Anterior acromioplasty for the chronic impingement syndrome in the shoulder. 1972. *J Bone Joint Surg Am.* 2005;87:1399.
- 20.** Rubin SM, Cummings SR. Results of bone densitometry affect women's decisions about taking measures to prevent fractures. *Ann Intern Med.* 1992;116:990-5.
- 21.** Hadler NM. Occupational musculoskeletal disorders. 3rd ed. Philadelphia: Lippincott Williams and Wilkins; 2005. p 102.
- 22.** Tongue JR, Epps HR, Forese LL. Communication skills for patient-centered care. Research-based, easily learned techniques for medical interviews that benefit orthopaedic surgeons and their patients. *J Bone Joint Surg Am.* 2005;87:652-8.