

Chronic Pain~ from Inflammation & Behavior

A Newsletter from Robert Gallup, Ed.D.



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Individual Perception and Inflammation

Given the enmeshment of the nervous and immune systems, it is not surprising that recent Psychoneuroimmunological (PNI) research is frequently citing “individual perception” as a major independent variable when looking at physiological outcomes in humans. I must say here that PNI is but finding out, from a Western scientific perspective, what I learned as a young grad student in 1967 while I read “Individual Behavior” (Combs and Snygg, 1959). It was Descartes’ deal with the Pope in the 17th century (not to study or talk about “mind”) that has led to cementing the line of thought into what became “Modern Medicine,” and Western science: that the ‘body’ and “mind” are of different matter and of different spiritual value. Twentieth-century study of the effects of “stress” on physiology led by pioneers such as Selye and Cannon, and more recently extended by PNI, surely has laid the groundwork for the current “scientific” conclusion that individual perception drives physiology and visa versa. It may well be that “mind” is made up of “matter,” and that all living ‘matter’ has “mind.” PNI can now describe some probable pathways for these phenomena (please see recent research on page 7-8).

The next issue:

- Chronic Pain & Fatigue are Usually Conditioned
- Health in The Big Picture: Single Payer Health Insurance
- Healing Happens! (case study)
- Recent PNI Research (simply stated)

In classes and seminars with Dr. Combs we discussed how: an individual’s behavior and their reality is driven by individual perception/meaning; a person’s general and relatively stable field of perceptions are the core of their “Self-Concept;” a particular perception reflects the entire experience of that person as well as the particular state of their perceptual field at that moment; the physical self is a limiting factor in perception while itself affected by perceptions. He said that, “What limits our organs must inevitably limit our perceptions as well. We are broadly limited by our fundamental physiology. Real changes in the bodily condition of an individual may be brought about by changes in the Self-Concept.” No, Dr. Combs and those of us in his graduate seminars in 1967-68 did not know that the immune and nervous systems are enmeshed. We did not know that this is a critical part of the physiological explanation for how perception and all physiology are enmeshed. We did believe, however, that all human subsystems and aspects of our “physical” and “mental life” had what we called a “transactional relationship.” Dr. Combs specifically mentioned the role of our central nervous system and general health as important determinants of individual perception.

Western science demands specific types of “proof” for theories. It is only the rela-

tively recent developments in technology that can give this proof. So, “Behavioral Psychology,” “Cognitive Psychology,” and more, ascended while “Perceptual Psychology” has been less respected. Today, PNI, a very conservative Western science is excitedly discovering that it is an individual’s meaning/perception which must be accounted for in order to predict amounts of circulating cytokines and neuropeptides, as well as the effects these chemicals will have on a particular person.

In 1967-68, I gave Art Combs a hard time as I acted out my anger/rage from my then new perceptions regarding the injustice within and performed by U.S. society. Yet, I was able to internalize his main ideas because they seemed true to me then as they do now. They have always been a cornerstone of my professional practice. I am proud for him, and grateful that he was on my path to Applied Psychoneuroimmunology.

The purpose of this newsletter (planned to be published three times a year) is to promote the sharing of the science, its applications, and victories towards improving the quality of life for the many who suffer from chronic inflammation, pain, and fatigue.

“Osteopathy and Inflammation,” by Melvin R. Friedman, D.O.

It is an honor to be able to write today a bit about the field of Osteopathy and its relationship to inflammation. Osteopathy is the philosophy of medicine inspired by a Missouri physician, **Dr. Andrew Taylor Still, M.D.** in the 1800s. After fighting in the Civil War, and then watching several family members die during a meningitis epidemic while he watched powerlessly, Dr. Still began to ask many deep and forward thinking questions. He wondered how it could be that God would make this world full of suffering and illness, and not give the capacity to heal within that same creation. He surmised that within a person are all the necessary ingredients to maintain balance, restore health and to lead a healthy and fulfilled life. He was ahead of his time with his conceptualization and clinical applications with his idea of homeostasis; that we are self sustaining, adaptive and self correcting organisms. He made several tenets:

- *Man is triune in nature, made of Mind, Body, and Spirit
- *Man follows the laws of Mind, Matter, and Motion
- *All of these aspects are always operational in the totality of the person, and interdependent on all levels
- *Man operates as a whole
- *Therapy must be rational and follow the application of these principles
- *Structure and Function are inseparable

We have often heard similar expressions of these ideas, however, even in today’s world, people are rarely seen within today’s medicine as a whole person, with integrated mental, physical, and spiritual lives, along with the natural and spontaneous predisposition to return to a state of health. Dr. Still had wanted to reform and improve medicine as it was practiced at the time. As it turned out, the dogma of the day maintained the status quo, and it was relegated to Dr. Still to begin a school of Osteopathy in order to preserve his vision of a more effective, humane and complete view of Man, and medicine. He started his school with only himself and a surgeon (the minority of cases that were beyond natural healing would often be responsive to surgical intervention). His greatest legacy to today’s osteopaths is his world view, and the magnificent depth and power within the manual approach to the body. Dr. Palmer, who was the founder of Chiropractic, studied under Dr. Still and streamlined the concept towards an adaptation of manual medicine to the centrally important area of the upper cervical spine.

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Osteopathic Approach

One idea that Dr. Still had, was that since the body is comprised of close to 80% muscle and bone, studying this system, its workings, biomechanics, and its interactions with other systems was a valid approach to health. Osteopathic Manual Medicine utilizes the practitioner's hands to influence and restore health and freedom to the body. In the Osteopathic Approach, it is felt that through diet, exercise, and manual manipulations that health can be maintained or restored in almost all cases. Osteopathy is a total body concept, incorporating all body parts, mind and spirit. It can only be practiced by a fully licensed physician with the privileges of providing all aspects of health care, including prescribing medicine, and performing surgery, as well as manual approaches to nervous tissues, viscera, connective tissues, bone, circulatory and lymphatic, and body energy systems.

The Goal of Manual Medicine

The goal of manual medicine is to restore freedom of motion (one of our basic principles) in mind, body and spirit. Mental restriction shows up as fixed ideas, maladaptive beliefs, and distortions of perception. Emotional restriction manifests as lack of adaptability, fears and anxieties, and an inability to fully express ourselves, and to love. Physical restriction leads to lack of motion, and engagement with the physical world, which becomes manifest ultimately as pain, discomfort and the inhibition of acquiring physical pleasure. With our hands, and the engagement of our good intent for the person we work with, we aspire to help the inherent corrective forces in a person to assist them towards the balance and freedom their body is always aspiring to.

Osteopathy and PNI

In this way, and with this holistic view, in a medically formatted way, Osteopathy in principle, follows much of the same thinking as we have seen expressed many years later in the field of Psychoneuroimmunology (PNI). Both fields see human beings are innately integrated wholes, on every level striving towards homeostasis. The structure of the body and the resultant function lead always to an interplay of architecture, and forces, and the resultant functional and chemical changes which result. The chemistry of the body is a constant by-product of physiological function, biological processes, and the release of responsive and maintaining chemicals and hormones. Induced chemicals effect and react to the structure of the body, as well as the demands we place on it. When an area is structurally limited, the body will attempt to organize and protect it. Chemicals are released to accomplish this, whether to stiffen the arc, buffer it with swelling or create pain and spasm to splint it; all are various aspects of the inflammatory system. If we are in a stressed mental or emotional state, stress hormones and chemicals are released which maintain differing types of consciousness (hyper-alertness, or stupor based on what is perceived as needed to serve the overall healing of the organism). Spiritual crisis and alienation lead to emotional and mental changes, which in turn are followed by these same results. Similarly, all chemical changes lead to physical and biomechanical changes which alter function in the physical body.

Inflammation

Inflammation and its sequellae constantly mediate between the physical body, its functioning, and the mental and emotional experience of our lives. Pro-inflammatory cytokines, which are produced by immune cells are examples of such mediators. Reducing inflammation therefore leads to greater freedom of the body, and similarly, free function of mind, body and spirit. In turn this process then leads to a reduction of physical and mechanical stressors and the reduction of inflammation as well. Inflammation is an essential component of how the body tries to heal itself, as well as the experience of pain and suffering which results from our traumas and byproducts of unhealthy lifestyles. In Osteopathy, as well as PNI, while coming at this common denominator in different ways, nonetheless acknowledge and interact with this critical factor in health.

Healing Happens!

Mary is a fifty-four year old career intensive care (ICU) nurse, with “a decade long history of chronic headaches and chronic fatigue.” She called me after looking at my website. During our initial phone call, Mary described herself as: “overweight, happy with my job, divorced, a health-food-freak, out-going, dedicated to her patients and nursing team, and finding life harder and harder because of the pain and fatigue.” Mary has two adult children, one grandchild, a “boyfriend,” and a cat. She owns her own home, has a garden, and goes to the gym three times a week. Mary has a Master’s Degree in Nursing and says that part of her job is to “mentor other nurses.” She said that “the headaches are not migraine,” and that “the tiredness is terrible at night, and that I do not sleep well. Usually four to five hours, then I wake up and cannot go back to sleep.”

initial meeting/Evaluation I found: all neurological, perceptual, and cognitive functions to be within normal limits; developmental milestones through teenage years were met; Mary’s Family of Origin included a mother who had been a hospital pediatric nurse before having three children, of which Mary was the first; her mother and siblings were overweight and her mother experienced similar headaches as did an aunt; her father was an auto mechanic; neither parent drank or smoked; Mary has begun menopause, and has pharmaceutically controlled high blood pressure. Reported specific elements of her diet indicated someone who is trying to maintain optimum health. Mary appears to enjoy her job, however her boyfriend has told her that he is concerned that her symptoms may have something to do with “all of the trauma” (Post-Traumatic Stress Disorder- PTSD) she has seen as a nurse. He has called Mary’s attention to the fact that a few years earlier, she had only a few headaches during a month long tour of Europe.

Mary stated that she called me because she has been reading that high blood pressure, some kinds of insomnia, and chronic pain can be related to chronic inflammation. She Googled “chronic inflammation” and found my website and Newsletter which focus on chronic inflammation as physiological cause of chronic pain. She has tried to relieve her symptoms with: acupuncture, dietary supplements, chiropractic, and a range of medical specialists and pharmaceuticals. Mary stated that these have had short term benefits and contradictions. She summed up her basis for considering my approach, “I can see that what you do is about change rather than fixing-someone. I know that you will want me to do the work while you teach, coach, and cheer me on. It will be hard to change. I’ve heard of Psychoneuroimmunology. Can you give me a couple of references of people you have worked with? I have nothing to lose.”

Mary agreed to keep a Journal which recorded: the location and intensity of any headaches three times a day, the time and intensity of “attacks of fatigue,” whatever she ate or drank, social activities, exercise, and to give a score documenting “intensity of patient care” in the ICU for her shift. We would meet every two weeks.

Two week Journal revealed: the headache pain was most intense (“5-9 out of 10”) in the evenings and mornings, and occurred ten times; the “attacks of fatigue” usually occurred between 2-5 PM and occurred eleven times; slept 4.5 to 5.5 hours a night; a large portion of her calories comes from complex carbohydrates cooked in healthy form or raw, and that she ate little refined sugar or fiber-removed starch (such as white rice) or protein; Mary had one beer and two mixed drinks; drank or ate dairy at least once a day; she averaged 1-2 bowel movements a day; she went to the gym five times during the period and performing both cardio and weight workouts; she calculated her weight as “twenty-seven pounds too much;” Mary visited with her grandchild twice and went to the movies with her boyfriend and another couple once; Mary pruned her roses once; and she gave three of the nine shifts she worked as having a “very intense” rating, in terms of patient care.

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Seeing Mary Through PNI Glasses

The nervous and immune systems are completely enmeshed. In this society behaviors which most commonly trigger immune cells to produce pro-inflammatory chemicals are emotions/social experiences, what we eat or drink, and how we do and/or do not use our bodies. Emotions can trigger because of the connections among the hypothalamic-pituitary-axis, sympathetic (and parasympathetic) nervous system and immune cells/organs. Immune cells have receptors for most chemicals produced by the nervous system and immune chemicals can act as hormones in the central nervous system or anywhere else. It is now well known that there is a link between chronic inflammation and PTSD. What we eat or drink is critical because pro-inflammatory chemicals can be produced anywhere in the body and result in “symptoms” at a site distant to the initial site of production. These chemicals travel through bodily fluids. Frequently, inflammatory chemicals produced in our digestive and/or elimination systems do not result in symptoms which feel like a “disease,” but the chemicals may result in significant and chronic symptoms somewhere else in our bodies. It is critical that we remember that this process is frequently conditioned, which is why most of us have particular patterns of “where our pain is felt.” So, we need to change our behaviors in order to change the pattern of chronic inflammation. I call these “Health Behaviors.” The good news is that we have the choice to change behaviors which can result in real healing.

Initial Monthly Plan: .1. Eliminate dairy and alcohol from her diet, and eat at least two meals a day which include protein; 2. begin Relaxation Training during our twice a month sessions with the goal of performing self-relaxation for 15-20 minutes per day three times a week. 3. Mary would select a psychotherapist who specializes in post-trauma behavior. The dietary suggestions are based on the fact that maintaining a steady level of blood glucose helps to regulate hormones and peptides which affect mood and the production of inflammatory chemicals. A steady supply of low fat protein is well known to help with this (see my website under Resources for links to The Zone Diet concepts, especially “Harnessing Hormones: Key to Long Life,” by Steiner). Alcohol and allergy (e.g. dairy) will cause blood glucose swings. Also, it is now well known that fat cells can produce pro-inflammatory chemicals which can lead to most of commonly known chronic diseases ([linking obesity/overweight to disease](#)). The suggestions related to self-relaxation and psychotherapy were made due to the likelihood that Mary’s difficulty sleeping (sleep deprivation) is a cause of pro-inflammatory production, and a factor in her chronic pain and fatigue. The sleeping problem may also be related to the held emotions (un-released emotions) she has accumulated from her job as a nurse working 30-40 hours a week in an ICU. In this setting there is almost constant witness to great trauma, both physical and psychosocial, which hospital protocols require staff to hold inside the normal and appropriate emotions one would have need to be released. This is usually done by sharing them with a safe and empathetic adult. It is now well known that **not** doing so frequently leads to post-traumatic behaviors and disease. The ‘medical model’ is one of “detachment,” and not letting any feelings a provider may have enter the “professional setting.”

Our sessions involved training in self relaxation, guided imagery, reviewing her Journal, agreeing on planned behavior changes and assistance with the process of therapist selection. Her dietary and other changes would be incremental. I offered large doses of education and encouragement in addition to the above.

Four Months Later. Mary had begun to talk about some work experiences during our sessions, suggesting that my experience as a provider in hospitals “makes me feel like I can talk with you about it.” She had not yet begun work with a clinical therapist. Her reasons included the whole range of possibilities. I gently let her know that while it is true that my experience as a provider working regularly in ICU’s gives me some important insights, that I am not trained to “de-brief” someone experiencing post-traumatic stress. The various aspects of Mary’s social life continued to nurture her. Mary had lost nine pounds and was now “off of dairy and alcohol completely.” She was now including low fat protein in approximately three of every four meals.

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While our guided relaxation and imagery work appeared successful, she said that she was “only able to really relax myself about once a week.” Mary’s quantity of sleep had increased to average five and one-half hours a night, rather than five. Her pain and fatigue numbers were grossly the same as before she started any changes.

Seven Months. Mary was now able to self-relax herself back to sleep, when she awaked too early “most of the time.” She now averaged nearly six hours of sleep a night. While her fatigue occurred approximately three times a week now, her headaches were approximately of the same frequency, intensity, and duration. Mary had lost a total of twelve pounds, “and felt more energetic.” She had not started with a therapist. Mary confessed that she was reluctant to start, because she felt “that someone who does not work in hospitals would not understand.” I had encouraged her to use her employee assistance program in the therapist search, as well as other resources. Mary said that she did visit with this service, but they could not “guarantee that the therapist has worked in hospitals.” Mary did agree to see to set an appointment with a recommended therapist for a group of “trial sessions.”

Twelve Months Mary was experiencing “only two or three attacks of fatigue a month.” She reported that she was “sleeping nearly seven hours a night and feeling rested.” Mary was performing self-guided imagery “successfully three to four times a week.” Her diet included protein three times a day most days of the week. She had lost twenty-two pounds. Mary’s headaches occurred four times a week instead of five, and were of approximately the same duration and intensity. The therapist that she had seen for three sessions had recommended on-going psychotherapy, and explained to Mary that her headaches were “very likely a result of post-traumatic stress reactions to the cumulative effects of what she has been experiencing at work, and had not allowed herself to really feel.” In fact, the therapist recommended “de-briefing.”

Fifteen Months. Mary began once every three weeks sessions with me. Her headaches “were only a little better” than when she contacted me. She told me that she realized that she may be “afraid to know whatever may be causing the headaches. I can’t change the way I do my job. We have to remain detached.” She stated that she understood that these headaches could stay with her unless she was willing to feel, share and then release the repressed emotion/trauma. Mary could articulate an understanding of Post-Traumatic Disease. In a survival situation in which we cannot immediately feel and process appropriate and powerful emotion in order to survive and/or do what we need to do to perform a job, the emotion is repressed/unfelt. The chemicals (the physiological substrate of “emotion”) produced by our bodies continue to be active or held in tissue, thus having high potential to stimulate various inflammatory events anywhere in our bodies including our brains. The pain Mary feels in her head is likely such conditioned and held inflammation reaction. The location for Mary appears to be genetically predicted, as other members of her family have headaches.

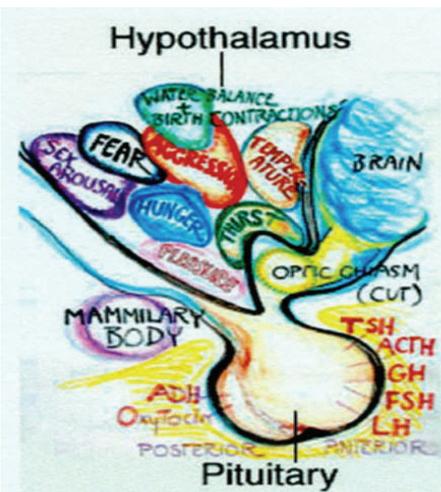
Seventeen Months Mary’s headaches and fatigue were essentially of the same frequency, intensity, and duration as stated above. She said that “what I’ve learned from you and the changes I’ve made are considerable. I feel more energetic, am enjoying my slimmer shape and meditations. I appreciate the great reduction in bouts of overwhelming fatigue, and all of the support you’ve given. I’m just going to have to continue to live with the headaches. I’ll be retiring in a few years.” I suggested that she contact me in a month or so (or any time she wants) to check-in and let me know if she would like to have a session. I also suggested that she consider starting a group for Critical Care Nurses that would be both self-help and be professionally led. We brainstormed a bit about how she could approach the nursing administration and/or Employee Assistance at her hospital. “I will follow-up and keep you posted,” she said. “I can show them the research you shared with me, and maybe I could get the therapist I briefly saw to support the effort.”

Recent PNI Research~ Some Important “Nuggets” to Use

The research “nuggets” shared here came from the journal *Brain, Behavior, and Immunity* (2005-6), and other sources. I suggest that readers, who have further interest in PNI, explore this wonderful journal, which is The Official Journal of the Psychoneuroimmunology Research Society. This section will be organized by topic and/or critical factors within Health Behaviors. The statements here are attempts to state simply and succinctly the main conclusions and/or implications of reported research. My goal here is to “translate” some of this very important information to expedite its general functional use.

Placebo- the Affects of “Expectations” or Individual Perception on Physiology

- Individual perception of pain is a critical factor in the development of neurochemical analgesic responses to placebo administration, as long as the physiological structures which produce these chemicals are intact. Individual variations in pain sensitivity and in the perceived affective qualities of the pain predicted which structures would be activated during endogenous opioid neurotransmission during placebo administration, with the most accuracy. Activation of the “mu”-opioid receptor mediated opioid neurotransmission and suppresses sensory and affective qualities of the pain, as well as improving negative emotional states induced by sustained pain.



- With the current understanding of the enmeshment of the immune and nervous systems, as well as the recent developments in technology, the underlying bio- mechanisms and relationships of “placebo effects” to Health and dis-ease are now being documented.

- Recent technological advances with PET Scans and new molecular biological techniques make it possible for the first time to investigate the neural correlates of pain, expectancy, and emotion, and relate these to clinical phenomena in the brain and in the periphery.

- The concept of “placebo” is empowering because it means that we can directly influence our Health (and physiology) by changing the way we

feel/emote and think and behave.

- “Placebo Effects” are an entry point for studying endogenous control processes that shape perception, affect, and motivation, as well as how such internal control processes can interact with “treatments.”
- Placebo effects can be conditioned.
- B-endorphins and some subtypes of opioid receptors modulate thymic and splenic t-cell proliferation, cytokine production, and calcium mobilization.
- The healing power of expectations- Once Alzheimer’s Disease robs a person of the ability to expect that a pain reducing medication will help them, the medication does not work nearly as well. {*This is validation of the traditional understanding of ‘placebo,’ which is historically given as the basis for performing studies which attempt to eliminate expectations by the subject and/or investigator> the double-blind study.*}
- In a study of patients who have Alzheimer’s Disease there was NO difference in pain relief whether the dosing was overt or covert, because this disease robs people of the ability to “expect.”
- There is great individual variance in ability to produce endorphins, opioids, and other pain killing and anti-inflammatory chemicals. {*Clinically, I have seen some people appear to learn to produce more.*}
- Patients with Parkinson’s Disease who were given a placebo instead of their anti-Parkinson’s medication showed a 40% decrease in the electrical firing of neurons in the locations in the brain which control movement. The expectation of more motor control led to more motor control.
- When a patient’s Deep Brain Stimulator (DBS) is turned on (to reduce involuntary movement and give more motor control) by a professional in front of the patient, the results are significantly better.

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- The brain areas associated with placebo/expectation-of pain-reduction-effects are: pregenual anterior cingulate, dorsolateral prefrontal, insula and nucleus accumbens.

Food (self-medication and obesity)

- Chronic stress leads to secretion of corticotrophin releasing factor (CRF), which leads to production of glucocorticoids (GC's) from the adrenals. This loop includes the amygdala and other limbic structures resulting in arousal and behavior changes. Together with insulin the circulating GC's stimulate drive for "comfort foods," which can then result in a temporary reduction in the effects of the chronic stressor.
- Theoretically, this loop works when the circulating GC's lead to a reduction/inhibition of the hypothalamic secretion of CRF. However, it seems that when the stressor (can be an internal event such as a thought or emotion) is chronic the behavior (self medicating) which is partly a result of the increase in circulating GC's becomes chronic/addictive/conditioned.
- In the presence of insulin and stress, GC's increase the relative intake of comfort foods and decrease the activity of the Hypothalamic-Pituitary-Axis (HPA).
- GC's act in peripheral energy storage organs to promote central obesity, and provides an indirect inhibitory feedback signal that limits the degree of perceived stress.

Pregnancy (Child Development)

- Excess CRF and cortisol reaching the fetal brain during periods of chronic maternal stress can alter personality and predispose the infant-child to: alterations in immune competence, Attention Deficit Disorder (ADD), Depression, diabetes, hyper-anxiety, alcoholism, smoking, and drug abuse through changes in neurotransmitter activities. These maternal chemicals are transferred through the placenta.
- Such a pattern of excess CRF can: alter function of the developing limbic system, alter analgesic response to morphine, result in less opioid receptors, and prolong activation of the HPA-axis and sympathetic nervous system leading to the dis-eases above (and more).
- The basis of this is the perceived stress of the mother and her physiological reactions to these perceptions. These studies are measuring circulating hormones and other neuro and immuno chemicals.

Obesity, General Health, and World Economics

- Nearly half of the children in North and South America will be overweight by 2010. In the European Union the number is predicted to be 38%. In the former the rise is from one-third, and in the latter the rise is from one-quarter. Mexico, Chile, Brazil, and Egypt have rates comparable to "fully developed" countries. In China by 2010 one in five children will be overweight.
- The basis of this is the exporting of the "Western Diet." Children are being bombarded to eat the wrong things by the Western world's food industry. The increasing use of the computer as part of a sedentary lifestyle is also considered a major factor/global trend. {Taken together, are these "the weapons of mass destruction?"}
- Living in what have been considered "isolated areas" is no longer a safeguard to securing quality of life or traditional eating habits.
- Some international health leaders are calling for a ban on all forms of marketing to children, and laws which ban such things as trans fats.
- Since children take health problems into adulthood, this will be the first generation who will have a LOWER life expectancy than their parents!!