

A BIOCULTURAL MODEL OF AGING

Mario E. Martinez

Institute of Biocognitive Psychology
P.O. Box 210295
Nashville, Tennessee 37221
IBP@Biocognitive.com

Keywords: Bioculture, Aging, Contextual Coemergence, Bioinformation, Biocultural Portals

ABSTRACT

In this paper I will address how the life sciences have concentrated on the pathology of aging while ignoring the biocultural aspects of health in the process of growing older. I argue that growing older is a dynamic cognitive, biological and cultural coauthoring of health rather than a hopeless unfolding of progressive pathology. I propose that this fragmented concept of aging precludes operationalizing and understanding the cultural markers that affect longevity. These cultural milestones, or *biocultural portals* include middle age markers, retirement markers, perceived wisdom, sexuality, status in the community, transcendental beliefs, sense of empowerment vs. helplessness and any other biocultural phase in human development. I suggest that the biocultural portals define and trigger the phase transitions of life as well as influence how they are accommodated. For example, the markers for middle age established by a culture, strongly influence the cognitive and biological expectations for the second half of life.

BIOCOGNITIVE THEORY

Research in psychoneuroimmunology (PNI) has demonstrated how the immune, endocrine and nervous pathways maintain a constant and bi-directional communication that interacts with cognition to affect health, illness and aging (see Ader, 2000; Solomon, 2000). Although we can strongly suggest from the

research that thoughts affect biology and biology affects thought, PNI has failed to incorporate the influence that culture has on the mind-body communication. The evidence for the cultural components that interact with health, healing and aging remains isolated in the field of medical anthropology (see Sargent and Johnson, 1996; Romanucci-Ross, Moerman and Tancredi, 1997).

In my theory of biocognition, I outline a cognitive, biological and cultural model to suggest how aging is influenced by the established medical, ethical and transcendental beliefs that are assimilated from the cultural history. While science identifies disease and pathological aging, culture defines illness and influences the process of how we grow older. In other words, *disease* is the physical evidence of pathology identified by the life sciences of the culture, and *illness* is the anthropological interpretations the culture makes of the pathology.

I propose that cognition, biology and historical culture simultaneously coauthor a bioinformational field that modulates health, illness and aging. Biocognitive theory integrates the research in psychoneuroimmunology and medical anthropology within a model of contextual coemergence to provide an alternative to the upward and downward causalities of the life sciences. Bioinformation is defined as *the cognitive, biological and cultural history that communicators contextually share in their communication*. In other words, *bioinformation is exchanged history between communicators in a coemerging field that seeks contextual relevance* (Martinez, 1999). The contributions of historical culture and its meaning in bioinformational theory are differentiated from the concept of society. Cognition and biology are inseparable and they coemerge within a cultural history. Culture is defined as the *internalized ethical, scientific and transcendental beliefs that a group shares*, while society is the *external rules of behavior that control a group*. Hahn and Kleiman (1983) argue that expectations about the prognosis of an illness are not merely propositions about outcome; they are cognitions reflected in the biology of those who assert them and are thus associated with neurotransmitters and hormones that affect physiological functioning.

BIOCULTURAL CONTEXT

Langer (1989) investigated the effects of contextual change on aging. She took a group of male subjects ages seventy five to eighty to a retreat and divided them into an experimental group that was to behave and speak as if they were living thirty years earlier and a control group that was instructed to only reminisce about thirty years earlier while maintaining their context in the present. In the area where the experimental group was housed; all the music, news, dress, speech and surroundings reflected the era they were instructed to recreate, whereas the control group lived in surroundings reflecting the present. Pre-post measures were taken of strength of handgrip, bicepoid breadth, triceps skinfold, vision with and without glasses, visual memory and other physical and cognitive markers of "aging". Several measures were repeated throughout the stay and the experiment was concluded after five days. The pre-post measures showed improvement in all areas for the experimental group with no change in the control group. Remarkably, independent raters reported that subjects in the experimental group looked an average of three years younger from pre-post photographs after only five days of re-enactment, whereas no differences were noted for the control group.

Payer (1996) illustrates in her comparative review of medical practice in the United States and Western European countries how the etiology of a migraine is vascular in the United States, hepatic in France and gastrointestinal in Britain. Additionally, while hypotension is a predictor of longevity in the United States, in Germany, hypotension is diagnosed as a pathological condition called *Herzinsuffizienz* (cardiac insufficiency). Payer also reports a study conducted with a normal population in Hamburg that evaluated cardiac functioning in which forty percent of the subjects were diagnosed with an abnormal ECG when German rules of diagnostics were applied, whereas only five percent of the ECG's were found abnormal using American criteria.

I argue that *growing older* is the cognitive and biological accumulation of time, whereas *aging* is the consequences of our behavior contextualized within a cultural history. In other words, the passing of time is necessary but not sufficient to account for the cognitive and

biological changes that transpire in the aging process. A culture defines the biocultural portals as well as interprets the health and the quality of aging. The biocultural portals are defined by the scientific, aesthetic and transcendental beliefs that are assimilated by the culture. For example, while a 62 year old from an industrialized culture is engaged in behaviors conducive to achieving retirement, a Tarahumara Indian counterpart of the Chihuahua region of Mexico may be running up to 200 miles in a competitive racing sport called "kick ball" that can last several days (Pelletier, 1981). The Tarahumaras, known for their longevity, believe that growing older makes them stronger and consequently better runners. Retirement is not one of their biocultural portals. Interestingly, since the Tarahumaras look forward to their expected physical gains from growing older, "middle age crisis" is unknown and the usual degenerative pathology associated with aging is rare in their culture.

BIOCULTURAL PORTALS AND THEIR ATTRIBUTIONS

Biocultural attributions originate from assimilated cultural beliefs and personal history. At an operational level it is not difficult to see that the interpretations of daily events based on how one should behave according to one's age can have considerable differential effects across time. For example, if a twenty two year old feels a muscle spasm coming out of a small sports car, the biocultural attribution of the spasm may lead to consider doing stretching exercises in the mornings. A sixty five year old in the same situation however, may decide that it is time to trade the sports car for a larger car ignoring the stretching exercises that could correct the problem. Once a biocultural portal is triggered, the expectations that define the corresponding developmental phase descend on the individual to promote the behaviors reflective of that phase.

The "endorsements" of a biocultural phase have cognitive and biological consequences on health and the aging process. Statements such as "you're too old for that" or "your medical condition is age-related" are mostly based on biocultural convention rather than hard science. Yet, the biocultural collusions that support these aging admonitions become self-fulfilling prophecies and consequently physical reality. For example, the effects of placebos and nocebos are well documented in the literature as examples of how cognition can

affect biology positively or negatively respectively based on expectations (see Hahn, 1995; Brody, 2000). The number four is associated with bad omens in China and Japan because the word for that number sounds like the word for death in the Mandarin, Cantonese and Japanese languages. Phillips and his colleagues (2001) compared death certificates from 1973 to 1998 of Chinese, Japanese and white Americans and found a statistical significance for higher cardiac mortality on the fourth day of every month in Oriental Americans. The study also tested the effects of the number thirteen (unlucky number in white American culture) and found no lethality associated with that number. The researchers hypothesized that although the number thirteen is considered “unlucky” by whites, the word for the number thirteen lacks the linguistic association with death that the number four has in the Oriental languages cited.

Since the life sciences identify pathology with a diagnostic model of downward causality, the biocultural variables that gradually contribute to the pathology are not considered in the etiology. In the life sciences, an operational assumption is made that the individual interacts with an environment void of cultural history. This mechanistic assumption views aging as a functional dance between genetics, behavior and physical environments across time. While contemporary medicine acknowledges that aversive interpretations of events trigger stress responses that can affect health, the consequent damage is relegated to a psychosomatic nosology that defines which pathologies can be considered stress-related. Such selective diagnostic procedures perpetuate the Cartesian mind-body split that assumes disease can be divided between medical and psychological where only some diseases can be affected by stress and none are affected by cultural history.

CONCLUSIONS

Considering that the healers of a culture are not immune to cultural postulates, the life sciences share an epistemology assimilated from a cultural history that influences the concepts of aging as well as the diagnosis and prognosis of disease. If the assimilated cultural beliefs define aging as an inevitable deterioration of health, then the gerontology of that culture will study and treat the pathology of aging rather than the dynamics of health in the process of growing

older. Cognition, biology and historical culture coemerge in a bioinformational field that constantly seeks contextual relevance. Cognition and biology occur simultaneously as a *biocognition* within a context of cultural history that can only be separated artificially and the separation can only yield *heuristic* data about the total experience. Rather than cognitive epiphenomena of biology, cultural beliefs are biocognitions that influence the health and aging process of the believer. Beliefs are assimilated from the cultural and personal history of the believer. The assimilated beliefs determine when the individual enters the biocultural portals and how the admonitions of these developmental portals affect health and the aging process. I argue that aging is the cognitive and biological effects of biocultural influences, whereas growing older is the cognitive and biological accumulation of time. The life sciences in general and gerontology in particular, must shift from focusing exclusively on the pathology of aging to studying the cultural influences that promote growing older in good health.

REFERENCES

- Ader, R., Felten, D.L., & Cohen, N. (Eds.). (1999). *Psychoneuroimmunology*, (second edition). New York: Academy Press.
- Brody, H. (2000). *The Placebo Response: How you can release the body's inner pharmacy for better health*. New York: Cliff Street Books.
- Hahn, R.A. (1995). *Sickness and health: An anthropological perspective*. New Haven: Yale University Press.
- Langer, E.J. (1989). *Mindfulness*. Reading, Massachusetts: Perseus Books.
- Martinez, M.E. (1999, September). *Belief systems and health: A Biocognitive model*. Lecture presented at the World Congress of the World Federation for Mental Health. Santiago, Chile.
- Payer, L. (1996). *Medicine and culture*. New York: H. Holt & Co.
- Pelletier, K.R. (1981). *Longevity: Fulfilling our biological potential*. New York: Dell Publishing Co.

Phillips, D.P. et. al. (2001). The *Hounds of the Baskervilles* effect: Natural experiment on the influence of psychological stress on the timing of death. *British Journal of Medicine* 323, 1443-1446.

Romanucci-Ross, L., Moerman, D., and Tancredi, L. (Eds.). (1997). *The anthropology of medicine: From culture to method*. London: Bergin and Garvey.

Sargent C.F., and Johnson, T.M. (Eds.). (1996). *Handbook of medical anthropology Contemporary theory and method*. (Rev. ed.). London: Greenwood Press.

Solomon, G. F. (2000). *From psyche to soma and back: Tales of biopsychosocial medicine*. Xlibris Corp.