

HEALTH AND STRESS

The Newsletter of The American Institute of Stress

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STRESS, SOCIAL DRINKING, AND ALCOHOLISM

KEY WORDS: susceptibility to alcohol, heredity vs. environment, Indians vs. Eskimos, stress, diet, gender differences, French Paradox, health benefits, hazards

A number of intriguing observations and speculations have been made about the interrelationships between stress and alcohol consumption. Do people drink to excess because they are under stress, or are they stressed out because they drink too much? Like the chicken and the egg, it's often hard to say which came first, especially when you see someone who is a confirmed chronic alcoholic.

Some individuals are undoubtedly driven to drink because they perceive they are subjected to overwhelming stress. They are more apt to drink alone, and at any time of day. Others may consume almost as much during a 24 hour period, but under very different circumstances. They might have a few cocktails before dinner with family or friends, which could also include several glasses of wine, and some brandy or other after dinner drink. It's not that you drink, but rather why that may be more important.

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Drink because you are happy, but never because you are miserable. - G.K. Chesterton

There are other connections. Stress can be the spice of life or the kiss of death. A little stress now and then makes life exciting. However, too much can kill you - and the same can be said for alcohol. Increased stress can increase productivity and pleasure - up to a point, after which things go downhill. That's also true for booze.

Some find that an evening drink with friends improves their mood and makes the cares of the day fade away more quickly than taking a tranquilizer. A few glasses of wine a day also has been found to reduce risk for a heart attack. This is usually attributed to its antioxidant content, but grain alcohol and beer are also cardioprotective. At the other extreme, excessive intake can lead to a life of despondency, despair, and distress, not only for the alcoholic, but friends and family as well.

People can become addicted to stress as well as alcohol, and our susceptibility for both also varies tremendously. Certain individuals simply can't cope with stress, while others appear to be intrinsically impervious to the slings and arrows of outrageous fortune, or have developed coping skills that make them more resilient. Similarly, some get high as a kite on two drinks, while others have a "wooden leg" and seem sober despite consuming huge amounts.

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*The Newsletter of
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Stress and alcohol can be two edged swords. Some people thrive on life in the fast lane, and a time urgent pressure cooker existence that poses constant challenges. That would prove extremely distressful for those who simply want a non threatening job well within their capabilities, and shun having to be responsible for the welfare of others. One man's meat can be another's poison with respect to both stress and alcohol.

Alcohol can also affect each of us very differently. Some become sentimental and amorous, or display unsuspected talents once their inhibitions disappear. Others turn from being a polite Dr. Jekyll into a hostile Hyde, and can be downright nasty and repulsive, revealing a dark side of their character that had been completely kept under wraps.

How well we handle stress may influence how we react to alcohol, and vice versa. The nature of stress responses may provide clues to drinking behaviors and our resistance or susceptibility to developing chronic alcoholism. Teaching people how to cope with stress more effectively might prevent many drinking problems. Conversely, reducing dependency on alcohol and learning how to drink in a more responsible manner could reduce stress for those who constantly turn to alcohol as a crutch.

Is It Heredity Or Environment?

Both drinking behavior and how we respond to stress are determined by a combination of genetic and environmental influences. Heritable factors are undoubtedly important, since there seem to be significant racial differences. The American Indian's unusual sensitivity was so great that alcohol was called "fire water", and legislation was enacted banning its sale to native Americans. However, heredity may not be the sole explanation for this susceptibility, and some believe that dietary habits may be equally important.

Many of the Indian tribes encountered by early explorers and settlers led a nomadic existence because of their need to forage for food. They tended to consume a diet high in carbohydrates and low in fat, that largely consisted of corn, fruits and vegetables. Although unusual sensitivity and addiction to alcohol was common, this was not a problem for their anthropological brothers living in Arctic regions, who subsisted primarily on whale blubber and fatty meats, rather than high carbohydrate crops. Although their genetic makeup is much like that of the American Indian, Eskimos don't seem to show the same sensitivity to alcohol.

Similarly, while alcohol consumption is high in Italy, Spain, and other Mediterranean countries, it is not associated with a corresponding increase in addictive behaviors or unusual sensitivity. This may also be due to the fact that their diet is high in olive oil and other fats that may provide such protection. Support for this comes from the observation that alcoholism became a serious problem when individuals from these countries began to settle in parts of South America. Alcohol turned into "fire water" and addiction became prevalent for many, especially those in Argentina, whose diet was predominantly the products of the pampas and other high carbohydrate foods.

The reason for this may be that alcohol and sugar are the only substances absorbed directly from the stomach. A rapid and marked increase in blood sugar triggers the secretion of insulin to return levels to normal. In some individuals, this response can be excessive, resulting in a cascade of other endocrine responses that are designed to maintain homeostasis.

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If the blood sugar level falls too low, other hormonal responses are quickly called into play, the most important being increased secretion of adrenaline from the adrenal medulla. Adrenaline rapidly makes glucose available by breaking down carbohydrates via a process known as glycolysis. There is also increased secretion of cortisone-like steroid hormones from the adrenal cortex that derive glucose from protein stores by gluconeogenesis. In some individuals, especially those with so-called reactive hypoglycemia, this response can also overshoot the mark so that blood glucose levels are increased, again triggering the release of insulin that results in a vicious cycle. Low blood glucose also causes a craving for sugar and sweets, and consuming these further complicates the body's efforts to restore normalcy by smoothly coordinated activities.

Hypoglycemia, Hormonal Responses to Stress, And Homeostasis

As a result, blood sugar levels can see-saw back and forth before they become stabilized, which can take hours. The intermittent secretion of adrenaline can cause palpitations, fluctuating hypertension, migraine headaches, and disturbing vasomotor responses due to sympathetic nervous system stimulation. Patients with such puzzling symptoms that have no obvious cause are usually assumed to be suffering from some emotional disorder, or "stress". The correct diagnosis can readily be established by a glucose tolerance test that is extended to six hours, during which symptoms usually recur as rapid rises and falls in blood sugar evoke hormonal and nervous system responses.

The treatment for this condition is to avoid carbohydrates and adhere to a diet of frequent small meals high in fat and protein, which are metabolized much more slowly from the small intestine. These also increase blood glucose more gradually than carbohydrates, and to a lesser extent, so that abrupt rises do not occur and metabolic adjustments are more orderly. Some physiologists believe that rapid falls in blood glucose and/or low blood levels may cause cravings for alcohol, which, like sugar, is also rapidly absorbed.

It has been proposed that a similar dietary regimen might reduce alcohol craving, and some studies support this notion. Several decades ago, researchers demonstrated that many alcoholics tended to respond to a sugar solution with the same wide swings in blood glucose levels as patients with reactive hypoglycemia. They also reported that alcohol cravings disappeared after patients were started on a high fat, high protein diet, and avoided carbohydrates. Concomitant administration of cortisone-like drugs resulted in further improvement.

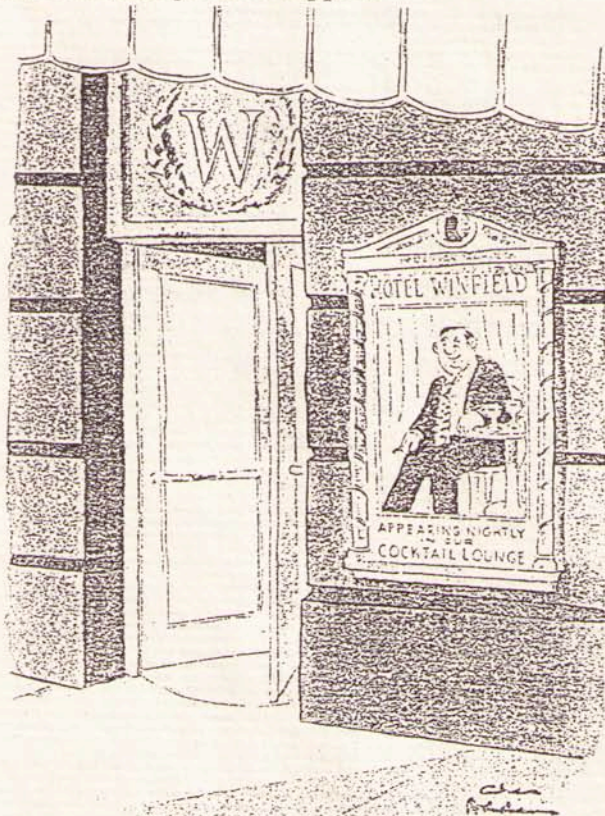
Adrenal cortical steroids have also been used to treat other addictive disorders, and may be particularly effective in reducing withdrawal symptoms. As with alcoholism, many substance abuse problems may be due to chronic stress. Since persistent stress results in exhaustion of the adrenal cortex and a markedly diminished secretion of its hormones, there would appear to be a logical rationale for such replacement therapy.

The response to stress is complex and involves activation of thyroid and many other hormonal activities that have widespread metabolic and physiologic effects. These are further amplified by a cascade of autonomic nervous system responses which also affect smooth muscle tone, the breakdown of carbohydrate, fat and protein stores, cardiovascular and gastrointestinal activities, and the function of the kidneys as well as many other organs and systems. Alcohol can also exert important influences on metabolism, the central nervous system, and other vital body systems and organs, especially the heart and liver.

When acute stress or alcohol intake is transient, or not excessive, normal regulatory responses are usually able to maintain homeostasis with few resultant permanent consequences. Persistent stress and chronic alcoholism are much more insidious and also more injurious. In addition to causing direct damage to various organs, both can produce serious emotional and central nervous system disturbances, including depression, anxiety, insomnia, and impairment in memory and learning. Both can also significantly impair immune system function, resulting in increased susceptibility to infectious diseases and a host of other illnesses. These changes come on gradually, and are often not recognized until it is too late to correct the damage.

Stress And Drinking

Some large scale studies suggest that many people drink to cope with job stress, marital and personal problems, or financial worries. In general, the more severe or protracted the degree of stress, the greater the amount of alcohol consumed. Thus, such drinking behaviors tend to be aggravated in individuals who are isolated, have poorer social support, and little faith or religiosity, since these increase stress levels. Abnormally high alcoholic consumption can also be influenced by genetic factors, past experience, expectations about the ability of alcohol to alleviate stress, and the individual's perceived sense of control over potentially threatening situations. High levels of stress are most likely to result in abnormal alcohol intake when alcohol is readily accessible, the individual strongly believes that alcohol will alleviate the problem, and there is nobody available to serve as a deterrent or provide support.



Animal studies show that stress increases alcohol consumption, and early experiences are particularly important. Prolonged periods of stress during infancy can alter subsequent emotional and hormonal responses to alcohol exposure, and influence cravings or habituation tendencies later on.

In one report, adult alcohol consumption in monkeys who were raised by peers, was compared to matched controls reared by their own mothers. The peer raised group, which was presumably under greater stress early in life, drank twice as much alcohol as those who were brought up by their real mothers. Conversely, rats who were petted and fondled during the first three weeks of life, showed remarkably reduced hormonal responses to a variety of subsequent stresses, and also consumed less alcohol. In humans, a similar association has been reported between adverse early childhood experiences, with chronic drinking behaviors and increased alcoholism, in later life.

Parental alcoholism may also have important influences in humans, but responses can vary. Some children who also subsequently become alcoholics may have inherited and/or acquired this trait. Others may avoid alcohol completely because of memories of how it destroyed their parents' lives.

Does alcohol raise or reduce stress? It can do both depending on a variety of factors. Studies in stressed out experimental animals subjected to unavoidable stress show that low doses of alcohol can reduce hormonal responses to stress. In humans, alcohol is generally thought to interfere with cognitive processes. However, in one study, low doses actually improved the ability to perform complex mental problem solving tasks under stressful conditions. Alcohol can trigger a cascade of hypothalamic-pituitary-adrenal responses to stress, and chronic alcohol intake can also increase adrenaline responsivity to stress. Some believe this may result in increased resistance to the harmful effects of subsequent stressors, much like the "Stage of Resistance" in Selye's General Adaptation Syndrome, during which the body's defenses are maximized. It is also likely that stress responses are different in those who consume alcohol regularly compared to teetotalers. Animals who prefer alcohol over water, seem to have different and possibly superior adaptive responses to stress compared to others that avoid alcohol.

I would hate to be a teetotaller. Imagine getting up in the morning and knowing that's as good as you are going to feel all day. - Dean Martin

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Although a clear association between the development of chronic alcoholism has not been proven, both acute threatening and chronic life stresses are usually responsible for relapses in former drinkers. Of all the influences of stress on drinking behavior, the most significant appears to be its influence on the return to drinking after a period of abstinence. One study followed men who had successfully completed an impatient alcoholism treatment program, and monitored physical and mental health, stress levels, and behavioral patterns. Researchers found that those who subsequently relapsed had experienced twice as much severe and prolonged stress before resuming drinking, compared to others who continued to abstain. Those who fell off the wagon also scored lower on measures of coping skills, self-efficacy, and social support. A return to drinking was most apt to occur in men who expected that alcohol would relieve their stress, and particularly those who relied on other drinkers for social support. As has been shown in smoking cessation studies, peer pressure and lack of support are very powerful influences.

What Kind Of Alcohol Is Best and How Much Should You Drink?

This may seem like an odd heading for a Newsletter on health, but the facts are that modest alcohol consumption of alcohol, and particularly wine, is associated with a fewer heart attacks and longer life spans. Rumblings about this began around a decade ago, when it was reported that despite a high fat diet, the French had remarkably low rates of coronary heart disease. About 315 out of every 100,000 middle-aged U.S. men die of heart attacks each year, compared to only 145 Frenchmen. And, as noted in a previous Newsletter, the figure plummets to 80 in Toulouse and the surrounding Gascon area, where "they smoke much more, and goose and duck fat are slathered on bread instead of butter, people snack on fried duck skin, eat twice as much foie gras as the rest of France, and fifty times more than Americans."

Wine is the most healthful and most hygienic of all beverages. - Louis Pasteur

The most likely explanation for this unusual decrease in heart attacks and longevity was that these individuals also consumed large amounts of wine with their meals. Rumblings about this "French Paradox" reached a roar in 1991, when *60 Minutes* featured an interview with Serge Renaud, the leading proponent of this theory. Wine sales promptly skyrocketed in the U.S., and have been climbing ever since.

However, there may be other factors to explain the French Paradox. Goose and duck fat are chemically closer to healthy monounsaturated olive oil than saturated fats like butter and lard. And the French eat large amounts of cheeses that can actually bind calcium, so that it is not absorbed into the blood stream like the calcium in milk. Nevertheless, it is the wine that has gotten most of the credit, and particularly red wine, which has a higher antioxidant content than white wine, presumably because it contains the pips and stems, but this has been disputed. One upstate New York winery recently proclaimed its product to be the healthiest, since it had the highest levels of resveratrol, a particularly powerful free radical fighter. Vintners have been petitioning the FDA to allow them to put health claims on their labels as has been allowed for oats and psyllium bran found in some cereals.



"Something that goes with oat bran . . ."

The French also dine in a much more leisurely fashion, and usually with friends and family, in a convivial, stress free atmosphere. They customarily have their large meal at lunch which can last 2 hours or more.

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This is in sharp contrast to the finger foods gulped down by Americans on the run, who often eat alone. The owner of one New York fast food establishment bragged that the total lunch time elapsed between ordering, serving, consuming, and leaving, averaged 210 seconds per customer!

There are a number of myths and considerable confusion about the health effects of alcohol. Some people believe that beer contains important nutrients and is a good source of carbohydrates. Pregnant women were formerly encouraged to regularly drink Guinness' Stout to fortify the fetus. But the present labeling for all alcoholic beverages contains a warning that they should not be consumed by pregnant women because of the risk of birth defects. In addition, that they may impair your ability to drive a car or operate machinery, and "may cause health problems." However, these are not specified. Nor is the labeling any different for wine than 120 proof grain alcohol, despite the fact that there is compelling evidence that wine can provide significant health benefits. Some believe that modest amounts of alcohol can improve both physical and mental performance for certain individuals, although it is clear that it is more likely to cause impairment for many others. Support for such opposing opinions can be found in the literature, and perhaps both sides are correct, since so many factors can be involved.

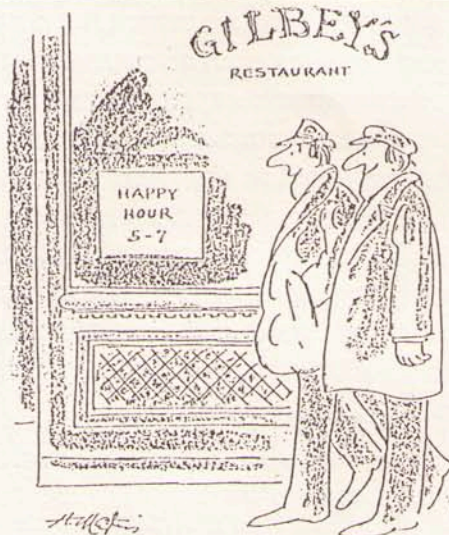
The strength of U. S. alcoholic products is expressed in terms of "proof" which is a measure of the percent of alcohol it contains. A 100 degree U.S. proof product is equivalent to 50% alcohol by volume in Great Britain and Europe, 80 degree proof is equal to 40% alcohol by volume etc. The designation "proof" is probably derived from "spirit of proof strength", the standard by which alcohol was measured in the seventeenth century. Dealers often tried to increase profits by adding water, and the way to test for this was to pour some whisky on gunpowder. If the gunpowder flashed after the alcohol evaporated, it was considered "proof" that it had not been watered down excessively. Rum is one of the few drinks that can be lit with a match because it is 50% alcohol. If the rum flamed, it was also "proof" that it contained 50% alcohol, as lesser amounts would not ignite.

In the 1740's, distillers began to use an instrument called a hydrometer which reflected specific gravity to measure the content of "spirit". This continued until 1980, when more precise measures of alcoholic strength by volume at a specific temperature were adopted. The term "spirit" generally referred to the vital principle that was the "breath of life", and animated or "fired us up". Distilled alcohol was also believed to contain such an essence or quality, hence the term "fire water".

Pure alcohol (200 proof or 100% by volume) supplies 7 calories per gram. A one and a half ounce shot of 90 proof gin contains 110 calories and 100 proof gin has 124 calories. The average 12 ounce can of beer has 146 calories, 13 grams of carbohydrates, and traces of some B vitamins and various minerals, depending on the brand. Light beer and non-alcoholic beer are lower in calories and sometimes carbohydrates. A three and a half ounce glass of table wine contains about 72 calories, 1 gram of carbohydrates, and small amounts of vitamins and minerals. Dessert or fortified wines like sherry and port have approximately 90 calories per 2 ounce serving.

Daily consumption of any of the above increases the level of high density lipoprotein, or "good" cholesterol, with wine perhaps having a slight edge because of its antioxidant content. Whether grain alcohol contributes to longevity in the same manner as wine is not clear, but has been a popular opinion, as attested to by the following.

There are more old drunkards than old doctors. - Old French proverb echoed by Ben Franklin



"And they say money can't buy happiness!"

The Hazards Of Alcohol

This Newsletter should not be misconstrued as a blanket recommendation that everyone would benefit from a few drinks daily. As noted previously, we all respond differently, and alcohol can have serious adverse health effects. Alcohol is currently the most abused drug in the United States. Ten percent of users are addicted, and another 10-20% are abusers or problem drinkers. Problem drinkers differ from alcoholics in that they are not physically addicted to alcohol and can often drink with some control. However, they may place themselves and others at risk because of central nervous system and memory impairment that lead to increased injuries, increased accidents, errors that cause legal and financial problems at work or home, and personality changes that ruin personal relationships.

Over 100,000 deaths a year in the U.S. are directly attributed to alcohol, the majority being due to automobile accidents and cirrhosis of the liver. It is likely that the toll is much higher, if one considers deaths due to infections or other disorders that alcoholism may have contributed to, not to mention its deleterious effect on quality of life.

Alcohol can raise estrogen levels by interfering with its metabolism, and has been incriminated as a contributing factor to breast cancer, although this has been recently disputed. However, there is little doubt that alcohol can contribute to liver and probably some malignancies involving the gastrointestinal tract. Alcohol also breaks down inhibitions and weakens will power, and many ex-smokers tend to resume their habits after they have a few drinks with others who are puffing away.

Women are more sensitive to alcohol than men, and moderate drinking is defined as a little more than one drink a day for women, or over two for men. One drink would be the equivalent of 12 ounces of beer, 5 ounces of wine, one and a half ounces of 80 proof distilled spirits, or one ounce of 100 proof distilled spirits. However, it is important to note that it is not wise to "save up" skipped drinks and then consume them all at once. Such "binge drinking" strongly suggests the likelihood of a drinking problem. Despite the wonders of wine, alcohol can be bad for the heart and can cause cardiomyopathy, particularly in heavy beer drinkers where an associated increased intake of certain minerals like nickel may play a role.

Chronic alcoholism is a significant problem in young people. Eighty five percent of high school seniors admitted to using alcohol in the previous year, and there are three million problem drinkers under the age of 16. Alcohol should be strictly avoided by children and adolescents, women who are pregnant or trying to conceive, individuals taking certain medications, or who drive or engage in other activities requiring skill and attention.

If you don't drink should you start? Do the possible benefits outweigh the risks? Most authorities would say no because of all the possible negative cognitive and behavioral effects, automobile and other accidents, as well as the increased incidence of liver disease, and possibly even certain malignancies. Others see it as a fairly even tradeoff. While there are 100,000 deaths a year are attributed to alcohol, statisticians estimate that if everyone abstained, additional deaths due to heart disease could possibly exceed 130,000 annually. Age is an important consideration. The greatest number of deaths is in the 15-45 year old age group, and the cardiovascular benefits are seen with modest consumption over the age of 45. Perhaps abstaining from alcohol until the fourth decade would be best.

Whether we drink, how much, what kind of liquor, when, and why, are highly individualized decisions that depend on numerous factors. Those with a family history of alcoholism should be particularly cautious since they are more prone to becoming problem drinkers. What kind of alcoholic beverage you select and how much you drink may depend on peer pressure, and your personality. Many who are partial to wine or beer may actually disdain hard liquor. But some confirmed alcoholics will drink anything, including cough syrup or rubbing alcohol if they can get it. The amount consumed, whether it is on a regular or binge basis, why, when, and with whom we drink, are all factors that influence total intake.

Perhaps the best general guideline is still "moderation in everything". And some might probably want to add, "moderation even in that."

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BOOK REVIEW: *The Way Of The Explorer: An Apollo Astronaut's Journey Through the Material and Mystical Worlds.* Mitchell, E., Williams D., G. P. Putnam's Sons, New York 1996, 230 pages, \$24.95.

Edgar Mitchell is probably best remembered as the astronaut who participated in several Apollo missions, and was the lunar module pilot for Apollo 14, when he and Alan Shepard explored the surface of the moon. Few are aware of his strong scientific background and training at MIT in quantum physics, or his solid Baptist upbringing, and his ceaseless quest to reconcile the two. As elegantly explained in this fascinating book, the Apollo 14 mission experience proved to be a cosmic crucible that really launched him on a mission to explore the nature of human consciousness. Along the way, we learn how he came to found The Institute of Noetic Sciences 25 years ago to test paranormal phenomena, and his subsequent investigations to unearth the common ground between science and spirit.

This book traces Dr. Mitchell's journeys into both outer and inner space. Our paths crossed several times in the early days of his Institute of Noetic Sciences, since we had many mutual friends with common interests. One was Carl Simonton, an oncologist who was intrigued with the relationship between stress and cancer, which I had written a great deal about. The Institute funded Carl's early research on how faith, intentionality, and stress reduction could reverse malignant growth. And Brendan O'Regan, a biochemist at Stanford Research Institute, who became their Director of Research and encouraged the scientific investigation of the stress reduction and health benefits of meditation and acupuncture at a time when these were largely rejected by mainstream medicine. Shortly before his untimely death, Brendan co-authored an authoritative annotated bibliography of spontaneous remission in cancer and other seemingly fatal disorders. There was the exciting research in biofeedback and study of the feats of Eastern mystics by our good friends Elmer and Alyce Green at the Menninger Foundation.

You will learn in this book why Dr. Mitchell believes that much of the above research is related to such things as resonance, right and left brain synchronicity, and holography, and that psychic transactions may be quantum events in the brain that provide a connection to our external environment and the Universe. This can only be appreciated by understanding quantum physics, which posits that all matter is both wave and particle at a subatomic level. This new approach and paradigm offers the promise of integrating and unifying acupuncture, homeopathy, psychic, and magnetic healing, much as light, microwaves, radio waves, x-rays and other energies were shown to be different manifestations of the same electromagnetic spectrum that differed only in wave length. These may all operate in some similar fashion at subatomic levels that Newtonian physics can not explain. The authors should be congratulated for making such technical concepts comprehensible and appealing. The average individual will find this book surprisingly easy to read, and certainly stimulating, as Dr. Mitchell explains how this approach provides the potential for self determination of our future evolution on this, and perhaps other planets.

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