



GREEN REVOLUTION

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Tending and Befriending : Women and Stress

By Laura Cousino Klein, PhD and Shelley Taylor PhD

This is a summary of an article published in *Psychological Review*:
Psychol Rev 2000 Jul;107(3):411-29

"Biobehavioral responses to stress in females: tend-and-befriend, not fight-or-flight."

A landmark UCLA study suggests that women respond to stress with a cascade of brain chemicals that cause us to make and maintain friendships with other women. It's a stunning finding that has turned five decades of stress research - most of it on men- upside down.

"Until this study was published, scientists generally believed that when people experience stress, they trigger a hormonal cascade that revs the body to either stand and fight or flee as fast as possible," explains Laura Cousino Klein, PhD, now an assistant professor of biobehavioral health at Pennsylvania State University in State College and one of the study's authors. It's an ancient survival mechanism left over from the time we were chased across the planet by saber-toothed tigers.

Now the researchers suspect that women have a larger behavioral repertoire than just "fight or flight." In fact, says Dr. Klein, it seems that when the hormone oxytocin is released as part of the stress response in a woman, it buffers the fight or flight response and encourages her to tend children and gather with other women instead.

When she actually engages in this tend-

ing or befriending, studies suggest that more oxytocin is released, which further counters stress and produces a calming effect.

This calming response does not occur in men, says Dr. Klein, because testosterone-which men produce in high levels when they're under stress-seems to reduce the effects of oxytocin. Estrogen, she adds, seems to enhance it.

The discovery that women respond to stress differently than men was made in a classic "aha!" moment shared by two women scientists who were talking one day in a lab at UCLA. "There was this joke that when the women who worked in the lab were stressed, they came in, cleaned the lab, had coffee, and bonded," says Dr. Klein. "When the men were stressed, they holed up somewhere on their own."

"I commented one day to fellow researcher Shelley Taylor that nearly 90% of the stress research is on males. I showed her the data from my lab, and the two of us knew instantly that we were on to something."

The women cleared their schedules and started meeting with one scientist after another from various research specialties. Very quickly, Drs. Klein and Taylor discovered that by not including women in stress research, scientists had made a huge mistake: The fact that women respond to stress differently than men has significant implications for our health.

It may take some time for new studies to reveal all the ways that oxytocin encourages us to care for children and hang out with other women, but the "tend and befriend" notion developed by Drs. Klein and Taylor may explain

why women consistently outlive men. Study after study has found that social ties reduce our risk of disease by lowering blood pressure, heart rate, and cholesterol.

"There's no doubt," says Dr. Klein, "that friends are helping us live longer." In one study, for example, researchers found that people who had no friends increased their risk of death over a 6-month period. In another study, those who had the most friends over a 9-year period cut their risk of death by more than 60%.

Friends are also helping us live better. The famed Nurses' Health Study from Harvard Medical School found that the more friends women had, the less likely they were to develop physical impairments as they aged, and the more likely they were to be leading a joyful life. In fact, the results were so significant, the researchers concluded, that not having close friend or confidante was as detrimental to your health as smoking or carrying extra weight!

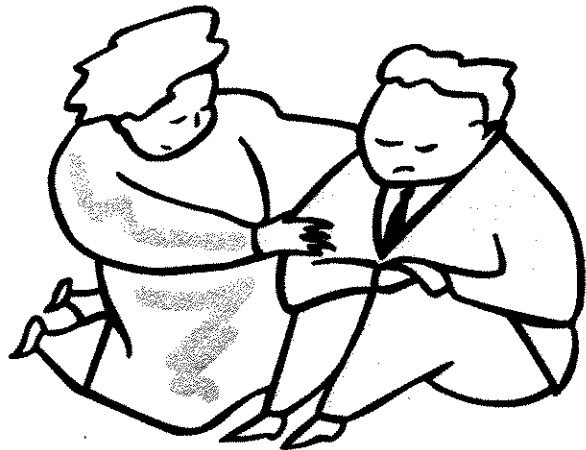
And that's not all: When the researchers looked at how well the women functioned after the death of their spouse, they found that even in the face of this biggest stressor of all, those women who had close friend and confidante were more likely to survive the experience without any new physical impairment or permanent loss of vitality. Those without friends were not always so fortunate.

Yet if friends counter the stress that seems to swallow up so much of our life these days, if they keep us healthy and even add years to our life, why is it so hard to find time to be with them? That's a question that also troubles researcher Ruthellen Josselson, PhD, coauthor of *Best Friends: The Pleasures and Perils of Girls' and Women's Friendships* (Three Rivers Press, 1998). "Every time we get overly busy with work and family, the first thing we do is let go of friendships with other women," explains Dr. Josselson. "We push them right to the back burner.

That's really a mistake, because women are such a source of strength to each other. We nurture one another. And we need to have unpressured space in which we can do the special kind of talk that women do when they're with other women. It's a very healing experience."

I thought this article on tending/befriending and stress would be interesting to School of Living members, because I believe these are tools that should and do exist in community. I also think men in community are more likely to tend to each other in times of stress than men in dominant society.

Shelley Taylor has also recently published a book on this material *The Tending Instinct* (Holt), May 2002.



SINGIN' THE SUGAR BLUES (yeah, baby)

"...half of the foods provided in our modern diet furnish little or no body-building or repairing material and supply no vitamins..." -- Weston A. Price, "Nutrition and Physical Degeneration"

"Scarcity is the notion that we are always lacking something. Because of this belief we become caught in endless pursuits to fill this perceived void." -- Lee Jampolosky, "Healing the Addictive Mind"

"Sweet talk is embedded in our language: sweetie, sweetie pie, sweetheart, honey, honey pie, sugar, sugar baby, candy, sweet cakes, baby cakes, honey bun, sugar plum. The message is loud and clear: sweetness = love." -- Elson M. Haas, "The Detox Diet"

"...sugar is the symbol of love and nurturance because as infants, our first food is lactose, or milk sugar. Overconsumption and daily use of sugar is the first compulsive habit for most everyone with addictions later in life."
-- ibid

"The white sugar addict becomes liable to obesity, tooth problems, and malnutrition; the last leads in extreme cases...to vitamin and mineral deficiency problems and probably even intestinal cancer." -- Henry Hobhouse, "Seeds of Change"

"Sugar addiction is often considered an adolescent problem to be put aside later. Yet it is usually replaced by addiction to alcohol, which enters the bloodstream even more quickly than sugar, almost within minutes if unaccompanied by food." -- ibid

"Candy is Dandy but Liquor is Quicker" -- Ogden Nash

SUGAR AND THE COLUMBIAN EXCHANGE

Cane Sugar (*Saccharum officinarum*) is a tropical, perennial grass native to Polynesia, where it was once considered to have magical properties. It is also recorded to have been used in sacred ceremonies in ancient Egypt, Babylon, and Persia. Although little is known about how it first traveled across the sea, cane sugar is recorded to have been chewed in China as an aphrodisiac in 1000 BC. Widely used in ancient India, it was first processed into white refined sugar at Bihar on the Ganges, in roughly 700 BC. By 632 AD the commercial production of sugar was established in Persia, Syria, Palestine, Cyprus, Crete, Sicily, North Africa, and Southern Spain. Sugar came to other parts of Europe during the middle ages (England 1319, Denmark 1374, Sweden 1390). It was an expensive luxury item, used especially in medicine to make the disgusting concoctions of the "professional" or Galenic pharmacopoeia palatable. An "ambrosia" for kings and the noble class, sugar was at first way too expensive to be everyman's addiction as it is today.

Columbus introduced sugar to the New World -- in Haiti -- in 1494 (hence the term "the Columbian Exchange"). As the cane was transplanted all over the world by conquistadores to the Canaries, Madeira, the Azores, Sao Tome, and the Caribbean, its increased production saw a marked rise in its availability, a sharp decrease in cost, and an increase in the slave trade to provide labor for the sugar plantations. By the century between 1690 to 1790, Europe imported 12 million tons of sugar, which cost roughly the same number of black lives.

BITTER SWEET REALITY: Or how an unnecessary "food" caused "the Africanization of the Caribbean"

Our bodies' natural biochemical processes convert fiber and starch into sugar. Sugar (in the form of fructose) occurs in all fruits and vegetables, but the pure or nearly pure sucrose found in processed white sugar is a man-made substance. White industrial sugar, from cane or from beets, if consumed in large quantities (as it is in our modern American diet) meets nearly all the body's energy requirements with a "quick fix". This means the digestive system has less work to do. Energy is produced and used in a sudden "rush" rather than a slow and steady stream. Once the body becomes used to this quick fix of energy, production of fiber- and starch-converting enzymes in the stomach is inhibited. This will eventually lead to all kinds of problems in the gut, including malnutrition. The fiber and starch naturally present in whole fruits and vegetables becomes difficult to digest, and of course, people by nature will avoid foods that are difficult to digest.

The habitual ingestion of sugar brings rushes of energy followed by sudden crashes, which causes the body to become used to a feast/famine cycle in the blood sugar level, which in turn produces a chemical rather than psychological addiction. This rush-and-crash cycle manifests in the brain as well: ingestion of sugar walks the brain through a complicated chemical process which ends up in a burst of serotonin, which makes people feel so doped up and good. When the blood sugar crash comes, serotonin levels drop, energy drops, and the brain then copes by releasing an emergency dose of endorphins, giving a false sense of sweet satisfaction. The addict then eats more sugar more frequently, to get that rush of energy and serotonin, and that dose of endorphins, which further intensifies the addiction.

Addiction to sugar will additionally lead to a preference for other highly refined foods, such as white bread (because the enzymes required to digest whole foods such as whole-grain breads are literally killed by the overconsumption of white industrial sugar). In England, where the sweet tooth developed rapidly as a symbol of affluence and "courtly favor," this strange preference for white "empty" bread was especially popular. By the year 1800, Brits were consuming per capita 18 pounds of sugar. However, sugar was still very expensive at that time, which means only the rich could afford it: some people must have been eating well over 18 pounds annually. As Hobhouse notes, "sugar, after the illegal drugs, and tobacco and alcohol, is the most damaging addictive substance consumed by rich, white mankind."

There are several reasons why the production of cane occurred in the Caribbean region such that before the year 1800, 80% of the world's sugar was produced in that relatively tiny area of the world. First, sugar was a high value crop, easy to sell (because consumers readily become addicts). Second, this helped balance out the high cost of settling Caribbean lands so far away -- 4000 miles and three months at sea from the Old World market. Third, cane sugar is a

"heavy feeder," meaning its production requires a lot of nutrients added to the soil. European farmers during the Middle Ages and into the Colonial Period did not have a sound understanding of feeding the soil in order to produce a monocultural cash crop. But the Caribbean islands, originally richly forested and sparsely populated, were perfect for the ancient "slash and burn" technique which could support large-scale production of sugar. Finally, when the Ottoman Turks conquered Cyprus, Crete, Egypt, the Aegean, and much of North Africa between 1520 and 1570, the existing sugar supply to Europe was virtually cut off. Spain was the only nation producing sugar in quantities sufficient to feed, in part, the addicted Europeans. To a great degree, white cane sugar funded the Inquisition, the Armada, and the Spanish conquest of Florida, California, Mexico, The Caribbean, South and Central America. Production of sugar to raise those funds and to satiate the European sweet tooth brought millions of black slaves across the ocean and into the brave New World.

SUGAR PRODUCTION TODAY rides on the coattails of this historical abuse of land and people. A recent report on National Public Radio revealed that Haitian workers are literally abducted and taken across the border into the Dominican Republic where they work 12 hour shifts on the sugar plantations given nothing but a chunk of cane to chew on. The D.R., one of the USA's "most favored nations," sells 80% of its sugar to the states.

Environmentally speaking, the production of sugar (or any other monocultural crop for that matter) is virtual genocide to native plant communities. Given the millions of pounds of sugar people consume annually, the amount of land given over to its monocultural production robs the Earth away from native biodiversity in more than 100 countries currently producing cane sugar. Add to this the fact that the conventional (non-organic) harvesting process includes setting fire to the cane field, thus burning away the dry leaves, making it easier to cut the stalks. This not

only kills any birds, insects or other animals which may happen to be in the field at the time, it also destroys the biological activity of the top soil, as well as adding smoke to the atmosphere (contributing to air pollution and ozone depletion).
 In fact, air pollution in the form of smoke during "the burning season" in Central America in the year 2000, largely from sugar production, was so thick that airports were shut down for most of the month of May that year. Of course, the lungs of children and wildlife are a bit more important than whether or not Continental and United met their market share that year. Given the overwhelming evidence that white industrial sugar is bad for your health in the first place, do we need any more reasons to stop eating this so-called "food?"

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The School of Living, founded in 1934 by Ralph Borsodi, is dedicated to the learning and teaching of personal responsibility and right living. It aims to foster self governing communities, which are democratic, humane, globally conscious and ecologically sound. All of its resources, especially the land it holds in trust, are held in responsible stewardship for all living creatures. We are happy to receive your comments and suggestions. Articles for publication are welcomed and greatly appreciated.

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After many years of wonderful committed service,
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