

## The Diet-Behavior Connection

Perhaps more than anyone else, Barbara Reed has made the criminal-justice system sit up and take notice of diet. A probation officer in Ohio for 20 years, Reed found that a change in her own diet — away from sugary “junk foods,” white flour and canned goods — changed her life. The recurring nightmares which had plagued her disappeared, as did the mental lapses, fatigue and violent mood swings.

By 1971 she was advocating a similar dietary reform to all her probationers. Those who followed her instructions reported feeling better, more energetic and more emotionally stable. Most important, she told *SCIENCE NEWS*, the recidivism rate amongst her charges plunged. And that’s something William Pike, a judge with the Municipal Court of Cuyahoga Falls, Ohio, noticed; “I was amazed at the dramatic results in persons who were placed on probation to her through my courts,” he said.

Though the data that Reed gleaned in attempting to improve the diet of more than 1,000 probationers are anecdotal, penal systems throughout the country have found it persuasive enough to begin giving it a try.

The research community, less willing to be swayed by anecdotal accounts, has begun its own investigation of diet’s role in behavior. And several studies now suggest that diet not only affects behavior and intellect (see accompanying story), but may also play a role in tempering antisocial behavior — much as Reed’s accounts had suggested. What’s more, this new research may also lend indirect support to the findings recently reported by William Walsh — for the inborn body chemistry of Walsh’s violent subjects might cause them to experience nutrition that is in effect similar to, if not worse than, that of junk-food addicts.

Stephen Schoenthaler, director of the Social Justice Program at California State College, Stanislaus, began a study of juveniles at Virginia’s Tidewater Detention Center in Chesapeake during 1980, to specifically probe whether a relationship existed between sugar consumption and what he terms “antisocial behavior.” Although the initial study was small, the results it suggested were strik-

ing — potentially a halving of incidents requiring formal disciplinary action.

The Tidewater studies involved drastically restricting refined (white) sugar in detainees’ diets. Because one couldn’t substitute fruit juice for Coke, or honey for table sugar, without the youths noticing, Schoenthaler had the detention home’s project director, Frank Kern, announce that fiscal difficulties were necessitating menu changes. Neither the staff, the children, nor the cooks were informed of the real reason for the diet change, Schoenthaler says.

Changes in antisocial behavior were measured from records kept daily by staff counselors. Every incident requiring discipline was recorded. Comparing data from the four months prior to and three months following the diet change, Schoenthaler found a 45 percent drop in



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antisocial behavior among the home’s changing population (most youths stayed only a month awaiting their court appearance).

Then he controlled for race, age, gender and arresting offense using records from a year before and following the sugar restrictions (which increased the number of subjects from 58 to 276). And still, he says, “there was a 48 percent reduction in antisocial behavior.” Finally, the 934 incidents that occurred over that two-year period were analyzed by type of offense. Schoenthaler found “an 82 percent reduction in assaults, 77 percent reduction in thefts, 65 percent reduction in horseplay, and 55 percent reduction in refusal to obey orders” — after limiting sugar. And “the people most likely to show improvement,” he noted, “were those who had committed violent acts on the outside.”

His work has not gone unnoticed. Kern says correctional facilities throughout the nation have expressed keen interest in the Tidewater research, and Virginia is even contemplating institutionalizing aspects of the Tidewater diet throughout its correctional system. Schoenthaler has follow-up studies in six states. And Kern expects to host a five-day symposium in October on theoretical and practical applications of dietary therapy in corrections.

Diana Fishbein, a University of Baltimore criminologist exploring diet and maladaptive behavior — including violence — has also focused on sugar. “When your blood sugar is low, your brain can’t function properly,” she says, “because the brain uses 50 percent of all glucose in the blood. And if the brain’s not functioning right, your behavior will be modified.”

She says research suggests low blood sugar may contribute to irritability, headaches, agitation, frustration and explosive behavior. And “it’s ironic,” she says, “but the more sugar one consumes, the lower one’s blood sugar tends to be.” Together with Robert Thatcher and colleagues at the University of Maryland, she is investigating how diet affects brain function and sugar metabolism. Conceding “I can’t really say there’s good, conclusive data” yet linking sugar and other carbohydrates with maladaptive — and potentially criminal — behavior, Fishbein says research certainly points in that direction.

Schoenthaler suspects that chronic deficiencies in elements essential to glucose metabolism — such as zinc, iron, phosphorus and magnesium — may contribute to a deprivation of the chemical energy needed by the brain for intellectual functioning. He told *SCIENCE NEWS*, “We know that if there is an [energy] shortage, the limbic system, the most primitive part of the brain, gets priority since that’s the part that controls involuntary muscle responses” — such as those for breathing and pumping blood. That region also seems to control emotions. Therefore, he speculates, if the brain is denied sufficient energy, the region “sacrificed” might be that which contributes to reasoning. He points out that Walsh’s data, Thatcher’s findings and his own Tidewater studies are all consistent with this theory.

relatively inexpensive way to view physiological events. For example, he says, looking at age-related iron levels in women, “You can see puberty clear as a bell.” More provocative, after conducting hair analyses for thousands of normal individuals, Walsh has found that healthy individuals invariably separate into one of six basic groupings. He says, “We think these relate to six basic body-chemistry types, somewhat analogous to blood types.” Walsh has

already been contacted by at least one industrial firm interested in developing and marketing commercial hair typing.

HRI has also begun looking for correlations between body chemistry and disease. Hair samples from victims of Alzheimer’s disease, Tourette’s syndrome and even alcoholism are being studied. It’s possible that similarities in trace-metal abundances might characterize sufferers of a particular disease. If so, such findings

could aid in understanding what causes the ailment and whether it might be amenable to chemical — including dietary — therapy.

While not limiting itself to any one test, HRI’s specialty, Walsh believes, “will probably be trace-metal analysis.” Walsh acknowledges the jury is still out. “But my suspicion,” he says, “is that these trace-metals are going to correlate with a lot of things besides violence.” □