

which A offered more when playing these two games were usually the same ones in which C was willing to give up more to penalize A in the third-party punishment game.

The experimenters suggest an evolutionary analysis of these results. When people live in small groups, natural selection can lead to the development of altruism through reciprocity: I will treat you fairly if I can assume that you will treat me fairly.

But reciprocity is effective mainly when people have repeated encounters or everyone knows everyone else, and it is easy to gain a reputation for good or bad behavior. It is not so easy to explain how altruism develops in larger or more anonymous groups where reputations are not so familiar.

These experiments suggest that the willingness of individuals to share even when there is no imme-

diately penalty for selfishness increases along with the understanding that, in many situations, other members of their society will act against their own immediate interest to impose a penalty. The voice of conscience influences us even when no one is watching, but it has evolved under the watchful eye of society.

Henrich J, et al. "Costly Punishment across Human Societies," *Science* (June 23, 2006): Vol. 312, pp. 1767–70.

Obesity and depression

Obese people are more likely than average to be clinically depressed and anxious, according to a national survey, but only when they are also white and college educated.

In the National Comorbidity Survey Replication, nearly 10,000 Americans were asked to state their height and weight. Obesity was defined as a BMI (body mass index) greater than 30—the equivalent of 186 pounds in a person 5 feet 6 inches tall.

In both sexes and all ethnic groups, and at all levels of education, obesity was correlated with a low risk of alcohol and drug abuse and addiction. Obese people of both sexes had a 20%–50% higher than average rate of various mood and anxiety disorders—

but only because three-quarters of the people in the sample were white and about half had some college education. Obesity was unrelated to anxiety and depression in African Americans, Hispanics, and non-Hispanic whites who did not attend college.

A correlation does not necessarily indicate a cause. Other studies suggest that depression can lead to obesity or obesity to depression; losing weight may help relieve depression, and depression can make losing weight more difficult; or depression and obesity could have some underlying common cause.

One reason this correlation is limited to college-educated, non-Hispanic whites may be that compared

to people with different ethnicity or less education, they have a low rate of obesity. Other research has shown that the association between depression and smoking is similar: College-educated whites are less likely to be smokers and more likely to be depressed if they do smoke. When the rate of a condition like nicotine addiction or obesity is lower in a given group, the remaining smokers or obese persons are more likely to be stigmatized or psychiatrically vulnerable, and so they are more likely to be depressed and anxious.

Simon GE, et al. "Association between Obesity and Psychiatric Disorders in the US Adult Population," *Archives of General Psychiatry* (July 2006): Vol. 63, No. 7, pp. 824–30.

Act, don't think, to relieve depression

That's the conclusion of a study comparing standard cognitive behavioral therapy with an expanded version of behavioral therapy called behavioral activation therapy.

Cognitive therapy targets persistent self-defeating thoughts. Cognitive behavioral therapy, a version that includes behavioral training and homework, has become one of the most widely used treatments for de-

pression. But some researchers have questioned how much work the cognitive part of the therapy really does.

Behavioral activation therapy, the alternative used in the new study, is based on the idea that depressed people withdraw from the routine activities and demands of daily life to avoid emotional pain. As a result, they receive fewer rewards and become more depressed. For example,

a depressed person in the midst of a conflict with a coworker stays home for several days. Withdrawing from feeling as well as action, she avoids immediate conflict but deprives herself of the satisfying knowledge that she is completing tasks and earning money, while doing nothing to address the original problem. What would help her in the long run is temporarily difficult and unpleasant.

As depression progresses and deepens, that may come to include getting out of bed in the morning.

In behavioral activation therapy, the therapist is interested in the function of negative thinking—the way it promotes withdrawal—rather than its rightness or wrongness, as in conventional cognitive behavioral therapy. Patients are shown how to find out and record what gives them a feeling of accomplishment, then do it more. They are taught to maintain regular routines and schedules while exploring alternative behavior by role-playing. They also learn to avoid pessimism and gloomy rumination by directing their attention to the immediate experience of their senses. In this respect, the

authors point out, behavioral activation therapy resembles the newer mindfulness-based cognitive therapies (see *Mental Health Letter*, April 2005).

In a study at the University of Washington, nearly 250 people with major depression were divided into four groups that received either behavioral activation therapy, cognitive behavioral therapy, an antidepressant medication, or a sugar pill (placebo). Treatment continued for 24 sessions over four months while standard questionnaires measured changes in the symptoms. Results were tracked separately for mildly depressed and severely depressed patients.

Patients in all four groups improved, and all treatments were equally effec-

tive for the mildly depressed patients. For the severely depressed, behavioral activation and the antidepressant drug were equal, and both were superior to cognitive behavioral therapy and the placebo. But patients taking the medication or placebo were much more likely to drop out than those receiving psychotherapy. So, over all, behavioral activation therapy was the most successful treatment. When depressed people were prodded into action, it seemed, their thoughts took care of themselves.

Dimidjian S, et al. "Randomized Trial of Behavioral Activation, Cognitive Therapy, and Antidepressant Medication in Acute Treatment of Adults with Major Depression," *Journal of Consulting and Clinical Psychology* (2006): Vol. 74, No. 4, pp. 658–70.

Thwarting alcoholism in the brain

A brain imaging study shows that high levels of a nerve receptor for the chemical messenger dopamine may help prevent children of alcoholics from developing alcohol problems themselves.

Fifteen people who did not abuse alcohol but had a high rate of alcoholism in their families—at least three relatives including the father—were compared with 16 controls who had no family history of alcoholism. Most were in their early 20s.

The subjects with a family history of alcoholism had high levels of working receptors of the type known as dopamine D2 in the caudate and ventral striatum, parts of the brain's reward system. Dopamine is a neurotransmitter released during and in anticipation of a rewarding experience.

In rats, high dopamine D2 receptor levels in the nucleus accumbens, another part of the reward system, reduce alcohol intake. Humans with

extra dopamine D2 receptors are more likely to become intoxicated on low doses of alcohol—a vulnerability that is associated with relative invulnerability to alcoholism. People with severe alcohol problems often have low dopamine D2 receptor levels in the striatum. And drugs that interfere with these receptors increase alcohol intake in both animals and humans.

In this study, higher levels of dopamine D2 receptors in frontal cortical regions, especially the orbitofrontal cortex and cingulate gyrus, were associated with high blood flow in those regions, which are involved in impulse control and judgment. The subjects with alcoholic fathers had lower overall activity in the frontal cortex than controls. So their extra dopamine D2 receptors may have protected them against alcoholism by compensating for some underlying deficit in those regions.

The authors think that both he-

redity and environment are involved. Most studies suggest that alcoholism is about 50% heritable. People with chronic alcoholism may start with normal dopamine D2 receptor levels that are reduced by a combination of stress and chronic alcoholism itself. Higher than average levels of the same receptors may protect otherwise genetically vulnerable members of the same families by enabling them to respond better to stress—including the stress of living with an alcoholic parent.

The authors note similar findings in studies of amphetamine addicts and suggest that the underlying capacity for self-restraint extends to other tempting rewards besides alcohol and drugs.

Volkow N, et al. "High Levels of Dopamine D2 Receptors in Unaffected Members of Alcoholic Families," *Archives of General Psychiatry* (September 2006): Vol. 63, No. 9, pp. 999–1008.

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