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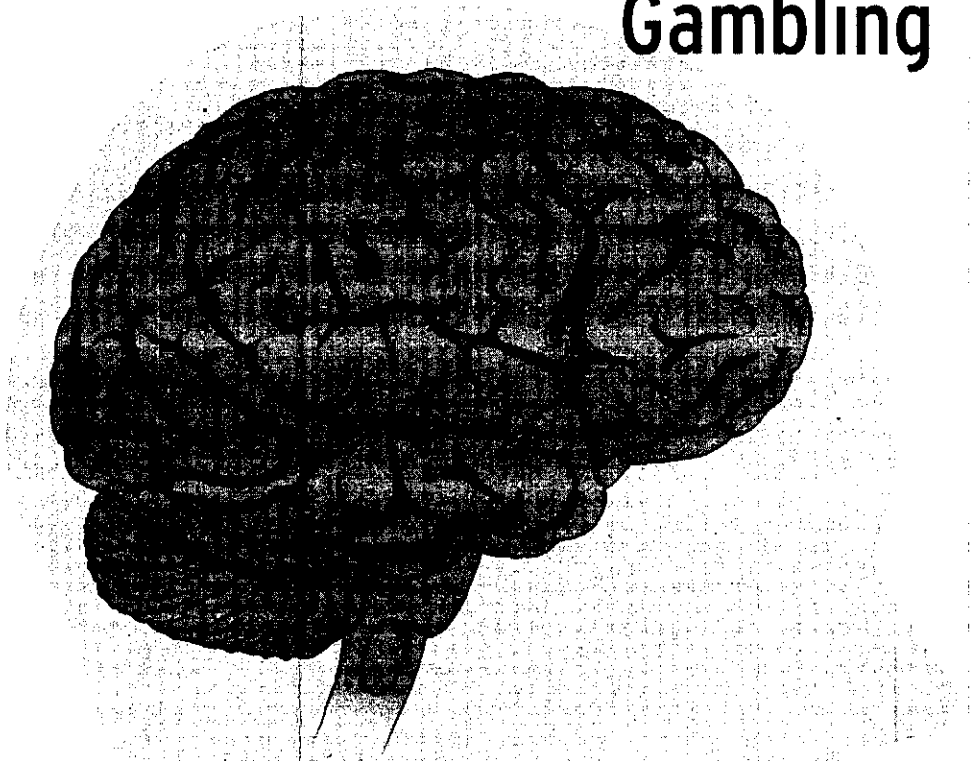
Brain Biology and Pathological Gambling



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The Institute for Problem Gambling

Jon E. Grant, JD, MD

Pathological Gambling

Is...

a serious condition. People are not able to stop or control their gambling even when they know it hurts them, their families and friends, and their wallets. Pathological gamblers are also called compulsive or addictive gamblers. They spend a lot of time thinking about gambling. They often experience overwhelming urges to gamble. They risk more money and spend more time gambling than they mean to. Gambling often interferes with their ability to maintain friendships and meet responsibilities at home and at work.

Many pathological gamblers do not believe that gambling is responsible for their problems. Even those who do recognize how gambling affects their lives find it difficult to stop, no matter how hard they try.

Pathological gamblers may be depressed or feel anxious. Sometimes, but not always, they abuse alcohol and/or other drugs.

Families affected by pathological gambling can also experience problems, especially in the areas of personal responsibility, finances, and trust.

Pathological Gambling

Is Not...

a sign of poor moral character or an indication that a person is lazy, greedy, or bad.

What Causes Pathological Gambling?

There is growing evidence that the interactions of a number of factors, such as psychological needs, social pressure, and the biological functions of the brain, contribute to the development of pathological gambling.

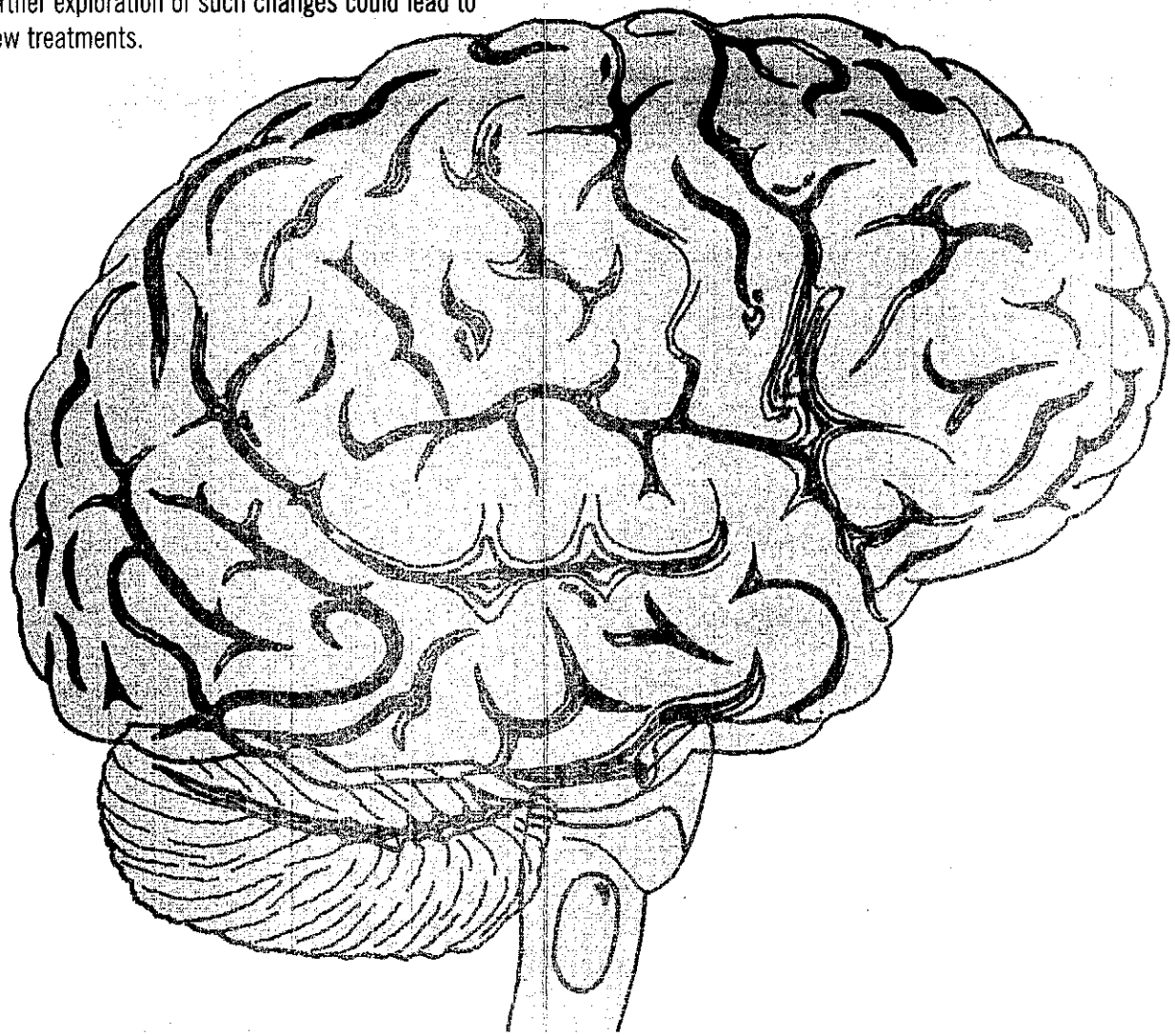
For some people, pathological gambling runs in families. This suggests that vulnerability to developing pathological gambling may be inherited as well as learned. That is not the only cause of pathological gambling, though. It is clear that other factors, such as financial problems, changes in a family related to death or divorce, or even living near a casino, contribute to the disorder.

Studies show that pathological gamblers are three to eight times more likely than recreational gamblers to have a parent who is a pathological gambler. In some families of pathological gamblers, a greater-than-average number of people have difficulties with alcohol, drugs, or depression. However, pathological gambling also occurs in people who have no family history of those disorders.

The Biology of the Brain

The brain consists of billions of nerve cells organized by region and function. Those cells communicate with one another through chemicals called neurotransmitters. New research suggests that pathological gamblers have changes in the levels of neurotransmitter activity in parts of their brains. It is not clear that these changes cause gambling—they could also be the effects of gambling—but further exploration of such changes could lead to new treatments.

Changes in the concentrations of some neurotransmitters are associated with such psychiatric illnesses as depression, anxiety, and obsessive-compulsive disorder. In terms of pathological gambling, researchers are not yet certain which neurotransmitter changes may provide more understanding of and better treatments for the disorder. However, there are neurotransmitters, especially those listed below, that are good candidates for more study.



Serotonin appears to help people control their impulses and need for excitement. A reduced concentration of serotonin in the brain is associated with a decrease in the ability to control impulses. That may lead people into risky behaviors, including gambling. Medications that raise serotonin levels, such as Prozac and Zoloft, are effective treatments for depression. They sometimes also help gamblers exercise more self-control.

Dopamine affects the way the brain experiences feelings of pleasure. If doing something makes a person feel very good, the person usually wants to do that activity again and again. Dopamine dysfunction appears to make people vulnerable to addictive behaviors.

Endorphins, chemicals the body makes, have the same effects on the brain that morphine and heroin do. Endorphins create a feeling of well-being and relieve pain. Several activities produce endorphins, including meditation and aerobic exercise. That is the usual explanation for the "runner's high." Exciting and risky activities, such as bungee jumping, also produce endorphins. Endorphin production in the brains of gamblers may be one cause of their addiction. Medicines that block the euphoria endorphins cause have been helpful to some gamblers.

Norepinephrine, or noradrenalin, affects energy, concentration, alertness, and sensation seeking. Gamblers have been found to have increased levels of norepinephrine during gambling, and those levels stay elevated for extended periods—even after the gambler stops for the day. These findings suggest that people with gambling problems may experience heightened levels of arousal while gambling, which may lead them to want more.

What Do These Findings Mean?

Learning about the brain biology of pathological gamblers gives researchers a way of understanding why gamblers have such a hard time stopping. Perhaps the excitement and risk involved in gambling produce chemical changes that result in addiction. If that is true, good intentions and willpower may not be enough. It is reasonable to hope that in the future, the benefits of psychosocial treatment of pathological gambling—group therapy, Gamblers Anonymous, individual counseling, and family intervention—may be enhanced more often with medication.