

Remember in chapter 1 we talked about the “perspectives”? One was the biological (remember chapter 2) and another was the behavioral/learning. One thing the behavioral approach says is that if something positive follows a behavior, the behavior is more likely in the future. (the positive thing that follows the behavior is called positive reinforcer). The behavioral perspective assumes that all behaviors are “learned” in this way, by the environment causing some to increase (when drinking leads to feeling good) and reducing others (think how likely you are to be a heavy drinker if after each drink you get sick). This article is commenting on which approach “neuroscience (meaning biological)” and “behavioral/Learning” makes the most sense.

What follows are excerpts from an article titled **Behavioral Perspectives on the Neuroscience of Drug Addiction** by Gail Winger in 2005.

Because drug addiction generally is conceived as a process *caused directly* by chronic administration of drugs of abuse, the investigative effort of neuroscientists is concentrated on a search for changes in the morphology or molecular biology in relevant parts of the brain as a function of chronic drug administration. (in other words, compare the brains of drug abusers and non-drug abusers). The neuroscience skills and techniques used by these investigations are formidable, and interesting neuronal changes have been observed following chronic drug administration. Even more technically fascinating is the possibility of recreating these localized neurobiological changes in the absence of drug administration—in effect producing an addicted brain without giving the addicting substance. Animals so treated then can be evaluated behaviorally, to determine whether they are, in fact, addicted. (in other words, if drug addiction can be thought of as a “brain disease” and caused by changes in the brain, then shouldn’t we be able to change the brain, like ‘giving the brain the disease’, and then view the drug addicted behavior of the animal?).

Behavioral scientists generally regard drug addiction as a behavioral disorder that results when drug reinforcers assume control over a substantial portion of an individual's behavioral repertoire ([Higgins, Heil, & Lussier, 2004](#)). As such, addiction to drugs can be considered a form of excessive behavior, occurring when other activities are expected and appropriate. Overeating and excessive gambling are other examples of inappropriate and excessive behaviors often attributed to an addiction of some kind, but do not involve drug administration. A characteristic of each is that initial exposure to a reinforcing stimulus (e.g., euphoria, food, money) is followed by a progressive escalation in the behavior that produced it. Behavior that results in the availability of these reinforcers may eventually dominate the behavioral repertoire simply because these stimuli function as more potent reinforcers than others available in an individual's environment. This may be due, in part, to genetic predispositions or, more likely, to particular learning histories combined with relatively easy access to these reinforcers (i.e., a high rate of reinforcement) and insufficient contact with alternative sources of reinforcement.

One advantage of a behavioral approach to drug abuse is that, contrary to the drug-based neuroscience theories, it not only accounts for excessive behavior that does not involve drugs, but it also accounts for situations in which repeated exposure to drugs is *not* followed by addiction. For example, people who use drugs to excess while they are young are likely to stop using drugs when they get older, a process called *maturing out* ([Chen & Kandel, 1995](#)). When a young person is exposed to reinforcers that are incompatible with drug taking, such

as those associated with marriage, family, and employment, the relative reinforcing functions of drugs usually decrease to the point where they no longer maintain the drug-taking behavior. People who do not mature out of their excessive drug taking may not have these other reinforcers available, may not seek them out, or may not find them to be superior to the drugs they are taking due to particular learning histories and/or genetic predispositions.

As a second example of repeated drug use not leading inevitably to addiction, consider that soldiers who used heroin to excess while in combat situations in Vietnam typically did not continue this use when they returned home ([Robins, 1994](#)). A third situation occurs in patients who self-administer opioids for the treatment of pain but have no inclination to continue to use the drug following recovery. The reinforcing effect of the drug in this case is related to its ability to reduce pain, and following recovery there is no reason

to continue to use the drug. There is also the fact that a great many people have successfully stopped smoking cigarettes, at least in part because the health risks became overwhelmingly obvious ([Centers for Disease Control and Prevention, 2004](#)). It clearly is not the case that simple exposure to drugs, even in the context of their strong reinforcing effects, necessarily leads to a permanent state of drug addiction.

A behavioral approach also is much more hopeful about the potential for treating drug addiction ([Higgins et al., 2004](#)).

Theories that subscribe to drug-induced changes in the nervous system present more hopeless scenarios (once-a-drug-addict-always-a-drug-addict) that are more likely bereft of treatment possibilities. Behavioral management of drug use, however, is one of the most successful intervention strategies, particularly with cocaine abuse for which there is no pharmacological treatment yet available. Contingency management procedures typically involve giving patients vouchers if they have drug-free urine samples on a regular basis. The vouchers can be exchanged for various goods and services. Some contingency management therapies increase the value of the voucher over time, as long as the client remains drug free, and resets the value if cocaine use is detected or if the client refuses to submit a urine sample. These procedures were far superior to standard therapy in producing drug-free clients and retaining them in treatment over a 24-week study ([Higgins et al., 1993](#)). At this point, a behavioral approach is *uniquely* able to generate successful strategies for prevention and treatment.