BEHAVIOR THERAPY 29, 567–576, 1998

Consumer Choice: Implications of Behavioral Economics for Drug Use and Treatment

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This article examines the three recommendations made by Bickel, Madden, and Petry (1998) for drug-abuse treatment: (a) adopting methods to decrease drug availability, (b) increasing the availability of substitutable nondrug activities, and (c) using treatment methods that will increase the extent to which delayed rewards control the behavior of substance abusers. Advantages of a "consumer choice" model for both understanding individual drug use and promoting access to new treatment alternatives are considered. Implications from behavioral-economic theory for drug policy decisions and enforcement, selection of and access to treatment, and techniques utilized in cognitive-behavioral treatment methods are reviewed. Finally, because behavioral economic approaches to drug use and treatment treat drug users as consumers, ways to make the treatment environment more attractive and user-friendly through low-threshold prevention and intervention efforts are discussed. The article concludes with a brief description of the parallels between the harm-reduction model of drug treatment and behavioral economic theory.

How can a drug-free state be achieved? Simple. An operation can remove the drug receptors from the brain. Those who refuse the operation will be deprived of all rights. Landlords will refuse them housing, restaurants and bars will refuse them service. No passport, no benefits from Social Security, no medical coverage, no right to buy or own a firearm. How I hate those who are dedicated to producing conformity. For what purpose? Imagine the barren banality of a drug-free America. No dope fiends, just good, clean-living, decent Americans from sea to shining sea.

—William Burroughs (1997)

The behavioral economics of drug dependence have been outlined in the interesting and provocative paper by Bickel and his colleagues at the University of Vermont (Bickel, Madden, & Petry, 1998). In this article, principles derived from behavioral economic theory are applied to two behaviors asso-

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005-7894/98/0567–0576$1.00/0

ciated with drug use and dependency: (a) spending resources (time, effort, and money) to obtain drugs, often to the exclusion of other potential rewards, and (b) "loss of control," defined by the authors as the inability to follow through with plans to cut down or abstain from drug use. Both behaviors are analyzed from the theoretical perspective of behavioral economics, based on their review of basic animal and human research, epidemiology, life history, and treatment studies.

The authors provide three main recommendations for drug-abuse treatment: (a) to adopt methods that would decrease drug availability, (b) to increase the availability of nondrug activities that may substitute for drug use, and (c) to use treatment methods that will increase the extent to which delayed rewards control the behavior of substance abusers. Each of these treatment implications will be considered in the present paper. Advantages of a "consumer choice" model for both understanding individual drug use and promoting access to new treatment alternatives are discussed.

Determinants of Drug Consumption

Why do drug users frequently commit an excessive amount of resources to obtain and consume drugs, often at the expense of other prosocial rewards? Two principles drawn from behavioral economics are proposed to account for this outcome (Bickel et al., 1998). The first principle, referred to as the law of demand, states that consumption of a reinforcer (e.g., drug use) decreases when constraints on access are increased (higher price). The second principle states that drug consumption is affected by the concurrent availability of other reinforcers ("cross-price elasticity").

According to the law of demand, drug use decreases when constraints on access (price) are increased. Drug price is not limited to the monetary cost of purchasing desired substances: "Factors influencing price, therefore, are more inclusive than monetary price alone, including, for example, the effort required to obtain the drug, the potency of the drug, and the consequences of drug use" (Bickel et al., 1998, p. 550). In support of the first determinant, data are reviewed showing that increased effort to obtain access to nicotine (among cigarette-deprived smokers in a laboratory smoking task) decreased consumption in a positively decelerating fashion. In this study, increased effort was linked to the number of operant responses required to obtain puffs from a cigarette.

The authors cite monetary cost as an important potential constraint on the use of both legal and illegal drugs:

> Given that cigarettes and alcohol are widely available at low prices in the U.S., we should expect that public consumption is at near maximal levels. In contrast, the prices of illicit drugs (not only monetary prices, but also constraints on consumption imposed by limited sources from which to buy and the legal sanctions against use) are con-

> siderably higher. Therefore, the baseline starting point of illicit substance abuse interventions is most likely further to the right along the demand curve, closer to the point at which consumption is proportionally more sensitive to price changes. (Bickel et al., 1998, pp. 548–550)

In a later section of the paper, the authors address the treatment implications of this principle: "Treatment should seek to increase the price of drugs of abuse through methods such as contingency management . . ." (p. 557).

Current American drug policy, often referred to as the War on Drugs, can be seen as an attempt to keep the price of illicit substance use as high as possible, presumably based on the assumption that if the price is high enough, consumption will be curtailed and consumers will turn to other nondrug reinforcers. The high rate of incarceration of drug offenders in American prisons reflects the ultimate contingency management: If you use, you lose your freedom. William Burroughs's (1997) "final words" (cited above) on the draconian penalties for drug use reflect his concern with the politics of the "zero tolerance" approach.

By making drug use illegal, the monetary costs are thereby determined by the demands of the "black market." The price of crack cocaine is determined by the law of supply and demand in the underground marketplace. From the perspective of an illicit drug user, the costs are very high, and extend well beyond the monetary price of the substance itself. Other costs to the drug user include potential death from drug overdose effects (often due to consumer ignorance as to the potency of drugs they are injecting) or from contraction of the HIV virus by the use of shared injection equipment (needle exchange programs are still illegal in many areas of the country). Those who are caught using or selling drugs face incarceration in prison for many years due to fixed, mandatory sentences. Others are reluctant to seek help because of the barriers associated with the stigma and fear of arrest associated with illegal drug use. In addition, there are numerous costs to society, including loss of revenue (no taxes are generated from the sale of illicit drugs), the cost of criminal activities required by many users to obtain funds to buy drugs, as well as the expenses paid to incarcerate drug users in the prison setting.

Given the tremendous costs associated with the current American drug policy, it is surprising that behavioral economic theory has not explicitly addressed the estimated costs and benefits of drug legalization as an alternative policy (Evans & Berent, 1992). What would be the economic and behavioral impact of decriminalizing illicit drug use and placing the same limits and conditions of sale as we now have for tobacco and alcohol products? Conversely, what would be the economic impact of making all substances, including alcohol and tobacco, illegal? What changes in drug use would be predicted on the basis of behavioral economic theory under both "legal" and "black market" conditions? Would more people seek treatment for illicit drug use if the criminal penalties for possession and use were lifted? One can spec-

ulate about the answer to these questions by examining what is indicated by behavior economic theory.

Behavior economic theory suggests that increasing constraints on access to drug reinforcers will result in a decrease in the consumption of that reinforcer. Many policies, in fact, appear to utilize this theory by prohibiting use or significantly restricting access to use (i.e., increasing the "price" of use). Outright prohibition or direct constraints intending to reduce access to a reinforcer, while succeeding in reducing consumption, may have unintended repercussions. In the study described by Bickel and colleagues (1998) and reviewed above involving the manipulation of the "cost" of cigarettes, consumption decreased from between 23% to 64%. However, drug seeking, described by the authors as the behavior emitted to obtain the drug, actually increased from at least 45% and up to 300%. Making a drug harder to get may result in making a consumer willing to work harder to get it. In the War on Drugs, an all-out attack in the absence of substitutable nondrug reinforcers may result in the consumer simply switching battlefields.

Bickel and colleagues (1998) note that "by increasing the cost of drug use by arranging nondrug reinforcers contingent upon abstinence, the cost of the drug increases in a way that does not mirror increasing the monetary cost of drug, and therefore would not increase drug-seeking" (p. 554). This, indeed, is the key. Behavior economic theory posits that preference for a reinforcer arises within a context involving other reinforcers, options, or activities. Preference for a reinforcer varies inversely with direct constraints on access to the reinforcer and inversely with the availability of alternative reinforcers and directly with constraints on access to them. Presuming that treatment can be viewed as an alternative reinforcer, based on the benefits accompanied by reduced harm or risk, the principles of behavior economics can be applied to selection of treatment. Just as a consumer may or may not choose to use drugs in the context of other reinforcers, a consumer may or may not choose to select treatment. If, in the context of other choices, treatment, as an "alternative reinforcer," is to be chosen as an option by a consumer, constraints on access to treatment must be minimal.

Data based on behavioral economic studies of both legal and illegal drug use would be extremely useful in informing future drug policy decisions. The current federal ban on funding for needle-exchange programs is a case in point. Policymakers are faced with a decision that involves the weighing of various costs and benefits. Is the "benefit" of reducing the risk of HIV infection among active intravenous drug users worth the potential "cost" of "sending the wrong message" to other potential injection drug users? Are the "costs" of approving marijuana for certain medical uses (thus opening the door to decriminalization) greater or less than the benefits of reducing human suffering in patients with cancer or AIDS? Again, by lessening constraints on access to needle-exchange programs (i.e., programs should be geographically accessible, should feel safe to the consumer, should be approachable, etc.) or use of marijuana for medical purposes (i.e., promoting decriminalization,

safety for the individual, open consultation with health-care providers, etc.), perhaps preference for these options would increase.

Contingency contracting is described as an application of the law-of-demand principle to drug treatment. An example of this procedure is the use of contingent rewards for continued abstinence. Each drug-free urine sample provided by the patient is reinforced with points that can be redeemed for prosocial nondrug activities (cf. Higgins, 1997; Higgins et al., 1993). As the authors state:

> Reinforcing abstinence increases the cost of drug use because the price of drug use includes the forfeiture of a reinforcer derived for drug abstinence as well as the usual cost of consuming a drug. (Bickel et al., 1998, p. 554)

Given the importance placed upon maintaining clients' motivation for continuing treatment, one potential limitation of contingency contracting is that it does not reinforce successive approximations. As indicated by the authors, presentation of a "dirty urine" leads to the forfeiture of a reinforcer. The dichotomous "dirty/clean" distinction suggests that there is no reward for a significant reduction in one's use. While ongoing, unchanged use would clearly not be reinforced, a program participant whose urinalysis indicates a 90% reduction in drug amount will fail to be rewarded—a condition that can contribute to premature termination of treatment. Engaging in an alternative response to drug use necessitates the perception of accessible alternative responses by the consumer. Hence, going beyond total abstinence as a condition for recognition, reinforcement, or reward is a possibility.

The second major principle based on behavioral economics is that drug use is affected by the availability of alternative nondrug activities or events. As stated by Bickel et al. (1998):

> With respect to the latter principle, the type of interaction between drug reinforcers and concurrently available reinforcers is important. These interactions fall on a continuum from alternative reinforcers that may substitute for drug use, to alternative reinforcers that complement drug use. The former interaction decreases drug use while the latter increases drug taking. (Bickel et al., 1998, p. 547)

Application of this second principle is necessary for long-term changes to occur. In the study described by Bickel, Amass, Higgins, and Esch (1997), with opioid-dependent patients undergoing detoxification while taking buprenorphine (a substitute opioid), the contingency management program was modified in such a way that engaging in nondrug-related alternative activities was reinforced with points that were exchangeable for social and

recreational goods and services. These reward points could be earned in addition to those earned for opioid-free urine samples. Results from this study showed that patients completing a greater percentage of prosocial activities in treatment had a greater frequency of drug-free urine samples.

Training patients in alternative activities to drug use is also a primary component of the cognitive-behavioral approach to treatment programs for addictive behavior problems. Relapse prevention programs are designed to train patients to engage in alternative coping behaviors in the immediate context of potential drug use (Carroll, 1996; Marlatt & Gordon, 1985; Monti, Abrams, Kadden, & Cooney, 1989). Once high-risk situations for potential relapse are identified, patients learn new adaptive coping responses that facilitate access to rewarding consequences. For example, if a patient has a pattern of relapse in response to anxiety-provoking situations, alternative methods of stress management (e.g., relaxation or meditation training, exercise) may provide reinforcing consequences that exceed that provided by the drug alone. A functional analysis of the individual's drug-taking behavior often yields useful information about alternative activities that may substitute for drug use.

The advantages of combining contingency management and coping skill training into comprehensive drug treatment programs have yet to be fully investigated. Research reviewed in the paper by Bickel and colleagues (1998) shows that manipulation of consequences for maintaining abstinence (or failing to do so) by contingency management procedures is effective at least on a short-term basis, particularly in the early stages of treatment when attaining initial abstinence is the primary goal. Treatment outcome studies of coping skill training (e.g., relapse prevention) often show that the impact builds over time, an effect that some investigators have termed a "delayed emergent effect" (Carroll et al., 1994). Treatment effects may be delayed due to the gradual process of acquiring and maintaining alternative coping responses over time. This pattern of findings suggests that treatment effectiveness may be facilitated by a combination of early-stage contingency management (perhaps augmented by pharmacotherapy) followed by training in coping skills. Skill training may be more effective if delivered during a period of stable abstinence (achieved through contingency management) early in the treatment period.

According to behavioral economic theory, the phenomenon of "loss of control" in drug use may be mediated by the principle of "discounting." In this analysis, the value of a delayed reward (e.g., economic stability and improved health) is discounted (reduced in value) compared to the value of an immediately available reward (drug use). According to Ainslie (1992) and other economic theorists, the devaluation of delayed rewards is proportional to their delay (hyperbolic discounting function). Thus, despite the good intentions made by individuals who plan to give up drug use (on their own or in treatment), such "rational" decisions are frequently abandoned in the face of the temptation associated with immediate access to drug reinforcers.

Bickel and colleagues (1998) recommend several novel treatment approaches based on this analysis:

> Such a model could then be employed to examine whether loss of control can be treated with either behavioral or pharmacological treatments. Second, this research may suggest novel treatment approaches via application of procedures previously demonstrated to produce shifts toward self-controlled choice (e.g., precommitment procedures, teaching tolerance of delay, cost-benefit reasoning). (p. 560)

Here again, cognitive-behavioral treatment methods designed to "produce shifts toward self-controlled choice" may be useful in this regard. Clients in drug treatment often benefit from a "cost-benefit" analysis of their choice to use drugs or to refrain from use. One example is the "decision matrix" exercise (Marlatt, 1985). In this decision-making exercise, the client is asked to describe his or her expected consequences of resuming drug use or maintaining abstinence. Outcomes are further classified into expected short-term and long-term consequences, and each of these is further divided into positive and negative consequences. As the client responds to the eight possible categories of outcome (use vs. no use; short- vs. long-term consequences; positive vs. negative outcomes), the therapist adds additional consequences that the client may have missed. The point of the exercise is to help clients make rational decisions designed to increase personal benefit and gain. Alternative motivational approaches can also be utilized to support self-controlled choice. Motivational interviewing (Miller & Rollnick, 1991), which uses the provision of feedback in a nonjudgmental, nonconfrontational manner, aims to develop discrepancies between the client's self-image and reality to promote the contemplation or initiation of change. Feedback about discounting behavior (e.g., consequences and costs of resuming use as well as compromising utilization of delayed rewards) could be a motivational "hook" that promotes appropriate behavior change.

Relapse is often mediated by expectancies about the consequences of drug use, even when the "drug" is a placebo substance that provides no direct rewarding consequences (Marlatt, Demming, & Reid, 1973). Personal beliefs and attributions about the cause of addiction and relapse have also been shown to predict the severity and magnitude of relapse for both smoking (Curry, Marlatt, & Gordon, 1987) and alcohol dependence (Miller, Westerberg, Harris, & Tonigan, 1996).

One of the most appealing aspects of a behavioral economic approach to drug use and treatment is that it treats drug users as consumers. And what consumers they are! It is difficult to imagine the vast resources (money, time, and energy) spent by loyal consumers on a daily basis around the world for commodities such as tobacco, alcohol, opiates, cocaine, marijuana, ecstasy

and designer drugs, LSD and hallucinogens, amphetamines and "crystal meth." In addition to consuming drugs, these consumers use up other community resources at a high rate of expense: medical and drug treatment services, police and interdiction efforts, prison and court costs, lost family income and personal expense.

How can we get such consumers into treatment or help them overcome their expensive addictive behavior? By treating them as consumers! One way to attract potential customers is to make the shopping environment attractive and user-friendly. Denigrating prospective buyers with pejorative terms such as "addict," "criminal," or "moral degenerate" is hardly the way to get them in the treatment door. By setting high thresholds for treatment entry (such as requiring total abstinence as a precondition for receiving treatment services), fewer consumers will attempt entry to your store. By threatening customers with long prison sentences for consuming their drug of choice, consumers are more likely to resist seeking help. Many drug treatment professionals criticize their customers for "denial" (i.e., consumer preference for drugs over treatment) or engaging in other manipulative processes (e.g., "shoplifting" or attempting to procure drugs while in treatment). Other programs may refuse to provide helpful services for their addicted clients, such as access to methadone or needle-exchange programs.

The principles of choice described by behavioral economic theory set the stage for a much more "user-friendly" approach to attract potential customers. As behavior economic theory hypothesizes that preference for a reinforcer varies inversely with direct constraints on access to the reinforcer, consumers may be attracted by low-threshold prevention and treatment programs that, similarly, are characterized by few constraints on access. In contrast to the high-threshold approach, low threshold programs make few if any requirements as a condition of entry (i.e., there are few constraints on access to the activity). Often, customers are invited to "come as they are" to these types of programs (Marlatt, 1996), even if they are still actively using drugs. Choice, for the participant, is emphasized. For example, potential consumers are given a menu of treatment options, ranging from basic information meetings (e.g., "Thinking About Quitting" groups) to participation in self-help groups, brief interventions, or more intensive therapy provided by professional therapists. A variety of treatment modalities and options are presented to consumers, including behavior therapy, pharmacotherapy, 12-step groups, therapeutic communities, and community-reinforcement approaches. Each therapeutic modality could be presented on video (or made accessible on the Internet). Consumers could make informed choices about their preferred treatment program; if a particular program failed, the consumer could return it, receive a refund, and purchase a competitive program.

Consumer choice and selection is a hallmark characteristic of the harm-reduction model of drug treatment (Marlatt, 1998). Parallels between behavioral-economic theory and the harm-reduction paradigm have been addressed elsewhere (Marlatt, Tucker, Donovan, & Vuchinich, 1997). As with behav-

ioral economics, harm reduction is consumer-focused and often establishes a partnership with the drug-consuming clientele. As an example of this partnership, needle-exchange programs were first recommended to public health officials in the Netherlands by a "union" of active addicts, known as the Junkiebond. Harm reduction is user-friendly and promotes low-threshold access for interested consumers. The philosophy of harm reduction promotes informed consumer choice as an alternative to professional treatment matching. Customers appear to be more satisfied when they are able to purchase what they want, not what they "should" get. Further, Bickel and colleagues (1998) note that "behavioral-economic principles of reinforcer interactions may provide a useful way to characterize the various types of polydrug abuse" (p. 557) by exploring which drugs are substitutable. When the immediate goal of abstinence does not seem attainable or desirable to a consumer, harm reduction efforts often seek to explore substitutable reinforcers that will reduce the harm associated with consumption of the initial drug (e.g., methadone maintenance for heroin users). Again, behavioral economic principles can inform these efforts as research on the efficacy of harm-reduction strategies continues.

Behavioral economics is a promising new approach to understanding drug use and treatment. Several important implications for treatment have been described in the excellent review paper by Bickel and colleagues (1998). Other treatment applications have been presented in two recent edited books on this topic (Green & Kagel, 1996; Johnson & Roache, 1997). Community reinforcement programs have also been developed to extend contingency contracting methods into the client's posttreatment environment. The next generation of treatment programs would do well to combine the most promising behavioral and cognitive-behavioral components into an integrative approach with a primary focus on consumer choice.

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RECEIVED: December 22, 1997
ACCEPTED: June 15, 1998