

EFFECTIVE USE OF SANCTIONS IN DRUG COURTS: LESSONS FROM BEHAVIORAL RESEARCH

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While many believe that the use of graduated sanctions is at least in part responsible for the success of drug courts, the body of research on this question is extremely limited. In fact, relatively few controlled studies of punishment or negative reinforcement have been conducted with noninstitutionalized adults, either in drug courts or in other settings, and apart from generic recommendations that sanctions be delivered quickly, reliably, and with sufficient intensity, little information is available on their use.

Although the circumstances and contexts of basic behavioral research in this area differ from the drug court environment, the principles that have emerged appear to apply across a variety of settings. Based on this research, several recommendations can be made on the use of graduated sanctions in drug court programs. Drs. Marlowe and Kirby present those recommendations here as they review behavioral research on the effects of punishment and negative reinforcement for predicting and controlling behavior.

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ARTICLE SUMMARIES

INCREASED PERFORMANCE

[1] Contrary to traditional clinical wisdom, drug court participants perform well in treatment, due in part to the effective use of sanctions.

SANCTIONS NEED NOT BE PAINFUL

[2] Wanton or excessive infliction of pain is inconsistent with the goals of punishment or negative reinforcement.

IN THE EYES OF THE BEHAVIOR

[3] Rewards and punishments are not always received as the deliverer intended them. How they are received depends upon the receiver's history.

REGULARITY OF SANCTIONS

[4] Regular and immediate delivery of sanctions is

important to the success of the receiver.

CLARIFICATION OF EX- PECTED BEHAVIORS

[5] Provision of "explicit behavioral instructions" and "predictable" sanctions will help drug court participants avoid the "helplessness syndrome."

EFFECTIVE PUNISHMENT

[6] To be effective, sanctions must be part of an overall behavior modification plan.

RESEARCH POTENTIAL

[7] Due to negatively perceived historic acts, specific areas of behavior modification research have been ignored for decades, and now need the attention of more modern research.

Traditional clinical wisdom holds that substance abusers cannot be forced into treatment with effective results. Presumably, legally mandated or coerced clients are less motivated to succeed in treatment than those who seek it on their own volition, and motivation is often presumed to be a prerequisite for positive behavioral change (Miller & Rollnick, 1991). They may also be reluctant to trust and engage with treatment providers if they perceive them as being on the side of criminal justice authorities and against their own legal interests (Schottenfeld, 1989). Further, the pressure of being forced into treatment can invoke counterproductive feelings of anger, resentment, and powerlessness, and undermine positive traits such as initiative, self-determination, and self-respect.

[1] Contrary to expectations, however, a substantial body of evidence indicates that legally mandated and coerced clients generally perform as well or better than others in terms of treatment retention, abstinence, and psychosocial functioning across a diverse range of settings (Anglin et al., 1998; Anglin & Hser, 1991; Brecht & Anglin, 1993; Collins & Allison, 1983; Group for the Advancement of Psychiatry [GAP], 1994; Hiller et al., 1998; Marlowe et al., in press, Marlowe et al., 1996; Simpson & Friend, 1988). The results are particularly promising for drug courts, which appear to produce retention rates that are superior to both probationary and community-based programs (Belenko, 1998).

A number of commentators have surmised that close monitoring of attendance, substance use, and criminal activity, combined with the imposition of increasingly severe sanctions for successive infractions, are at least partly responsible for the success of drug courts and similar probation programs (Anglin et al., 1998; Byrne et al., 1992; Harrell & Cavanagh, 1995; Office of Juvenile Justice and Delinquency Prevention [OJJDP], 1995; Taxman, 1998), and indirect evidence appears to support the theory that the severity and certainty of criminal justice sanctions are inversely related to the likelihood of criminal recidivism (Apospori & Alpert, 1993; Bren-

nan & Mednick, 1994; Piliavin et al., 1986). Virtually all probationary and drug court programs impose a progressive list of penalties for successive infractions of program rules (e.g., for each “dirty” urine sample provided, each failed court appearance, or each subsequent misdemeanor conviction) (Chavaria, 1992; Gonska, 1994). Very few studies, however, have specifically evaluated graduated sanctions interventions in a drug court or any other setting.¹

To our knowledge, no effort has been made to dismantle a sanctions program and identify its operative ingredients. And apart from generic recommendations that sanctions be delivered quickly, reliably, and with sufficient intensity (Anglin et al., 1998; Harrell & Cavanagh, 1995; Taxman, 1998), little information has been garnered on how to design sanctions, how to tailor sanction schedules to optimize outcomes, or how to avoid some of the notorious pitfalls of using negative sanctions in treatment.

Clearly, the body of research on the use of sanctions in drug courts is extremely limited, and, for reasons that are explored below, relatively few controlled studies of punishment or negative reinforcement have been conducted with noninstitutionalized adults. In addition, legal restrictions on conducting research among inmates (Myerson et al., 1991) make it difficult to gather direct evidence from correctional samples.

Much of the basic behavioral research that has been conducted in this area has taken place in the animal laboratory or in institutionalized settings for mentally ill or developmentally delayed persons. The circumstances and contexts of these studies were obviously quite different from the drug court environment. However, the basic behavioral principles

¹Preliminary data are available from the D.C. Superior Court Drug Intervention Program (Harrell & Cavanagh, 1995), which suggest that clients can be readily recruited into a sanctions condition, and that they may in fact perform significantly better than clients in a traditional counseling setting in terms of retention and urinalysis-confirmed abstinence. These promising findings must still be confirmed in a randomized trial on a larger sample of offenders.

that have emerged from this research appear to apply across a variety of settings and species (Griffiths et al., 1980).

Based on the body of research that is available, several recommendations can be made on the use of graduated sanctions in drug court programs. We present those recommendations here as we review basic behavioral research on the effects of punishment and negative reinforcement for predicting and controlling behavior.

PUNISHMENT AND NEGATIVE REINFORCEMENT RESEARCH: REVIEW & RECOMMENDATIONS

The terms “punishment” and “negative reinforcement” appear often in the review that follows. As defined in behavioral research, they refer to the specific effect(s) of a sanction on behavior, and not to the nature of the sanction itself. In the strictest sense, “punishment” is defined as any consequence of a specific behavior that reduces the likelihood that the behavior will be repeated, or repeated at the same rate, in the future (Azrin & Holz, 1966; Martin & Pear, 1992). For example, a person is imprisoned for the crime of using drugs. Upon his release he stops using drugs. In this instance, imprisonment has functioned as a “punishment” for drug use. If, however, a second person is imprisoned for the crime of using drugs, but continues to use them after her release, then the imprisonment has not functioned as a punishment for drug use, regardless of how it was intended.

“Negative reinforcement” is defined as the removal of a sanction contingent on a target behavior, which has the effect of increasing that behavior (Sidman, 1966). Suppose a third person is imprisoned for the same crime. This inmate receives progressive reductions in her sentence as she completes various stages of a treatment program. The reduction in her sentence constitutes “negative reinforcement” because the reduction increased the target behavior of treatment completion.

SANCTIONS NEED NOT BE PAINFUL, HUMILIATING, OR INJURIOUS.

[2] Early researchers on punishment and negative reinforcement tended to employ aversive sanctions, such as electric shocks, seclusion, or physical restraint. Understandably, this approach precipitated a strong public and professional backlash, and the study of punishment fell into disrepute among most behavioral researchers and practitioners.

In general, it is necessary to search the literature of the 1950s or 1960s in order to uncover primary resources and empirical studies of punishment. By the 1970s, punishment had almost disappeared as an area of inquiry in psychological research, and most of today's clinical textbooks simply review the most common negative side effects of punishment, and then conclude that positive reinforcement (rewarding desirable behavior) is far preferable for changing behavior (Martin & Pear, 1992; Goldfried & Davidson, 1976; Hall, 1975). The adage that "one can catch more flies with sugar than with vinegar" aptly summarizes much of contemporary psychological thought about punishment.

Remembering that "punishment" simply refers to a method of curtailing undesirable behavior, and that "negative reinforcement" refers to a method of enhancing desirable behavior, we can see that it is quite possible to engage in a scientific study of these phenomena without being sadistic or authoritarian. In fact, the wanton or excessive infliction of pain is inconsistent with the goals of punishment or negative reinforcement. If one's purpose is to predict and control the behavior of others, then orderly, modulated responses to their actions are required. The infliction of pain or discomfort on a person without regard to his or her ability to respond is unlikely to render that person predictable or controllable. Rather, this kind of treatment tends to make a person behave in unpredictable and unmanageable ways.

SANCTIONS ARE IN THE EYES OF THE BEHAVER.

[3] Not all punishments are painful, and not all painful events are punishing. Certainly, parents and teachers understand that scolding or spanking does not necessarily decrease a child's inappropriate behavior. Indeed, some children find it rewarding; they are gratified that someone is finally paying attention to them. For many children and adults, ridicule or rebuke is preferable to being ignored.

At the extreme, some individuals find physical restraint or the infliction of pain to be rewarding. For instance, certain sub-cultures view physical pain or incarceration as a "baptism of fire" or a "badge of honor." To the amazement of the public, policymakers, and even some corrections officials, prestige and camaraderie can be unexpected rewards of what was intended to be punishment (Marlowe et al., in press; Skolnick, 1990).

The efficacy of a particular intended punishment is determined in large part by a subject's personal history and life circumstances. In one study, impoverished inmates ranked a \$5,000 fine as being more aversive than three years of probation or six months in jail (Petersilia & Deschenes, 1994). It is not likely that middle-class defendants would agree. Asked how they would rank various intervals of intensive probation (one, three, and five years) against equivalent periods of jail time, many inmates in the same study group either expressed a preference for the jail time or ranked the two options equally. These individuals viewed intensive probation as being more confining or more demanding than jail. Married and employed inmates, however, preferred probation to incarceration (Crouch, 1993). Apparently, these inmates with meaningful ties to the community are willing to be subjected to stringent supervision in exchange for the opportunity to retain those ties to the community that they have established. It is unclear whether these rankings reflect the actual effects that these sanctions would have on inmate behavior; how-

ever, the results suggest that one type of sanction might not be equally effective for all offenders.

Just as intended punishment might operate as a reward, intended rewards could inadvertently operate as punishment (Torres, 1996a), and it is safe to say that a person's previous life experiences affect how he or she interprets or reacts to either punishment or reward. For example, in many drug treatment programs, drug-free urine specimens can be exchanged for clinic privileges, reduced attendance requirements, payment vouchers, or take-home doses of methadone. The objective here is to reward desirable behavior rather than to punish undesirable behavior. The drawback is that some clients may react to a missed opportunity to earn a positive privilege as though it were a negative sanction, and the unanticipated outcome could be an outburst or a desire to flee treatment.

SANCTIONS MUST BE OF SUFFICIENT INTENSITY.

Studies have consistently demonstrated an orderly relationship between the intensity of a negative sanction and its effects on the undesired behavior. Take, for example, this illustration of punishment: A mouse is trained to press a bar lever to obtain food. The frequency of bar pressing can subsequently be reduced by shocking the mouse each time it presses the lever, and precisely how much the bar-pressing rate will decline is directly proportional to the strength of the electric shock (Azrin & Holz, 1966). At some level of intensity, the bar pressing ceases altogether after only one or two learning trials.

The implications of this finding, however, are not as straightforward as one might think. Subjected to punishment at low to moderate intensities, both animals and human beings can become habituated (accustomed) to being punished, resulting in their being able to withstand unusually high levels of punishment. If a mouse were to be subjected to gradually increasing intensities of electric shock, it would continue to

press the bar-lever beyond intensities that would completely deter other mice (Azrin et al., 1963).

By analogy, recidivist offenders could become habituated to threats from the criminal justice system, and cease to be deterred by even long periods of incarceration. Indeed they may tend to minimize the seriousness of prison in comparison to other sanctions (McClelland & Alpert, 1985). For some individuals, each instance of incarceration may actually increase the likelihood of future incarcerations. Criminologists tend to attribute this phenomenon to the socialization of youthful offenders into an antisocial milieu, or to the fact that the brutality of prison begets brutality by inmates, a theory that are not necessarily incompatible with the habituation theory. Numerous factors undoubtedly conspire in certain cases to make prison a substantially less effective sanction than might be anticipated.

[4] The findings on habituation have important implications for the use of graduated sanctions in drug courts. Virtually all probationary and drug court programs impose graduated sanctions (Chavaria, 1992; Gonska, 1994), and the implications of habituation must be taken into account when developing a graduated sanction plan that can last the life of a treatment program. Every time we meet an infraction with a light sanction, we run the risk of habituating the offender to the next level of sanction. This is not to say that graduated sanctions are contraindicated. Rather, it suggests that building up the intensity of sanctions slowly could be counterproductive; generally speaking, early sanctions should exceed a meaningful threshold of intensity. For the first infraction or two, a stern warning and a fairly moderate sanction might be in order (e.g., a requirement to spend several hours or several days observing court sessions). In the very early stages of treatment, the most pressing issue may be to demonstrate that infractions can be detected and will be acted upon. However, a pattern of relatively weak sanctions can serve as an invitation to test the limits and engage in further misconduct.

As a defendant becomes increasingly accustomed to criminal justice sanctions, it will become necessary for the judge to “up the ante” in order to continue to control the defendant’s conduct. At some point, however, a sanction “ceiling” will be reached, after which further escalation would be impractical or a violation of Eighth Amendment or Due Process requirements. Premature exhaustion of the court’s arsenal of sanctions leaves a judge little recourse beyond returning the defendant to criminal court to face disposition of the original charges. Devising a set of intermediate sanctions that have sufficient “sting” and yet are practical to implement calls for substantial ingenuity. Too slow to escalate, and the defendant could become habituated to punishment; too quick, and the judge runs the risk of exhausting his or her options. The ideal mid-tier sanction is easily managed, lends itself to further escalation, and foreshadows to the defendant what might be involved in stronger sanctions. An example would be several days in residential detention or jail. Such a sanction would presumably lend itself to reasonable implementation by the court, should not unduly burden the jail system, and would strongly hint at things to come if the defendant fails to modify his or her behavior.

SANCTIONS SHOULD BE DELIVERED FOR EVERY INFRACTION.

Just as important as the intensity of punishment is the regularity with which it is delivered. In behavior analysis, this is referred to as the schedule of reinforcement. In a “continuous fixed ratio” (FR1) schedule, sanctions are delivered for every infraction. “Intermittent” FR schedules can also be established; a sanction would be delivered for every second infraction on an FR2 schedule, for every third infraction on an FR3 schedule, and so on. Sanctions can also be delivered on a “fixed interval” (FI) schedule, in which a sanction is delivered for an infraction occurring after a fixed time. For example, a sanction might be delivered for the first infraction that occurs after Wednesday.

As borne out by behavioral research outcomes, the smaller the ratio of punishment to infractions, the more consistent and enduring is the suppression of the undesired behavior (Azrin & Holz, 1966). Put simply, FR1 schedules are the most effective. Intermittent or FI schedules can work, but more time and more learning trials will be required. For instance, a mouse on an FR3 schedule will not be shocked after pressing a bar the first two times, but will be shocked the third time it presses the bar. This is apt to stretch the time and the number of trials it will take the mouse to stop pressing the bar. Add to this the fact that the mouse will continue to receive food pellets for pressing the bar, which will reinforce the mouse's tendency to press the bar. The lapse in punishment, in combination with continued reward derived from the food, will make it more difficult to suppress the bar pressing in the future.

By analogy, a person who is punished for using drugs one time but not the next time is less likely to suppress drug-taking behavior in the future than another person who is punished for every infraction. Further, like the mouse with its food, the drug user receives the reward of drug use without an accompanying punishment. Finally, the drug user is apt to perceive a "hole" in the system to be exploited in the future. Few programs set out to deliver punishment on an intermittent or FI schedule, but most wind up doing so without knowing it. A well-intended effort to give a defendant "one more chance" might have the unintended effect of switching the defendant to an intermittent (FR2) schedule. The matter becomes more complicated if the timing of punishment varies over the course of treatment. For example, in a court with a revolving docket, a defendant might appear before different judges on a predictable schedule over the course of a month. If the sitting judge during the first and third weeks of the month is strict and a lenient judge takes the bench during the second and fourth weeks, the unintended effect may be to place the defendant on an FI schedule. In effect, the defendant would be punished for the first infraction after two

weeks. Alternatively, the defendant might effectively be placed on an FRI schedule by the strict judge and on an intermittent schedule (e.g., FR2 or FR3) by the lenient judge. In effect, the defendant learns that the first judge will punish him or her for every infraction, while the second judge imposes punishment only for every second or third infraction. This arrangement is likely to lead to “anticipatory suppression” (Skinner, 1953) of drug use during the first and third weeks of the month, with more frequent drug use during the remaining weeks.

SANCTIONS SHOULD BE DELIVERED IMMEDIATELY.

To have the greatest chance of reducing undesirable behavior, sanctions should be delivered as quickly as practicable after an infraction occurs. In laboratory settings, intervals of just one hour have been demonstrated to decrease a sanction’s efficacy (Azrin, 1956). A long delay could negate the impact of the sanction entirely, or it could bring about only temporary change. The impact of a sanction is strongest when it is delivered immediately after an infraction. When a sanction is delayed, many new behaviors will fall in between the violation and the sanction. In this case, the sanction might be inadvertently paired with behavior that is desirable, or at least not undesirable. For example, a defendant lapses to drug use on Monday, but remains drug-free and attends all scheduled treatment appointments for the remainder of the week. If the judge imposes a sanction on Friday, it could act to punish the defendant’s abstinence. At a minimum, the delay could complicate matters. If the judge praises the defendant for his or her abstinence from Tuesday through Friday and subsequently imposes a sanction for Monday’s lapse, the praise might ring hollow.

UNDESIRABLE BEHAVIOR MUST BE RELIABLY DETECTED.

Failure to uncover an infraction is, in behavioral terms, functionally equivalent to putting the individual on an intermittent

schedule. It also lowers the credibility of the detection system, effectively inviting future efforts to test its limits (Torres, 1996b).

Programs that perform urinalyses on a regular weekly or bi-weekly schedule risk placing their clients on an intermittent schedule, and precipitating anticipatory suppression of drug use only on the days immediately preceding the tests. For this reason, many community-based treatment programs conduct urine testing on a random monthly or bi-weekly schedule. Clients in these programs can expect to be tested two, three, or four times per month, but they have no advance notice of the specific days on which testing will occur. In theory at least, the fear of detection remains constant throughout the month.

Random testing may keep some clients clean, but it invites others to “play the odds.” Many commonly abused substances remain detectable in urine for less than 48 to 72 hours (Gilman et al., 1990). If testing occurs twice a month, the window of detection is thus typically less than six days, so the odds favor undetected use for 24 days out of a 30-day month. Factor into this equation the fact that testing rarely occurs on a weekend (which tend to be high drug-use days) and a drug user can lapse on a Friday evening with a reasonable chance of delivering a “clean” urine specimen on Monday morning. Now, factor in the low odds of a test actually being called on that particular Monday, and the chance of detection becomes negligible. Finally, note that tests are typically spaced at least several days apart from each other, so each test effectively signals a period of respite from detection.

Ideally, testing should be performed at least two to three times per week. Frequent testing may not close the window of opportunity for undetected drug use completely, but the opening will become quite small, increasing the chances of detection. In addition, frequent testing will facilitate the immediate levying of sanctions, eliminating the possibility of inadvertently establishing an intermittent or FI schedule.

The accuracy of positive urinalysis results can and will be challenged, but a challenge is seldom cause to delay the imposition of any but the most severe sanction (e.g., program expulsion). If follow-up testing does in fact uphold a challenge, the wrongfully imposed sanction can subsequently be terminated or compensated, and it is unlikely that a single instance of undeserved punishment, particularly punishment of moderate or low intensity, would cause serious or lasting harm. Failure to reliably detect and implement a sanction, on the other hand, is quite likely to detract from the efficacy of the intervention.

It is important to inform clients at the point of their entry into treatment that they bear the relatively slight risk of false positives (typically less than 3 percent) from the urine tests. It is also important to recalibrate drug-testing equipment on a regular basis to avoid recurrent unreliable results, and to have independent laboratories validate results by routinely performing confirmatory analyses of randomly selected specimens.

SANCTIONS MUST BE PREDICTABLE AND CONTROLLABLE.

Punishment can only be effective if the individual has both the ability and the opportunity to respond as desired. An individual cannot learn to behave as expected if the demands placed upon him or her are excessive, or if he or she lacks the skills required to respond appropriately. Similarly, an individual cannot seek to avoid sanctions or even know when to expect them if he or she is unaware of the behaviors that trigger them.

[5] Unpredictable or uncontrollable sanctions can lead to a behavioral syndrome known as “learned helplessness” (Seligman, 1975), in which the person who is punished becomes aggressive, withdrawn, or despondent. For instance, children who are unable to predict when a parent will become angry or displeased with them often present as clingy,

depressed, or irritable, and out of a sense of futility they may give up trying to satisfy even basic expectations.

It is essential to specify clearly what behavior(s) is expected of a person in order to avoid punishment. Ideally, the expected behavior will be clearly quantified and operationalized. A simple instruction to “stay clean” is open to interpretation; as such, the defendant might not be able to predict what behavior will avoid a sanction. In contrast, a requirement that the defendant deliver two clean urine specimens per week and attend three counseling sessions per week is substantially more predictable and controllable.

The importance of providing explicit behavioral instructions cannot be overstated. Clients who do not clearly appreciate what is expected of them, and what behaviors will avoid the imposition of punishment, may become complacent or simply stop trying. Further, substance abusers are notorious for attempting to manipulate ambiguities to their own favor. Clear behavioral instructions will reduce the likelihood that clients will evade responsibility by claiming ignorance of the rules.

Strict compliance at the outset may be an unrealistic expectation, particularly for individuals who experience severe cravings or withdrawal symptoms. Unable to satisfy such expectations, the individual might be tempted to give up. It may be preferable to establish a series of graduated, attainable expectations that constitute steps toward the desired behavior (e.g., achieving a percentage reduction in drug use or attending a specified number of treatments). This is called “shaping.”

Of course, certain conduct, such as violent criminal recidivism or high-risk sexual behaviors, may be too serious or dangerous to permit gradual approximations. For an individual who cannot readily suppress such behaviors, it may be preferable not to rely on punishment after the fact, but rather to place the individual in a residential environment to prevent opportunities for acting out.

Shaping is not without other risks. Undesired behavior could be permitted to continue unabated, and perhaps to continue

to be rewarded. It is important, therefore, even during the early stages of shaping, that target behaviors cross some meaningful threshold of utility. For drug court clients, each behavioral step should be demonstrably related to the end goals of abstinence from substance abuse and crime, and each successive step should bring the client demonstrably closer to attaining those goals.

SANCTIONS MAY HAVE UNINTENDED SIDE EFFECTS.

Punishment has many iatrogenic (negative, unanticipated) side effects. When used excessively or inappropriately, it may precipitate a learned helplessness syndrome, which is counterproductive to the goal of improving behavior. Individuals who experience excessive, uncontrollable, and/or unpredictable sanctions often become irritable, despondent, and isolated, and thus less open to positive behavioral change.

Punishment can also provoke efforts to escape (Sidman, 1966). Indeed, an individual's immediate and understandable reaction to pain or discomfort is to attempt to flee. The more uncomfortable the sanction, the more intense the effort to escape. It is not surprising, therefore, that individuals enrolled in treatment programs that rely excessively on sanctions often abscond in large numbers.

Finally, punishment has a noteworthy tendency to have an impact beyond what was intended (Sidman, 1966, 1989). For instance, a judge's intent upon issuing a sanction to a defendant is to help the defendant avoid drugs in the future. Unfortunately, what the defendant may actually learn to avoid is the judge, or all judges, or all criminal justice authorities. This is because the judge becomes more associated with the sanction than the behavior that triggered it. This is especially common when there is a lag time of several days or weeks between the infraction and the sanction.

Indeed, the judge is more spatially and temporally connected to the sanction than is the instance of drug use, which might have transpired several days or weeks before. Verbal instructions are frequently employed at this juncture in an effort to

“detach” the judge from the punishment, and to explicitly connect the punishment to the defendant’s own behavior. Like a parent who says, “This hurts me more than it hurts you,” in an effort to minimize some of the iatrogenic effects of punishment, a judge can make it clear that the sanction is a result of the defendant’s own conduct, and that he or she derives no pleasure from imposing it. The likelihood of success with this strategy depends on numerous factors, not the least of which is the judge’s true attitude. Judges who deliver sanctions with a sense of satisfaction, hostility, or vindictiveness are unlikely to convince a defendant that this is totally for the defendant’s own good. In fact, such negative sentiments are more apt to link the judge to the sanction, or to act as punishment in their own right, thus increasing the defendant’s efforts to avoid the judge.

BEHAVIOR DOES NOT CHANGE BY PUNISHMENT ALONE.

[6] Used in isolation, punishment is not a particularly effective means of controlling behavior. It can evoke many iatrogenic responses, among them habituation, efforts to escape, and despondency. The eventual outcome could be intransigence or unresponsiveness to intervention. When used with other behavior modification techniques^{3/4}techniques like extinction, positive reinforcement, and negative reinforcement—punishment can become a much more effective tool (Azrin & Holz, 1966).

EXTINCTION

“Extinction” refers to a decrease in an undesirable behavior resulting from a loss of rewards previously associated with that behavior (Martin & Pear, 1992). Drug use, for instance, has a number of reinforcing effects, including euphoria, kinship with other substance abusers, and sexual pleasures. A treatment provider who relies solely on punishment to alter drug use behavior must compete with these pleasurable rewards. It will take a substantial amount or intensity of pun-

ishment to counteract twenty hours a week of intense euphoria. If, however, other techniques can be employed to constrain the individual from experiencing the pleasurable effects of the drugs, then the drug-taking behavior should decline at a more efficient rate.

Extinction generally occurs when an individual continues to engage in the target undesirable behavior, but no longer receives the concomitant positive reinforcement. It follows, therefore, that an individual who continues to take drugs but no longer feels their euphoric effects might reasonably be expected to decrease his or her drug use.²

Contrary to expectations, preventing a person from using drugs (for instance, by placing him or her in a restrictive residential setting) does not necessarily lead to extinction. This is because neither drug taking nor the rewards of drug taking can occur. Only when drug taking occurs in isolation from its rewards can extinction be anticipated.

POSITIVE REINFORCEMENT

Punishment is most likely to be effective in the long run when it is used in combination with “positive reinforcement” of behaviors that 1) are fundamentally incompatible with the undesired behavior; 2) carry their own natural rewards; and 3) are likely to be rewarded in the client’s natural social environment (Sisson & Azrin, 1989). For instance, eating right, spending time with one’s family, and holding down a good job have natural rewards such as improved health, more satisfying family relationships, enhanced income, and the esteem of others in one’s own social environment. All of these things are fundamentally incompatible with drug abuse.

Payment vouchers are a good example of positive reinforcement, and one that a number of studies have demonstrated to have very powerful effects. For instance, payment vouchers can be awarded for providing drug-free urine samples, and

²“Antagonist” medications such as naltrexone, which block the pleasure-inducing effects of opiates and alcohol, may work, in part, through an extinction process.

then used by the recipients to facilitate healthy, drug-incompatible lifestyles (Higgins et al., 1994, 1991; Kirby et al., 1998, 1997; Milby et al., 1996; Silverman et al., 1996). In these studies, the vouchers serve to immediately reward early abstinence, and thus to “capture” such appropriate behavior. They are further used to acquire goods and services that bring the client into contact with natural contingencies in the environment that reward healthy, adaptive behaviors. For example, the vouchers might be exchanged for memberships to health clubs, movie tickets, or new work or church clothing, which would support adaptive activities such as health maintenance, recreation, and gaining employment. Although animal studies indicate that positive reinforcement and punishment appear to have synergistic effects (i.e., when used in combination, each may increase the effects of the other) (Azrin & Holz, 1966), to our knowledge positive reinforcement programs have not been systematically investigated in conjunction with sanctions for the treatment of substance abusers. Depending on how they are implemented, it is conceivable that one intervention might either improve or detract from the utility of the other. It is well documented that sanction schedules and voucher schedules, when properly administered and used independently, can produce very large “effect sizes” (the statistical representation of the magnitude of their effects) (Crowley, 1984, 1986; Kirby et al., 1998). There is no clear evidence that one intervention is necessarily superior to the other (Stitzer et al., 1986); in theory at least, sanctions and voucher schedules could be implemented in a complementary fashion to achieve maximum benefit.

When punishment and positive reinforcement programs operate in tandem, it is important to delineate clearly between the two and to ensure that they are not contingent upon the same or substantially similar behavior. For instance, a drug court client might receive positive rewards (e.g., social recognition or access to improved housing) for attaining specific treatment plan goals. The same client might also receive negative sanctions (e.g., an increased schedule of court appearances)

for poor attendance or evidence of recent drug use. In general, the client should not receive both sanctions for poor attendance and rewards for good attendance.

As a practical matter, having sanctions and rewards contingent on the same behavior can be confusing, and there is always the risk that the sanctions and rewards will cancel each other out. For example, it is conceivable that a client could keep some appointments and miss others in the same week, and be issued both sanctions and rewards for the same overall course of conduct.

A related issue is whether or not to include a “response cost” in positive reinforcement schedules. A “response cost” is defined as a loss of rewards that is contingent on undesirable behavior (Martin & Pear, 1992). For example, a client who provides a “dirty” urine specimen might lose previously earned payment vouchers, or a portion of the value of future vouchers. For all intents and purposes, a response cost functions as punishment. Therefore, employing it as part of a positive reinforcement schedule may be tantamount to mixing different schedules (punishment and positive reinforcement) for the same category of behavior. In addition, a response cost can undermine the effects of previous rewards, particularly if it sets a client back to “square one.” It could cause a client to give up on the program.

NEGATIVE REINFORCEMENT

Much of the ambivalence about using sanctions in treatment stems from the confusion of “negative reinforcement” with punishment. Negative reinforcement is not punishment. Punishment is defined as any contingency that reduces the likelihood that a behavior will occur in the future. Negative reinforcement, on the other hand, occurs when the removal of a stimulus, contingent on a behavior, increases the behavior. In short, punishment reduces a behavior; negative reinforcement increases a behavior.

“Escape conditioning” and “avoidance conditioning” are two variations on the negative reinforcement theme. In the case of escape conditioning, the aversive sanction has d-

ready been presented, and the individual can terminate the sanction by engaging in the desired behavior. In avoidance conditioning, the individual can forestall the sanction by engaging in the desired behavior. A conditional release program, in which an inmate can reduce or terminate a prison sentence by completing treatment, is a prime example of escape conditioning. Pre-trial or pre-sentencing diversion programs, in which a criminal record or a sentence can be averted by completing treatment, exemplify avoidance conditioning. Contrary to assumptions, therefore, much of what transpires in drug courts actually exemplifies negative reinforcement, and not punishment (Marlowe, in press).

Behavioral theorists tend to link punishment and negative reinforcement under the same rubric of “aversive conditioning” or “coercion,” arguing that they produce the same or similar negative side effects (Sidman, 1989). Experiments involving shock conditioning of rodents are often invoked to support this argument. If a mouse presses a lever to obtain a food pellet, it is a simple matter to reduce the lever-pressing behavior by shocking the mouse each time it presses the lever. As stated so far, this is a straightforward example of punishment. Now, add a chain that the mouse can pull to terminate the shock and this becomes an example of escape conditioning (because removal of the shock increases the rate of chain pulling). In this instance, the mouse may begin to avoid a range of things that have been inadvertently associated with the shock, such as food, levers, or the experimenter. The mouse might also exhibit “superstitious” behavior (Skinner, 1948) such as pulling the chain whenever it experiences any form of pain or discomfort, or it might exhibit other maladaptive reactions such as cowering, social isolation, or aggression. These iatrogenic effects could have disastrous consequences, such as reducing the mouse’s overall level of food intake, or reducing its engagement in productive activities. In this paradigm, the mouse is initially punished, and is then given the opportunity to terminate the punishment through escape reinforcement. It should not be surprising that pun-

ishment and negative reinforcement would produce comparable avoidance responses when they are linked to each other in this manner. But what happens if the initial sanction and the opportunity for escape are not so intimately tied together? In drug courts, the judge is rarely responsible for the defendant's initial arrest or incarceration. Unlike the arresting officer or the arraignment judge, who are spatially and temporally connected to the original criminal justice sanction, the drug court judge should be less apt to trigger an avoidance reaction from the defendant. In fact, he or she may be seen as interceding between the defendant and imprisonment. By removing the threat of incarceration, contingent upon success in treatment, the drug court judge might be viewed as a highly reinforcing or gratifying presence.

Negative reinforcement differs fundamentally from punishment in that it focuses on increasing desirable behavior rather than on decreasing undesirable behavior. In this sense, it actually shares more in common with positive reinforcement than with punishment. And like positive reinforcement, it is most likely to be successful in the long run when it is used to promote conduct that 1) is fundamentally incompatible with drug use; 2) carries its own natural rewards; and 3) is likely to be rewarded in the client's natural social environment. In addition to punishing substance use, therefore, drug courts are most likely to be successful if they use their leverage over defendants to enhance behaviors related to health maintenance, employment, involvement in family activities, and adaptive social functioning. For instance, criminal charges might be held in abeyance contingent on the defendant's taking measurable steps toward obtaining a job, rekindling family relationships, or meeting parenting obligations. Assuming that such steps are reasonably obtainable by the client, they are quite likely to compete heavily with substance abuse, and thus to potentiate the effects of other drug court interventions.

Although both punishment and negative reinforcement rely to some degree on negative sanctions for their effects, their

mechanisms of action are fundamentally different. Their long-term effects also differ. In animal laboratory testing, avoidance conditioning has been demonstrated to have the most lasting effects, followed, respectively, by escape conditioning and punishment (Azrin & Holz, 1966; Sidman, 1955). The reason for this is not entirely understood; however, it may be related to the frequency of contact between the individual and the negative sanctions, and thus to the potential for habituation. In avoidance conditioning, the individual may never need to come into contact with the sanction; the threat of imposition of the sanction may be all that is required. At most, only one or two sanctions are typically necessary. In escape conditioning, the individual is first exposed to the negative sanction, and must then learn to behave as expected in order to terminate it. In the case of punishment, repeated imposition of sanctions may be required to suppress the undesirable behavior.

Whatever the reasons for the differences in endurance, the lesson for drug courts should be apparent: The more the threat of sanction is realized, and the more the judge focuses on suppressing “bad” behavior rather than on increasing “good” behavior, the greater the risk of habituation and ultimate treatment failure. The optimum way to proceed appears to be to hold a realistic threat of serious sanction over the defendant’s head, and to forestall use of that sanction contingent on drug-incompatible conduct. In tandem with this avoidance schedule, “stinging” sanctions should be delivered, when necessary, to quickly suppress drug-taking and related behaviors when they first emerge.

THE NEED FOR MORE RESEARCH

[7] Because punishment and negative reinforcement have been unnecessarily linked to historic acts of cruelty, they have received scant research attention in recent years. Recourse to decades-old data is required to find scientific guidance on how to design and tailor sanctions programs. In contrast, the progress of research in terms of identifying the operative features of positive reinforcement schedules for the

treatment of substance abuse has been impressive (Higgins et al., 1991, 1994; Kirby et al., 1997, 1998; Milby et al., 1996; Silverman et al., 1996). Comparable efforts are required to “tinker” with the various features of sanctions schedules to make them as effective and as humane as they can be.

More specifically, there is a need for research designed to $\frac{3}{4}$

- ◆ *Identify the optimum rate at which sanctions should be ratcheted upward in intensity to minimize habituation and avoid ceiling effects.*
- ◆ *Determine how negative sanctions might be combined with other behavior modification techniques (e.g., extinction or positive reinforcement) to maximize outcomes.*
- ◆ *Determine the proper parameters for including response costs in positive reinforcement programs.*
- ◆ *Identify techniques for reducing learned helplessness, maladaptive escape behaviors, and other iatrogenic effects of sanctions.*
- ◆ *Explore alternative methods for monitoring substance use and delivering sanctions so as to improve the detection of infractions and minimize the delay interval between infractions and their consequences.*

Drug courts, in particular, provide a unique and exciting venue in which to study and rekindle interest in punishment and negative reinforcement paradigms. The opportunity for careful scrutiny of clients' behaviors, coupled with frequent judicial contacts and the possibility of rapid imposition of meaningful penalties, provide these behavior modification techniques, at last, with a “fair trial” in a useful “real world” context. Because drug courts incorporate due process and other legal safeguards into their procedures, they should also present a relatively reduced risk for the kinds of abuses that sanction paradigms may have invoked in the past.

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