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Matching Judicial Supervision to Clients' Risk Status in Drug Court

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Abstract

This article reports outcomes from a program of experimental research evaluating the risk principle in drug courts. Prior studies revealed that participants who were high risk and had (a) antisocial personality disorder or (b) a prior history of drug abuse treatment performed better in drug court when scheduled to attend biweekly judicial status hearings in court. In contrast, participants who were low risk performed equivalently regardless of the court hearings schedule. This study prospectively matches drug court clients to the optimal schedule of court hearings based on an assessment of their risk status and compares outcomes to clients randomly assigned to the standard hearings schedule. Results confirmed that participants who were high risk and matched to biweekly hearings had better during-treatment outcomes than participants assigned to status hearings as usual. These findings provide confirmation of the risk principle in drug courts and yield practical information for enhancing the efficacy and cost-efficiency of drug courts.

Keywords

drug court; risk assessment; drug abuse; antisocial personality disorder

Drug courts are special criminal court dockets that provide a judicially supervised regimen of drug abuse treatment and case management services to offenders who are nonviolent and abuse drugs in lieu of criminal prosecution or incarceration. According to the National Association of Drug Court Professionals (NADCP, 1997), the "key components" of a drug court include (a) ongoing status hearings before the judge in court, (b) mandatory completion of drug abuse treatment, (c) random urine drug screens, and (d) progressive negative sanctions for program infractions and positive rewards for achievements. In preplea or diversion drug courts, participants who satisfactorily complete the program may have their criminal charges dropped and may be eligible for record expungement after remaining arrest free for an additional waiting period and meeting other obligations such as paying a filing fee. In postadjudication drug courts, graduates may avoid incarceration, consolidate their probationary requirements, or receive a sentence of time served in the program.

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Judicial status hearings are a defining component of the drug court model that clearly differentiates drug courts from other interventions for offenders who are involved with drugs. Programs such as Treatment Accountability for Safer Communities (TASC) or intensive supervised probation (ISP), for example, may provide drug abuse treatment, case management, urine screens, and sanctions and rewards; however, they are not judicially managed interventions and do not involve frequent court appearances. In contrast, in drug courts the judge is conceptualized as the "leader of the treatment team" and is believed to play a critical role during status hearings by evaluating clients' performance and imposing sanctions and rewards contingent on that performance (NADCP, 1997). Moreover, it is believed that ongoing judicial supervision "communicates to participants—often for the first time—that someone in authority cares about them and is closely watching what they do" (NADCP, 1997, p. 27). In qualitative evaluations, participants have tended to credit their success in drug court to their interactions with the judge (Cooper, 1997; Goldkamp, White, & Robinson, 2002; Harrell & Smith, 1997; Satel, 1998; Saum et al., 2002); however, prior to the current program of research, there was no experimental evidence to indicate whether the judge is, in fact, necessary or helpful to drug court outcomes.

Beginning in 1999, we initiated a sequence of experiments aimed at determining whether judicial status hearings are an essential ingredient of drug court programs. More important, we sought to identify those types of clients who are most likely to benefit from ongoing contact with the judge. According to the criminal justice concept of the risk principle, intensive interventions such as drug court are believed to be best suited for offenders who are high risk and have more severe criminal propensities or drug use histories but may be ineffective or contraindicated for offenders who are low risk (e.g., Andrews & Bonta, 1998; Gendreau, 1996; Hollin, 1999; Thanner & Taxman, 2003). The rationale is that offenders who are low risk are less likely to be on a fixed antisocial trajectory and are more likely to "adjust course" readily following a run-in with the law. Therefore, intensive treatment and supervision may offer little incremental benefit for these individuals at a substantial cost. Offenders who are high risk, on the other hand, are likely to require intensive interventions to alter their entrenched negative behavioral patterns.

Unfortunately, it is no small task to identify reliable and robust risk factors for specific offender rehabilitation programs. Findings may be expected to diverge depending on whether an investigator is considering risk for criminal recidivism, risk for relapse to substance abuse, or risk for absconding from treatment. Moreover, the base rates for various types of risk factors will vary considerably depending on the nature of the population under study. For example, a greater preponderance of high-risk factors would be anticipated in a prison inmate population as opposed to a preplea misdemeanor drug court. Statistically speaking, such differences in base rates will substantially increase or decrease the predictive utility of a given risk factor. As a result, it may be necessary to identify specific sets of risk factors for various types of correctional programs.

It is also important to distinguish between risk factors that merely correlate with treatment outcomes (referred to as "predictor variables") and risk factors that differentially predict outcomes in specific types or levels of interventions (sometimes referred to as "moderator variables" or "interaction variables"; e.g., Baron & Kenney, 1986). For example, an investigator might learn that a younger age during treatment predicts poorer performance in a correctional rehabilitation program. However, this finding would yield little useful information about how best to treat youthful offenders. On the other hand, if it were demonstrated that age interacted with the dosage of treatment services, such that younger offenders performed better when exposed to more intensive interventions, this finding would yield important information for treatment planning. The current program of research was designed to identify such moderator variables in the context of drug court programs.

PRIOR STUDIES

The current study followed a staged sequence of prior experimental research. The first study was conducted in a misdemeanor preplea drug court located in the urban city of Wilmington, Delaware. Consenting participants were randomly assigned at entry either to attend judicial status hearings on a biweekly basis throughout their enrollment in the program (biweekly condition) or to be monitored by their treatment case managers who petitioned the drug court for status hearings only as needed in response to serious or repeated infractions (as-needed condition). The typical schedule of status hearings for this drug court was every 4 to 6 weeks; therefore, participants in the as-needed condition attended hearings less often than in standard practice, and participants in the biweekly condition attended hearings more often. These conditions reflect the extremes of contemporary drug court practice. The highest dosage of status hearings generally used by drug courts is biweekly, whereas the smallest dosage is on an as-needed basis, whenever there is a problem or need identified by the judge or by treatment personnel (NADCP, 1997).

Results revealed that for the sample as a whole, the schedule of judicial status hearings had no impact on counseling attendance, urine results, or self-reported substance use or criminal activity during participants'enrollment in drug court (Marlowe, Festinger, Lee, & Schepise, et al., 2003), in graduation rates from the program (Festinger et al., 2002), or in urine results or self-reported substance use, criminal activity, or psychosocial functioning at 12 months postadmission to the drug court (Marlowe, Festinger, Dugosh, & Lee, 2005).

It is important to note, however, we conducted a circumscribed set of planned interaction analyses to determine whether certain subgroups of participants may have performed relatively better or worse in the two study conditions. Based on our review of the literature concerning the greatest risk factors for failure of offenders in diversion programs (e.g., Gendreau, Little, & Goggin, 1996; Marlowe, Patapis, & DeMatteo, 2003; Peters, Haas, & Murrin, 1999), we hypothesized that judicial status hearings would have the greatest impacts for participants who were higher risk and were relatively younger, had an earlier age of onset of crime, had more severe drug problems, had antisocial personality disorder (APD), or had previously failed in a drug treatment program.

Two of these hypothesized interaction effects were confirmed. Participants who (a) met *DSM-IV* diagnostic criteria for APD or (b) had a prior history in drug abuse treatment provided more drug-negative urine specimens while they were enrolled in drug court and were more likely to graduate successfully from the program when they were assigned to biweekly status hearings (Festinger et al., 2002). Conversely, those without these risk factors performed equivalently or better when assigned to as-needed hearings. The differential effects for the offenders who were high risk versus offenders who were low risk "canceled each other out" in the main-effects analyses for the sample as a whole and would have been missed entirely if not for the planned interaction analyses.

An important limitation of this first study was that it was conducted in a single jurisdiction, with a single misdemeanor drug court program and a single judge. The specific nature of the population raised questions about the generalizability of the findings. Moreover, because the interaction effects were evaluated in post hoc statistical analyses and were not under experimental control, it was possible the results could have reflected unstable or chance variations in the sample. Therefore, we replicated the same design in two new studies in different jurisdictions. The first replication study was conducted in two misdemeanor drug courts located in the rural farming community of Georgetown, Delaware, and the state capital of Dover, Delaware. A concurrent replication study was conducted in two felony drug courts located in those same jurisdictions.

In the replication studies, we reproduced several of the interaction effects that were previously detected. Specifically, misdemeanor participants with a prior drug treatment history provided significantly more drug-negative urine specimens during the first 14 weeks of the program when they were assigned to biweekly status hearings as opposed to as-needed hearings (11.50 vs. 2.67, $p = .007$) (Marlowe, Festinger, & Lee, 2003). The magnitude of this effect size was quite large ($ES = 1.92$) and was not influenced by data outliers or other unusual sample characteristics we were capable of identifying. Because of the large magnitude of the effect, statistical significance was reached with small cell sizes for participants with drug treatment histories ($n = 6$ in some cells). There were also substantial differences in graduation rates and termination rates. More than 80% of misdemeanor participants with drug treatment histories graduated from the program when assigned to biweekly hearings, compared to less than 20% of those assigned to as-needed hearings. Conversely, termination rates were nearly doubled for participants with drug treatment histories assigned to as-needed hearings. Similarly, in the felony programs, participants with APD reported engaging in significantly more days of substance intoxication on average when they were assigned to biweekly status hearings as opposed to as-needed hearings ($M = .50$ vs. 4.83 days, $p = .03$; Marlowe, Festinger, & Lee, 2004).

Because of the serious legal repercussions that might be imposed by the court on clients who are terminated from drug court or continue to abuse substances in the community, the researchers were required to report these interim findings to the Institutional Review Boards (IRBs) monitoring the studies and to the drug court program staffs to determine whether it was practical or ethical to continue with the design. This was especially necessary because the as-needed participants were receiving less judicial supervision than they ordinarily would have in standard practice. The IRBs determined that the risk-benefit ratio had shifted for the study, thus requiring us to alter the consent forms and inform all current and future participants about the possible risks of being scheduled for as-needed hearings. In addition, the drug court judges elected not to continue with the current design given the potential risks to their clients and to public safety. Therefore, the study was prematurely terminated.

The small cell sizes for the replication analyses raised concerns about whether the study samples were representative of drug court clients generally. Because the findings were reproduced in sequential experiments, and were predicted, a priori, based on a validated criminal justice theory (i.e., the risk principle), it is arguably justifiable to place greater confidence in the results. Nevertheless, it was essential to further replicate this work using a safer research design with a larger number of participants.

CURRENT STUDY

The current study utilizes a prospective matching design, which obviated the ethical problems we previously encountered and offers the further advantage of bringing the interaction effects under direct experimental control. The purpose of the current study was to prospectively match drug court participants who were high risk to biweekly judicial status hearings, and to match participants who were low risk to as-needed hearings, and to compare their outcomes to those of participants attending the standard schedule of status hearings. Thus, the current study was evaluating the incremental utility of matching clients to “service tracks” based on an assessment of their risk status.

This article reports during-treatment outcomes over the course of the first 14 weeks of the drug court program. Fourteen weeks is the minimally scheduled time period in which clients can complete the requirements for graduation. Because most clients actually require 6 to 8 months to satisfy the conditions for graduation, outcome data are not yet available on many of the participants’ ultimate program completion status. In addition, follow-up interviews are

scheduled for 6 and 12 months postadmission to the drug court, and we are monitoring state criminal justice databases for 24 months postadmission. Results of those future outcome analyses will be published in subsequent reports.

METHOD

Human Participants Protections

The current study was approved and is being monitored by the IRBs of the Treatment Research Institute and the Delaware State Department of Health and Social Services. A Department of Health and Human Services (DHHS) Confidentiality Certificate was obtained, which shields the research data from a court order or subpoena. Monthly oversight meetings are held for the study that are regularly attended by the drug court judge and representatives of the attorney general's office, public defender's office, criminal defense bar, treatment program, and the Delaware State Division of Substance Abuse and Mental Health. In these meetings, we review the study procedures and are prepared to correct any adverse reactions that might be experienced by research participants or by project staff members (none has been reported to date). The presence of defense counsel and treatment providers at these meetings helps to ensure that participants' legal rights and treatment needs are continuously addressed.

Recruitment

Consecutive admissions to a misdemeanor drug court located in the urban city of Wilmington, Delaware, were approached for participation in this study over a 24-month recruitment period (November 2002 through October 2004). To be eligible for this drug court program, defendants are required to be age 18 years or older; a resident of New Castle County, Delaware; charged with a misdemeanor drug offense involving possession or consumption of cannabis, possession of drug paraphernalia, possession of hypodermic syringes, or driving under the influence; and cannot have a history of an offense involving drug dealing or manufacturing, death or serious injury to a victim, or use of a deadly weapon.

All defendants who entered the drug court were ordered by the judge to report to a specific treatment program, which handles all misdemeanor drug court cases in that county, on a specified date the following week for an initial intake appointment. If the defendant did not arrive for the intake as scheduled or reschedule the appointment within 24 hours, a *capias* (bench warrant) was issued. Following a group orientation session conducted by clinical staff persons at the treatment program, a research staff member provided a brief oral description of the study, including participation requirements, payment incentives, confidentiality protections, and the right to refuse or withdraw from the study at any time without negative consequences. Clients who indicated a potential interest in the study went through a formal, individualized informed consent procedure that was approved by the IRBs.

Of defendants who entered the drug court, 91% arrived at the treatment program for their intake appointment (i.e., 9% absconded or were rearrested or incarcerated prior to intake). Of those who arrived for an intake, we were able to approach more than 95% about potential participation in the study. Of eligible clients, 42% (n = 194) consented to participate, and 58% (n = 274) refused to participate. This recruitment rate is comparable to those attained in our previous studies and was anticipated given that the defendants were being asked to potentially increase the number of times they would be required to appear in court before the judge. An additional eight clients were unable to consent to the study because of a language barrier or serious cognitive impairments secondary to a comorbid psychiatric syndrome.

The study cohort is predominantly male (75%), White (58%) or African American (34%), unmarried (94%), young adult ($M \pm SD$ age = 25.71 ± 8.41 years), high school educated (12.35

± 1.67 years), and employed (66%). They reported currently abusing cannabis (76% of participants), alcohol to intoxication (14%), narcotics (10%), or several illicit drugs concurrently (5%) during the 30 days immediately preceding the intake assessment. Based on recommended cutoff scores for classifying the treatment needs of offenders (Lee et al., 2001), approximately one third of the sample (37%) produced "subthreshold" drug composite scores on the Addiction Severity Index (ASI; McLellan et al., 1992) similar to a non-substance-using population. Approximately one half (52%) produced "moderate" drug composite scores similar to a national sample of substance abuse clients in outpatient treatment, and 11% produced "severe" drug composite scores similar to a national sample of substance abuse clients in residential treatment.

To gauge potential selection bias in the sample, we obtained access to demographic information, arrest histories, and baseline ASI data from the chart records of 61% (168 of 274) of clients who refused to participate in the research study. It is important to note, these data were obtained in aggregate batches from the treatment program and were purged of all client-identifying information. Unfortunately, chart records were only available on 61% of these individuals because some of the records had been removed to an off-site storage facility during renovation of the treatment program. There is no reason to conclude some records were unavailable for reasons related to clients' performance in drug court.

Individuals who consented to participate in the current study were compared to those who refused participation on a range of demographic variables (age, race, gender, marital status, education, employment status), ASI drug severity ratings, whether they had a history of alcohol or drug treatment (yes or no), whether they had a history of criminal convictions (yes or no), and whether they had been previously incarcerated (yes or no). Chi-square tests were used to examine differences on the categorical variables, and *t* tests were used for the continuous variables. Women were more likely to agree to participate in the study ($n = 49$) than to refuse participation ($n = 20$), $\chi^2(1) = 10.24$, $p = .001$. Moreover, individuals who reported currently experiencing serious drug problems were more likely to agree to participate ($n = 86$) than to refuse participation ($n = 35$), $\chi^2(1) = 22.35$, $p < .0001$. Finally, individuals with an education beyond a high school diploma were more likely to agree to participate ($n = 69$) than to refuse participation ($n = 30$), $\chi^2(1) = 14.45$, $p < .0001$. No other significant differences emerged. This suggests that offenders who were more seriously involved in drugs were more likely to enter the study, and females and those with college or technical education were over-sampled relative to their prevalence in the program. Otherwise, the study sample appears reasonably representative of the target population of misdemeanor drug offenders.

BRIEF DESCRIPTION OF THE DRUG COURT PROGRAM

In this preplea drug court, each defendant is required to plead guilty to the initial drug charge (s); however, the guilty plea is held in abeyance until the defendant either graduates or is terminated from the program. If the defendant graduates, the charges are dropped ("nolle prosequi"). If the defendant fails to complete the program, the guilty plea is formally entered as a conviction. Conviction results in a criminal record of a drug offense, which can have serious consequences for such things as future employment, and the defendant also loses his or her driver's license for a term of 2 years. Convicted defendants are ordinarily sentenced to probation in the community, with conditions similar to those imposed in drug court (e.g., drug abuse counseling and urine monitoring); therefore, dropping out of the drug court does not necessarily result in lesser legal obligations.

The drug court program is scheduled to be a minimum of 14 weeks in length, although most clients require 6 to 8 months to satisfy the conditions for graduation. To graduate, a client must complete a standard regimen of 12 weekly psycho-educational group sessions, provide at least

14 drug-free urine specimens, and pay a US$200 court fee. The group sessions cover such topics as the pharmacology of drug and alcohol use, progression from substance use to dependence, the impact of addiction on the family, treatment options, HIV/AIDS risk reduction, and relapse prevention strategies. In addition, all clients are assigned to a case manager who coordinates any necessary treatment referrals, and the case manager or a court liaison submits monthly progress reports to the drug court judge and appears at all status hearings. Participants provide urine specimens on a random, weekly basis in direct observation of a same-gender treatment staff person. The urine drug screens are performed by an independent certified laboratory using the enzyme multiplied immunoassay technique (EMIT) with gas chromatography/mass spectrometry (GCMS) confirmation of positive results on a five-panel screen for cannabis, opiates, amphetamines, cocaine, and phencyclidine (PCP).

The drug court judge is authorized to administer various sanctions or remedial interventions to clients for poor performance. These include verbal reprimands, homework assignments to be presented in psycho-education groups, additional counseling sessions, daylong attendance at the drug court as an observer, or community service obligations. In addition, the judge or clinical case manager may refer clients to an intensive drug diversion (IDD) track, which involves twice-weekly individual counseling sessions with a TASC case manager. Finally, the judge or treatment team may administer various rewards to clients for good performance. These include verbal praise, token gifts, certificates of recognition, and reductions in clients' treatment or supervisory obligations.

RESEARCH DESIGN

The purpose of the current study was to prospectively assign clients in drug court who are high risk to biweekly judicial status hearings, and to assign clients who are low risk to as-needed hearings, and to compare their outcomes to those of clients attending the standard schedule of status hearings. Consenting participants were randomly assigned in roughly equal proportions either to be matched ($n = 95$) or unmatched ($n = 99$). Unmatched participants were scheduled to attend status hearings every 4 to 6 weeks, which is the standard practice for this misdemeanor drug court. Matched participants were scheduled either to attend biweekly judicial status hearings or as-needed hearings, depending on whether they met criteria for APD or had a drug treatment history (see Figure 1). The base rate for high risk in the sample was 33%; therefore, a greater proportion of matched participants were assigned to as-needed hearings.

If a participant revoked consent after initially agreeing to participate in the study, he or she was reassigned to the standard schedule of status hearings, which, as noted, was every 4 to 6 weeks. All (99 of 99) participants in the unmatched condition and 93% (88 of 95) of participants in the matched condition continuously remained in their assigned condition following random assignment. This left a final cohort for outcome analyses of 187 participants. All 7 of the participants who dropped out of the study had been matched to biweekly status hearings. As a result, there was 24% attrition from the matched biweekly cell. This differential attrition was not surprising given that biweekly hearings placed substantially more onerous time demands on participants, and these participants tended to have the most serious antisocial predispositions or drug use histories.

The small number of dropouts limited our statistical power for detecting attrition bias; however, we compared the dropouts to the remainder of the participants who were high risk on demographic variables (age, race, gender, marital status, education, employment status), current criminal charge(s), criminal history (prior warrants, convictions, incarcerations), and baseline ASI severity ratings (alcohol, drug, legal, employment, medical, family, and psychological). Chi-square tests were used for the categorical variables, and *t* tests were used for the continuous variables. We set a liberal *p* value of $p < .15$ to detect potential attrition bias

because of the small cell sizes for these analyses. Results indicated that the dropouts did not differ from the remainder of the participants who were high risk on any of these baseline variables. Regardless, it is still possible that participants who were performing poorly in the drug court program might have dropped out of the biweekly condition at a higher rate to reduce the likelihood the judge would detect their infractions. Thus, it is possible the results could have overestimated positive outcomes for the matched biweekly participants.

DATA SOURCES

Study participants were administered a battery of structured interviews by trained technicians at baseline and monthly during the first 3 months of treatment. They received a $40 money order for completing the baseline assessment and a $25 money order for completing each of the three monthly assessments. In addition, participants provided informed consent to allow the research team access to their weekly urine drug-screen results and attendance records. The data reported in the current article were derived from the instruments described below. As noted earlier, future follow-up interviews are scheduled at 6 and 12 months postadmission to the drug court, and we are monitoring state criminal justice databases for 24 months postadmission to assess rates of rearrests and reconvictions.

The baseline assessment battery included the ASI, which assesses current (past 30 days) and lifetime drug problems, alcohol problems, legal problems, medical problems, family and social problems, employment problems, and psychiatric problems. Multiple studies of ASI composite scores and lifetime items provide evidence of impressive reliability, concurrent validity, predictive validity, and discriminative utility across various groups of clients characterized by age, race, gender, and primary drug of abuse (e.g., Alterman et al., 1998; Cacciola, Koppenhaver, McKay, & Alterman, 1999; McDermott et al., 1996; McLellan, Cacciola, et al., 1992; McLellan et al., 1985; McLellan, Luborsky, O'Brien, & Woody, 1980). Additional items were appended to the ASI that assessed participants' involvement in criminal activities over the preceding 6 months, regardless of whether those activities were detected by authorities or resulted in formal criminal charges. For these items, criminal activity did not include simple drug use or drug possession but did include drug dealing or manufacturing, property offenses, theft offenses, violent offenses, and weapons offenses.

At baseline, participants also completed an Antisocial Personality Disorder Interview and a Prior Treatment Questionnaire for purposes of matching them to the study conditions. The Antisocial Personality Disorder Interview is a 30-item, true-or-false structured interview modeled after the Structured Clinical Interview for the *DSM-IV-Personality Disorders*–Version 2 (SCID-II; First, Spitzer, Gibbon, & Williams, 1994) that assessed whether each participant met *DSM-IV* diagnostic criteria for APD. In interrater reliability scoring trials, we had 100% exact agreement for categorical diagnoses of APD among our research technicians. The Prior Treatment Questionnaire inquires about the number of past treatment episodes participants experienced, the density of services provided during each episode, discharge status, satisfaction with treatment, and the longest interval of abstinence attained during and after each treatment episode. In our prior studies, a dichotomized (yes or no) item inquiring whether the participant experienced any prior drug treatment was found to interact most reliably and robustly with the schedule of judicial status hearings; therefore, we used that same item for purposes of matching participants in the current study. Interrater reliability and test-retest stability for this item were consistently above 95% in all of our prior drug court studies.

Participants completed the Recent Treatment Survey (RTS) on a monthly basis during the first 3 months of drug court. The RTS is an abbreviated version of the Treatment Services Review (TSR; McLellan, Alterman, Woody, & Metzger, 1992), which assesses clinical services received by participants in the same domains covered by the ASI. In addition, the RTS evaluates

participants' clinical status during treatment in those same domains. For example, it assesses days of illicit drug use, alcohol intoxication, and criminal activity during the immediately preceding 30-day period. As with the ASI, criminal activity is not defined to include simple drug use or drug possession but does include drug dealing and manufacturing, property offenses, theft offenses, violent offenses, and weapons offenses. All of the items on the RTS were derived directly from the TSR, and test-retest stability for those items exceeded 88% exact agreement in several studies involving adult drug abusers (McLellan, Alterman, et al., 1992; McLellan, Arndt, Metzger, Woody, & O'Brien, 1993). The follow-up rates for the RTS assessments were 83% at Month 1, 77% at Month 2, and 84% at Month 3.

DATA ANALYSES

The primary dependent measure for the current study was the results of urine drug screens obtained from participants on a random, weekly basis during the first 14 weeks of drug court. Secondary dependent measures were attendance at scheduled counseling sessions during the first 14 weeks and self-reported illicit drug use, alcohol intoxication, and criminal activity reported on the RTS during the first 3 months. As was noted earlier, 14 weeks is the minimally scheduled time period in which any client can graduate from the drug court, and the principal criterion for graduation is that clients must provide at least 14 weekly drug-free urine specimens. In the great majority of cases, clients require considerably longer than 14 weeks to provide 14 drug-free specimens, and most clients graduate in 6 to 8 months, if they graduate at all. This required us to cap the during-treatment analyses of urine results and counseling attendance at 14 weeks. Otherwise, clients who were performing more poorly in the program, and thus who were required to stay longer, would have had more opportunities to provide urine samples and attend counseling sessions. This could have had the paradoxical effect of making participants who were performing poorer look as good as, or better than, successful clients on some of the primary and secondary outcome measures.

Randomization checks were performed separately for the high-risk and low-risk groups because the study design intended the two risk groups to have different levels of problem severity at baseline. Within each risk group, matched and unmatched clients were compared on demographic variables (age, race, gender, marital status, education, employment status), current criminal charge(s), criminal history (number of prior warrants, charges, and convictions), and ASI problem severity ratings (alcohol, drug, legal, employment, medical, family, and psychological). Chi-square analyses were used to examine differences on categorical variables, and *t* tests were used to examine differences on continuous variables. The results indicated one significant difference. Clients who were low risk in the matched condition had greater employment problems at baseline than did those in the unmatched condition, $t(127) = -2.68$, $p = .008$. Therefore, ASI employment severity ratings were entered as a covariate in the subsequent outcome analyses.

The total number of drug-free urine specimens and the largest number of consecutive drug-free urine specimens provided by participants were analyzed using ANCOVA. The models included terms for condition (matched vs. unmatched), risk status (high vs. low), and their interaction. In addition, the covariate of baseline employment severity rating was controlled for in the analyses. Weekly urine results were also analyzed using a generalized estimating equation (GEE), which can accommodate dichotomous dependent variables that are assessed longitudinally (e.g., Diggle, Liang, & Zeger, 1994). In addition, GEEs were used to examine differences in self-reported drug use, alcohol intoxication, and criminal activity on the RTS during Months 1, 2, and 3 of the program. The GEE analyses initially included a three-way interaction term for Condition × Risk × Time; however, this interaction was not significant in any analysis and was subsequently dropped. Finally, main effects were not interpreted when significant interaction effects were also uncovered.

RESULTS

Experimental Integrity

A series of manipulation checks confirmed that we maintained strong experimental control over the levels of the independent variable (i.e., dosages of judicial status hearings). Two-factor ANOVAs were performed comparing the number of judicial status hearings that were scheduled and attended by participants in the four study conditions (see top of Table 1). With regard to the number of hearings that were scheduled by the court, results revealed a significant main effect for condition (i.e., matched vs. unmatched), $F(1, 183) = 19.89$, $p < .0001$, a significant main effect for risk (high vs. low), $F(1, 183) = 207.21$, $p < .0001$, and a significant Condition × Risk interaction, $F(1, 183) = 145.59$, $p < .0001$. As intended, participants who were high risk and were matched to the biweekly condition were scheduled to attend significantly more judicial status hearings than were participants in each of the other three conditions. In contrast, participants who were low risk and matched to the as-needed condition were scheduled to attend significantly fewer hearings than participants in the other three conditions. The participants who were high risk and low risk and assigned to the unmatched condition did not differ significantly from each another in terms of the number of hearings they were scheduled to attend.

Similarly, with regard to the number of status hearings that were actually attended by participants, results revealed significant main effects for condition, $F(1, 183) = 23.57$, $p < .0001$, and risk status, $F(1, 183) = 146.52$, $p < .0001$, and for the Condition × Risk interaction, $F(1, 183) = 136.71$, $p < .0001$. Participants who were high risk and matched to the biweekly condition attended significantly more status hearings than participants in the other three conditions. Participants who were low risk and matched to the as-needed condition attended significantly fewer status hearings than participants in the other three conditions. Finally, participants who were high risk and low risk and assigned to the unmatched condition did not differ significantly from each other in terms of the number of hearings they attended.

Outcome Analyses

Table 1 presents data on each of the outcome measures. Differences in the total number of drug-negative urine samples provided by participants were assessed using two-factor ANCOVA, controlling for baseline employment severity ratings. Results revealed a significant main effect for condition (matched vs. nonmatched), $F(1, 181) = 5.08$, $p = .03$, and a significant Condition × Risk interaction, $F(1, 181) = 7.06$, $p = .009$. Participants who were high risk and were assigned to the unmatched condition, and thus who attended the standard schedule of status hearings, provided significantly fewer drug-negative urine specimens than did participants in any of the other three conditions. Participants in the latter three conditions did not differ significantly from one another on this outcome measure.

Differences in the largest number of consecutive drug-negative urines were also assessed using two-factor ANCOVA. This analysis revealed a significant main effect for condition, $F(1, 181) = 5.73$, $p = .02$, and a significant Condition × Risk interaction, $F(1, 181) = 4.82$, $p = .03$. Participants who were high risk and assigned to the unmatched condition provided significantly fewer consecutive drug-negative urine specimens than participants in the other three conditions. Participants in the latter three conditions did not differ significantly from one another on this outcome measure.

GEE analyses were used to compare the longitudinal distributions of urine drug screens during a 14-week period. The GEE models included terms for condition, risk status, time, and the Condition × Risk interaction and baseline employment severity ratings. As noted earlier, the three-way interaction for Condition × Risk × Time was initially included in the models;

however, this interaction term was not significant in any analysis and was removed from the models reported below. Three participants had some missing data points for this analysis, resulting in a total of 20 missing data points. Therefore, the urine data were analyzed by treating missing data as missing, and also by using a more conservative approach that assumed missing specimens to be drug-positive.

When missing data were ignored (i.e., treated as missing), results of the GEE analysis revealed significant main effects for time, $\chi^2(13) = 38.47$, $p = .0002$, and condition, $\chi^2(1) = 8.61$, $p = .003$, and a significant Condition × Risk interaction, $\chi^2(1) = 10.46$, $p = .001$. The likelihood of providing a drug-negative urine specimen increased for the entire cohort during the course of the 14-week period. Participants who were high risk and were assigned to the unmatched condition, and thus who attended the standard schedule of status hearings, provided fewer drug-negative urine specimens during the 14-week period than participants in the other three conditions. The longitudinal distributions of the urine results are depicted in Figure 2.

Similarly, when missing data were assumed to be drug positive, results of a GEE analysis revealed significant main effects for time $\chi^2(13) = 36.83$, $p = .0004$, and condition, $\chi^2(1) = 8.74$, $p = .003$, and a significant Condition × Risk interaction, $\chi^2(1) = 10.50$, $p = .001$. The likelihood of providing a drug-negative urine specimen increased for the entire cohort during the course of the 14-week period. Participants who were high risk and assigned to the unmatched condition provided fewer drug-free specimens than participants in the other conditions. Because the results were virtually identical regardless of whether missing data were treated as missing or as drug-positive, the two sets of distributions are not separately depicted.

As was described earlier, the drug court judge and clinical case manager may refer clients who are performing poorly to an IDD track that involves twice-weekly individual case management sessions. A total of 23 participants were referred to the IDD track. It is not surprising to note, these participants were significantly more likely to be high risk, $\chi^2(1) = 11.43$, $p = .0007$; however, there was no difference in the number of IDD referrals between the matched and unmatched conditions (Table 1).

A two-factor ANCOVA was used to examine differences in the number of counseling sessions attended by participants in the various conditions. Results revealed a significant interaction effect for Condition × Risk status, $F(1, 181) = 9.02$, $p = .003$. Participants who were high risk attended significantly more counseling sessions when they were matched to biweekly hearings than when they were unmatched. There were no differences among the other conditions. Because participants who were high risk were more likely to be referred to IDD, this would be expected to increase the number of counseling sessions they were required to attend. However, counseling attendance apparently increased even further for those participants who were high risk and were scheduled to attend biweekly judicial status hearings.

As noted earlier, the RTS assesses days of illicit drug use, alcohol intoxication, and criminal activity during the immediately preceding 30 days. For these items, the distributions of responses were highly skewed; therefore, the responses were dichotomized to indicate whether the participant reported any of these behaviors during the past 30 days. Statistical analyses could not be performed on the item inquiring about criminal activity because very few participants endorsed any criminal activity. Results of GEE analyses revealed no significant main effects or interaction effects on self-reported illicit drug use or alcohol intoxication during the first 3 months of drug court.

DISCUSSION

The results of this program of research provide strong confirmation of the risk principle in the drug court context. In four experimental studies, participants who were high risk performed

substantially better in drug court when they were scheduled to attend frequent biweekly judicial status hearings. In contrast, participants who were high risk had a relatively poor prognosis when assigned to the standard dosage of roughly monthly status hearings, and they performed so poorly in as-needed hearings that it was necessary to end the experiments prematurely on ethical and public-safety grounds. On the other hand, outcomes were generally equivalent for participants who were low risk regardless of how often they were required to appear before the judge in court.

These findings underscore the importance of going beyond simply evaluating baseline predictors of outcomes, and instead identifying variables that can differentially predict outcomes for drug offenders in varying modalities or intensities of care. It has long been known that offenders with APD or prior treatment failures generally have poor outcomes (e.g., Marlowe, Patapis, et al., 2003); however, this finding offered little practical instruction about how to intervene with these clients who were difficult to treat. Learning how these moderator variables interact with the schedule of court hearings yields immediate guidance for treatment planning.

The current findings have obvious implications for drug court practice. Judicial status hearings are among the most costly and time-consuming elements of drug court programs and some critics have argued that they divert scarce resources from the provision of “real” treatment (e.g., Anderson, 2001; Hoffman, 2002). Judges and bailiffs cost money, which may then not be available to pay counselors’salaries. Moreover, the time it takes clients to appear at court hearings could interfere with their ability to satisfy other legitimate obligations such as attending work or school. Finally, some commentators have argued that the intrusion of the judge into the treatment process could be disruptive or harmful under some circumstances. Clients may be hesitant, for example, to confide clinically important information to their counselors for fear the information would be disclosed to the judge and used against their legal interests (e.g., Schottenfeld, 1989).

Proponents of drug court take the contrary position that offenders who abuse drugs often fail to meet their obligations and may pose a continuing threat to public safety if they are not closely monitored and do not face immediate and consistent consequences for their noncompliance in treatment (e.g., Hora, Schma, & Rosenthal, 1999; Meyer & Ritter, 2002). This may be as therapeutic, or more therapeutic, than “coddling” these individuals in treatment because it instills accountability and applies basic principles of behavior modification in the most effective manner (Marlowe, 2002; Satel, 1999). The fact is that in our society, only judges have the authority to administer substantial sanctions and rewards to offenders with consistency and certainty (Harrell & Roman, 2001; Marlowe & Kirby, 1999). Clinicians and probation or parole officers rarely have the power or inclination to do so (e.g., Goldkamp, 2000; Taxman, 1999).

Extreme arguments are rarely borne out by research, and neither of these positions can account for the fact that drug court clients who are high risk responded better to frequent court hearings, whereas clients who are low risk responded equivalently to various levels of judicial supervision. It seems that both of these positions may be partially correct but are referring to different clients. Some drug offenders who are low risk can apparently be expected to perform adequately in treatment if they are permitted to develop a therapeutic alliance with their counselor and to focus on their recovery without intrusion from criminal justice authorities. Others, however, will require consistent and intensive judicial supervision to succeed. Identifying those offender characteristics that reliably predict success with more frequent judicial contacts has the potential to enhance outcomes in drug court programs, target program costs most efficiently, reduce unwarranted intrusions into treatment, and reduce public safety risks from the most incorrigible types of drug offenders.

Research of this kind can further inform policy makers about the best strategies for diverting drug offenders from prosecution or incarceration. For example, statewide initiatives such as California's Proposition 36 (California Substance Abuse and Crime Prevention Act, 2000) divert large numbers of offenders charged with drug possession to probation and community-based treatment in lieu of incarceration. These statutes typically incorporate a "probation-without-verdict" pretrial diversion model, which does not ordinarily include explicit provisions for judicial status hearings or graduated sanctions and rewards. It is important to sort out which types of offenders are apt to perform adequately using such a low-intensity statutory mechanism and which offenders will require a more intensive judicially monitored program to succeed (Marlowe, Elwork, Festinger, & McLellan, 2003).

It is important to note, there are several methodological limitations to the studies reviewed in this article that should be borne in mind. Taken alone, any one of the studies can be fairly criticized for such problems as small cell sizes, limited sample representativeness, potential selection bias, or systematic attrition. However, the accretion of evidence across multiple studies lends steadily increasing confidence to the reliability of the results. Still, all but one of the studies were conducted in misdemeanor drug courts, and all of the programs were preplea diversionary models. As such, questions remain about the generalizability of the findings to more serious felony populations and to postadjudication drug courts.

Although it can be concluded that APD and drug treatment history are reliable risk factors in misdemeanor drug courts, this does not necessarily mean they are the only risk factors or the most robust risk factors. It is possible that other variables that were never measured in our studies, such as comorbid Axis I psychiatric diagnoses, could have greater utility for predicting success in various types or levels of drug court interventions. Further research is needed to identify other client-level variables that contribute to better treatment-matching strategies for clients of the drug court.

Questions also remain about how to interpret the influence of drug treatment history. On one hand, this variable may simply reflect the severity of participants' drug abuse problems; that is, participants with more severe or longer term drug problems may have had more opportunities to be referred or mandated into drug treatment. Alternatively, it could reflect past negative experiences with drug abuse treatment. Data from our interview assessments revealed that participants who had drug treatment histories reported lower levels of perceived deterrence; that is, they perceived a weaker connection between their own conduct and the imposition of sanctions and rewards in the program (Marlowe, Festinger, Foltz, Lee, & Patapis, 2005). It is possible these participants may have been exposed to prior treatment regimens that lacked credibility in terms of monitoring and responding to their conduct in treatment. If so, they may have approached drug court with lowered expectations about being held accountable for their actions. More intensive monitoring by the court might have been necessary to counteract this jaded attitude. However, because these findings were merely descriptive and correlational, additional controlled research is needed to gain a better handle on the meaning of this interaction effect.

Finally, a serious question relates to the "staying power" of these effects. In our original study, the interaction effects were no longer detectable by the time of posttreatment follow-up assessments (Marlowe, Festinger, Dugosh, et al., 2005). When the participants who were high risk were no longer in drug court or were approaching discharge, they apparently became less influenced by their contacts with the judge. It is common practice for drug courts to relax their supervisory obligations as clients near completion (NADCP, 1997), and those supervisory obligations often end precipitously following graduation. This could be expected to lead to a convergence of effects and to a decline in outcomes for participants who are high risk. If there are comparable posttreatment findings in our subsequent studies, this would highlight the need

for strategies that extend the effects of judicial supervision beyond the initial active phases of drug court. For example, although it is probably neither constitutional nor cost-effective to continue judicial supervision of drug offenders indefinitely, it may be possible to hold "booster" court hearings following evidence of sustained relapse to substance use or failure to follow through with a reasonable aftercare plan.

In summary, the results of four experimental studies in five adult drug courts revealed that drug court clients who were high risk performed significantly better when assigned to frequent biweekly judicial status hearings, whereas clients who were low risk performed equivalently regardless of the schedule of court hearings. Moreover, the latest study demonstrates the utility and potential cost-effectiveness of prospectively matching drug offenders to service tracks based on an assessment of their risk status or clinical needs. A number of investigators have concluded that it is time to move beyond the simple question of whether drug courts work and to begin studying how they work, for whom they work, who they might harm, and how they might be further improved (e.g., Goldkamp, 2001; Longshore et al., 2001; Marlowe, 2004; Marlowe, DeMatteo, & Festinger, 2003). This program of parametric research takes a step in this direction by identifying client-service matching effects that can be harnessed to improve outcomes and reduce untoward effects in drug court programs.

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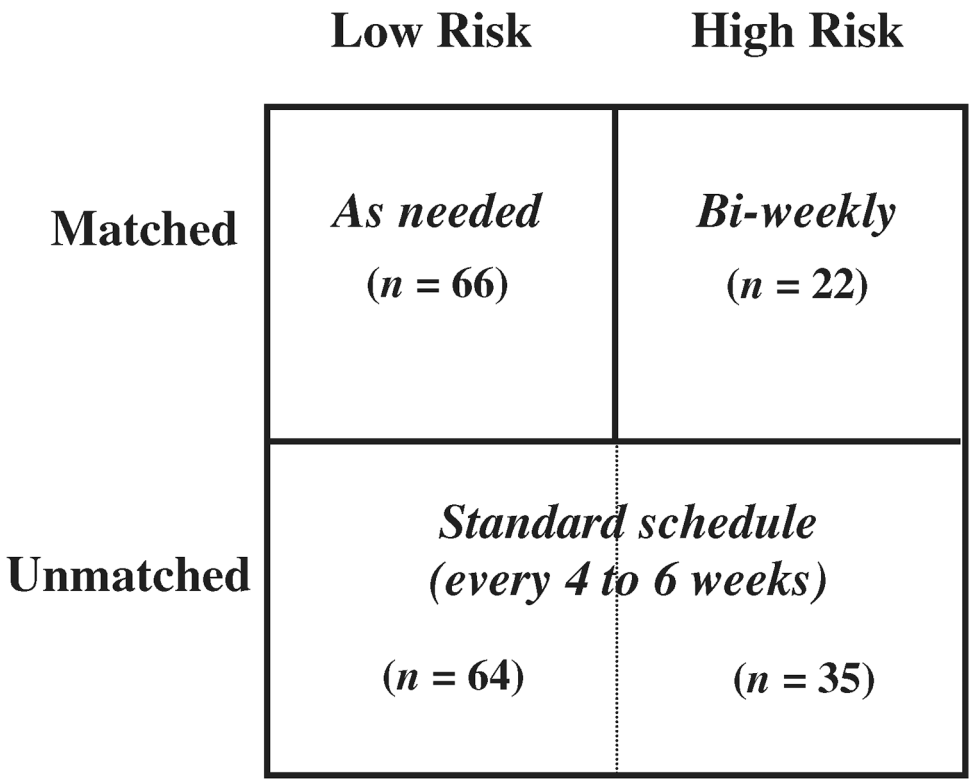

Figure 1.
Study Research Design. High Risk = Meets *DSM-IV* Diagnostic Criteria for Antisocial Personality Disorder (APD) or Has a History of Drug Abuse Treatment. Low Risk = Does Not Meet *DSM-IV* Diagnostic Criteria for APD and Has No History of Drug Abuse Treatment

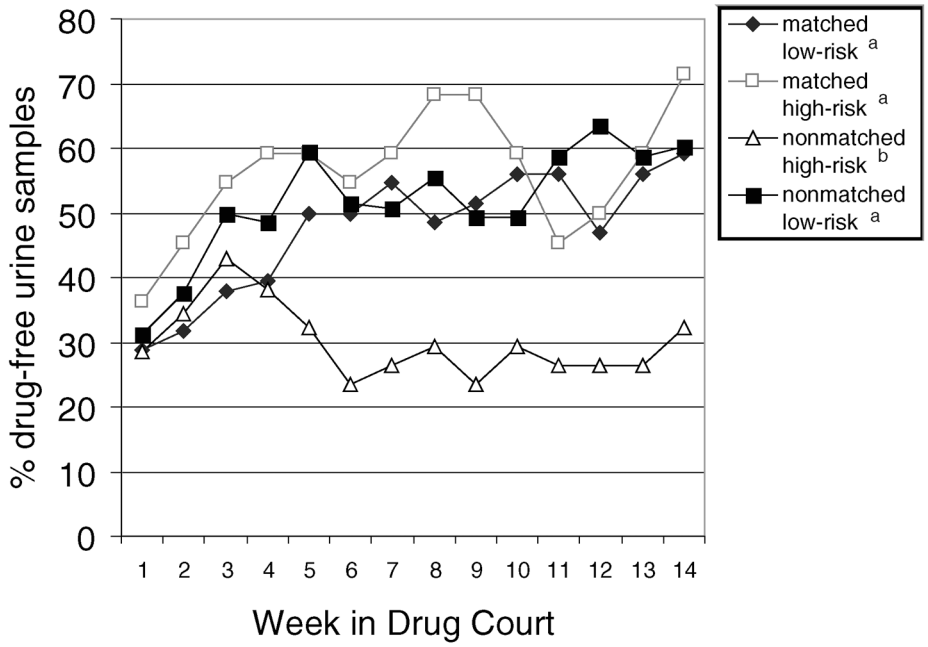

Figure 2.
Proportions of Misdemeanor Drug Court Participants Providing Drug-Negative Urine Specimens by Condition and by Week.
NOTE: Groups with Superscripts ([a, b]) that differ from each other are significantly different at $p < .001$.

TABLE 1

Outcomes During the First 14 weeks of Misdemeanor Drug Court by Condition and by Risk Status: *M* (*SD*) or *n* (%)

	Unmatched		Matched	
	Low Risk (*n* = 64)	**High Risk (*n* = 35)**	**Low Risk (*n* = 66)**	**High Risk (*n* = 22)**
Status hearings scheduled****	1.58 (1.35)[a]	2.00 (1.55)[a]	.20 (.44)[b]	5.00 (.98)[c]
Status hearings attended****	1.30 (1.33)[a]	1.37 (1.35)[a]	.06 (.24)[b]	4.36 (1.56)[c]
Number drug-free urines**	7.27 (5.05)[a]	3.94 (4.64)[b]	6.62 (5.17)[a]	7.86 (5.04)[a]
Consecutive drug-free urines*	5.20 (4.20)[a]	2.69 (3.37)[b]	5.03 (4.66)[a]	5.82 (4.84)[a]
Referred to IDD***	4 (6%)[a]	7 (20%)[b]	5 (8%)[a]	7 (32%)[b]
Counseling sessions attended**	9.00 (3.14)[a,b]	6.86 (4.58)[a]	8.58 (3.37)[a,b]	10.14 (4.17)[b]
RTS: reported any illicit drug use, past 30 days				
Month 1	14 (24%)	6 (20%)	12 (26%)	3 (14%)
Month 2	11 (22%)	8 (31%)	10 (21%)	4 (19%)
Month 3	10 (19%)	8 (31%)	9 (16%)	2 (10%)
RTS: reported any alcohol intoxication, past 30 days				
Month 1	6 (10%)	6 (20%)	7 (15%)	6 (29%)
Month 2	8 (16%)	5 (19%)	6 (13%)	6 (29%)
Month 3	11 (21%)	4 (15%)	11 (19%)	3 (14%)
RTS: reported any illegal activity, past 30 days				
Month 1	0 (0%)	1 (3%)	1 (2%)	1 (5%)
Month 2	0 (0%)	1 (4%)	0 (0%)	0 (0%)
Month 3	1 (2%)	1 (4%)	0 (0%)	0 (0%)

NOTE: IDD = intensive drug diversion; RTS = Recent Treatment Survey. Data from the RTS reflect the percentages of participants reporting at each monthly interval (i.e., who had nonmissing data). Alcohol intoxication = consumed five drinks in 1 day or imbibed until experienced the effects of alcohol. Illegal activity does not include simple drug use or drug possession but does include drug dealing or manufacturing, property offenses, theft offenses, violent offenses, and weapons offenses. Cells with superscripts that are different from each other are significantly different at $p < .05$ using Tukey HSD.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

**** $p < .0001$.

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