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## Social Networks, Supportive Behaviors, and Perceived Social Support as Predictors of Drug Court Completion

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Social Networks, Supportive Behaviors, and Perceived Social Support as Predictors of Drug  
Court Completion

By

Tasha Miranda Ramirez

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree

of

Master of Science

in the

Andrew Young School of Policy Studies

at Georgia State University

## ABSTRACT

### SOCIAL NETWORKS, SUPPORTIVE BEHAVIORS, AND PERCEIVED SOCIAL SUPPORT AS PREDICTORS OF DRUG COURT COMPLETION

By

Tasha Miranda Ramirez

10/15/2019

Committee Chair: Dr. E. Sevigny, Ph.D.

Major Department: Criminal Justice and Criminology

**Purpose:** The understanding of sociodemographic variables of drug court completion is well documented in the drug court literature, but the application of theoretical predictors is often neglected, leading to a gap between theory and practice. To fill this gap, this study examined the utility of social support theory in explaining the differences between those who complete the drug court program and those who fail to do so. Using Cohen's definition, social support was conceptualized as social networks, supportive behaviors, and perceived support.

**Methods:** Participant survey data and drug court data from the National Institute of Justice's Multi-Site Adult Drug Court Evaluation (MADCE) was used to construct seven scales of social support that proxy the Index of Socially Supportive Behaviors (ISSB) and Multidimensional Scale of Perceived Social Support (MSPSS). Several random effects, multi-level logistic models were used to calculate the probability of drug court completion, controlling for participant and drug court level effects. There were two hypotheses: (1) *Social support is positively associated with drug court completion*, and (2) *drug court completion varies by the type of social network and the type of supportive behavior*.

**Results:** Consistent with the previous theoretical hypothesis and empirical research, the combination of informal and formal social support, including supportive behaviors and perceived social support, significantly predicted drug court completion at 18-months. Formal expressive and formal perceived social support were correlated with completion, even when level-2 programmatic controls were added to the modeling. However, formal instrumental social support did not predict completion. Likewise, both expressive and instrumental informal social support from family remained insignificant throughout all models. Suggestions for implementing changes in the drug court model based on these results are discussed.

**Keywords:** *Drug court, social support, multi-level modelin*

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As this research concerns the importance of informal and formal social support, I should acknowledge the contributions of my family and the faculty at Georgia State University that guided me during this research. Without their support, this work would not have been possible.

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## **Dedication**

To the individuals suffering from substance use disorder and their families: The path to recovery is a long and winding, full of forks, hills, and uncharted territory, but I know you will reach the “mountain top.” I commend you for your bravery. Keep up the good fight.

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## Introduction

“Crime is best addressed not through greater amounts of control but by increasing social support.” –Francis T. Cullen and Mitchell Chamlin (1999)

Drug courts were established to combat the ineffectiveness and expense of traditional criminal justice approaches for managing drug-involved offenders. There are now more than 3,100 drug courts across the United States, half of which are intended for adults (U.S. Department of Justice, 2017). Though drug courts operate according to the unique protocol of each jurisdiction, the primary treatment approach is grounded in the concept of therapeutic jurisprudence (Hora, Schma, & Rosenthal, 1998). The purpose of drug court is to “achieve a reduction in recidivism and addiction among substance-abusing offenders through early, continuous, and intense judicially supervised treatment, mandatory periodic drug testing, community supervision, and appropriate sanctions or rewards” (National Institute of Justice, 2017). To achieve its purposes, drug courts must retain participants until they complete the program. This typically takes between 12-18 months (Rempel, Green, & Kralstein, 2012), with completion rates ranging from 34-56 percent (General Accountability Office, 1997; Dematteo, Marlowe, Festinger, & Arabia, 2009). On the low end, this figure indicates that just 1 out of 3 participants successfully complete drug court.

The National Institute of Justice (NIJ) is specifically concerned with increasing drug court graduation rates (NIJ, 2013). However, completion can be influenced by many factors. Research aimed at identifying sociodemographic characteristics finds that those who complete are generally older, male, white, married, more educated, and employed (Butzin, Saum, & Scarpitti, 2002; Mateyoke-Scriver, Webster, Staton & Leukefeld, 2004; Roll, Prendergast, Richardson, Burdon & Ramirez, 2005; Dannerbeck, Harris, Sundet & Lloyd, 2006; Broussard,

2012; Gallagher, 2013; Smith, 2017). Alternative factors associated with drug court completion include treatment motivation, participation in individual drug treatment, defendant risk propensity, criminal history, drug of choice, and the frequency of contact with the drug court judge (Goldkamp, White, and Robinson 2001; Winick & Wesler, 2001; Burns & Peyrot, 2003; Taxman & Bouffard, 2005; Hickert, Boyle, and Tollefson, 2009). These studies are essential for understanding who completes the drug court program but fails to address why.

Cullen (1999) argues that social support has a critical role in the rehabilitation of offenders, but this hypothesis receives little attention in drug court literature. When social support is examined as a predictor of drug court completion, the distinction regarding its many properties and presumed benefits is often neglected. Instead, the conceptualization of social support tends to be loosely defined as an individual's level of social connectedness (e.g., religious affiliation, number of friends and family, or engagement in prosocial activities). Two exceptions include research on the psychosocial factors of drug court participants (Frei, 2014) and the limited recovery capital of drug court participants' support social networks (Zschau, Collins, Lee, & Hatch's, 2016). However, neither study fully captured the complexity of social support identified in the theoretical literature, such as the importance of a recipient's perceived versus actual social support from family, friends, and the drug court treatment team (Cohen, 1992). Without a consistent framework to isolate the influential elements of social support, there is no clear understanding of the appropriate modifications needed to improve retention, completion, and ultimately recidivism.

## **Purpose**

The purpose of this research is to address the prior limitations, applying a more nuanced conceptualization of social support to explain the differences between those who complete and

those who fail to do so. Of further importance is the need for more rigorous analyses that explains the association between social support and completion and the effect of contextual level variables. The question is, “Which component of social support best explains the differences between those who complete the drug court program and those who fail to do so?” Consequently, this research posits that (1) *social support is positively associated with drug court completion*, and (2) *drug court completion varies by social network and the type of supportive behavior*. To test these hypotheses, participant data from the National Institute of Justice’s (NIJ) Multi-site Adult Drug Court Evaluation (MADCE) was used to construct a series of multi-level logistic regression models accounting for the effect of a participants’ perceived and actual social support from family and the drug court treatment team within drug courts and between individuals. This understanding is useful for developing drug court procedures that offer participants the most effective social support throughout the drug court program.

### **Social Support Theory**

In general, social support theorists posit that the exchange of resources provided by supportive relationships is integral to well-being (Barrera & Balls, 1983; Shumaker and Brownwell, 1984; Langford, Bowsher, Maloney, & Lillis, 1997; Cullen, Wright, & Chamlin, 1999). Holahan and Moos (1983) research was the first to recognize that supportive resources are derived from two distinct sources of social support: family and work relationships. Tardy (1985) refer to these sources as informal and formal social networks, respectively. Further, Vaux (1988) posited that within social networks, the flow of supportive resources is a one-way transactional process involving a provider and a recipient. According to Lin (1986), and acknowledged in criminology by Cullen (1994), supportive resources can be actual and perceived. In advancing

these ideas, Cohen (1992) postulated that social support encompasses three broad dimensions: *social networks, supportive behaviors, and perceived support.*

*Social networks* refer to the structure of support systems, which is often used to investigate kinship patterns and community structure as a form of social capital (Cullen, Wright, & Chamlin, 1999; Scott, 2017). There are two types of social networks, formal and informal (Tardy 1985; Vaux, 1988). Formal social networks consist of secondary relationships provided by institutions, such as schools, work-places, and the criminal justice system. Informal social networks are intimate relationships, which include spouses, family, and peer companions (Cox & Demmitt, 2014). These social networks can be prosocial or deviant (Cohen & Syme, 1985; Colvin, Cullen & Ven, 2002). For example, the nature of illegal drugs forces users to network with subcultures, and these groups, in turn, provide a form of social support that reinforces drug use (Goode, 1970; Colvin, Cullen & Ven, 2002), whereas prosocial networks create resiliency against drug use through providing the resources needed to overcome an adverse event. To further complicate matters, Falkin & Strauss (2003) argue that social networks can provide both constructive social support yet enable drug use. Though social networks do not have a direct effect on behavior, support systems are essential components of behavioral tendencies that can either weaken or strengthen the capacity to desist from drug-related activity (Cullen, Wright, & Chamlin, 1999; Litt & Mallon, 2003; Lewandowski & Hill, 2009).

Although different typologies exist, according to Lin (1986) and Cullen's (1994) paradigm of social support, informal and formal social networks can provide two types of *supportive behavior*: (1) expressive support and (2) instrumental support.<sup>1</sup> Expressive support

includes feelings of belonging and intimacy produced by engaging in shared activities with those in the social network, which acts to affirm or increase self-efficacy. Providing monetary assistance or other tangible resources that supplement socio-economic well-being is considered instrumental support. The resources (both received and perceived) provided by supportive behaviors are a form of *social capital*, which acts to alleviate the adverse effects of stressors (Ferlander, 2007). Supportive behaviors are thought to promote constructive coping when congruent with the demands of the stressor (Cohen, 1985; Thoits, 1995). When an individual experiences stressful life events, such as drug treatment, supportive social networks that consistently supply social capital increase the likelihood of positive coping (Cohen, 1992; Colvin, Cullen, & Thomas, 2002; Glanz, Rimer, Viswanath, 2008). However, research finds that perceived support matters more than actual support. That is, components of supportive behaviors are found to be weakly linked to better health outcomes when compared to perceived support (Lakey, Orehek, Hain, & VanVleet, 2010).

*Perceived support* is the perception of availability and satisfaction with supportive social networks and behaviors (Tardy, 1985; Haber, Cohen, Lucas, & Baltes, 2007; Shorey and Lakey, 2011). There are two components of perceived support: (1) The perception that an event requires support and (2) the presumption that one's social network can adequately master the situation

<sup>1</sup> Conceptual elaborations also include appraisal support and informational support (Langford, Bowsher, Maloney, & Lillis, 1997; Akers and Seller, 2000) within the framework of supportive behaviors. Similar to expressive support, appraisal support is encouragement, feedback, affirmation, and/or appreciation. It can be verbal, i.e., "Good work," or nonverbal, such as tokens, certificates, or medals of achievement. Informational support is similar to instrumental support, which represents guidance, advice, and suggestions that aid an individual's position in society. Because appraisal and informational support are, essentially, captured by expressive support and instrumental support, operationalizing these constructs could create conceptual dissonance and introduce multicollinearity among predictors. Thus, these constructs are not *specifically* operationalized in this study.

and provide the supportive behaviors needed to overcome an adverse event (Wethington & Kessler, 1986). Lazarus and colleagues (1977) were the first to posit that perceived support is more integral to well-being than received support. Since then, numerous studies confirmed this hypothesis (Barrera, 1986; Norris & Kaniasty, 1996; Willis & Shinar, 2000). Ultimately, the distinction between received and perceived social support suggests that the interpretation and anticipation vary by individual provider traits and social influences (Goldsmith, 2004; Shorey & Lakey, 2011).

### **The Link between Social Support and Drug Treatment Outcomes**

Research related to drug rehabilitation programs frequently focuses on the nature and operation of informal and formal social networks and the supportive behaviors they provide, both perceived and received. These studies utilize data from a plethora of sources, including methadone maintenance clinics and residential treatment facilities. Similar to drug rehabilitation programs, the drug court model requires participants to reduce or desists from substance use under the close supervision of treatment providers. Since a clear understanding of social support and drug court completion has not been established, this review explores both drug rehabilitation and drug court research.

### **Informal Social Networks**

As Cohen (1992) observed, “Social supports are thought to contribute to the avoidance of stressful events, the appraisal of events, and the ability to cope with events and their consequences.” Though social support from family and friends is a prominent component of the drug recovery process, social support from family, friends, and spouses do not uniformly benefit recipients (Goldsmith, 2004). Research on opioid maintenance treatment suggests that the association between social support and opioid use at baseline and three months varied by the

type of support (Wasserman, Stewart & Delucchi, 2001). In fact, significant others and friends are found to have a stronger correlation with drug treatment success than familial relationships (Zimet, Dahlem, Zimet, and Farley, 1988; Zimet, Powell, Farley, Werkman, Berkoff, 1990). Social support within informal networks is also contingent on the types of support required, “the relational characteristics and the network structures” (El-Bassel, Chen, & Cooper, 1998). Because the degree of social embeddedness within a social network is an antecedent of receiving social support, the stronger the attachment, the more likely it is that an individual will receive the needed capital to overcome a negative event (Langford, Bowsher, Maloney & Lillis, 1997).

Rose and Clear (1988) posit that informal controls that are “well-functioning,” or prosocial, have the potential to decrease drug use. Similarly, Dannerbeck, Harris, Sundet, & Lloyd (2006) attributed differences in drug court success to differing levels of positive family support. However, some supporters enable drug use, while others encourage cessation (Falkin and Strauss, 2003). To that end, Goehl and colleagues (2009) discovered that participants who are closest to a drug-user in their informal social network had more positive urinalysis than those who are further removed from a drug-user in the informal social network (63% versus 35%). Social network research defines this as the *homophily principle*, which posits that “similarity breeds connection” (McPherson, Smith-Lovin & Cook, 2001).

Contrary to a plethora of empirical and theoretical literature, Florentine, Anglin, Gi-Rivas, & Taylor (1997) found no evidence for the family social support hypothesis regarding drug treatment success. However, individuals entering drug treatment are often suffering from mental health issues, which influences their level of social support and, subsequently, the usefulness of supportive behaviors in providing resiliency (Warren, Stein & Grella, 2007; Frei, 2014). If an individual cannot adequately assess a stressful situation and evaluate the need for

social support, the appraisal process becomes ineffective (*see* Lazarus). For example, Dobkin, Civita, Paraherakis, and Gill's, (2002) survival analysis of out-patient adult substance abusers revealed that low informal social support at intake is linked with higher severity of drug addiction at follow-up, but low social support was most prevalent among participants with symptoms of depression and psychological distress. When an individual has co-occurring disorders, social support is only linked to successful drug treatment if self-efficacy is high. Specifically, Warren, Stein, and Grella (2007) investigated the role of social support and self-efficacy on drug treatment outcomes among participants with co-occurring disorders and discovered that those with higher self-efficacy have higher levels of social support and are statistically less likely to use alcohol and cocaine.

In practice, efforts to increase social support in drug treatment are often geared toward informal social support (Stanton & Shahish, 1997; Litt & Mallon, 2003). A significant flaw in implementing informal support is the variation in drug court eligibility criteria (Goldkamp, 1994). Some drug courts accept first-time offenders, while many others only accept offenders with a demonstrated history of drug abuse and dependence. As a result, participants could have substantial criminal histories coupled with years of substance abuse before entering treatment (Belenko, 1998). This is problematic because the persistent nature of substance abuse and dependency has a profound impact on families and loved ones that often pulls the drug user away from the prosocial network, due to "network burn-out" (Barnard, 2006). This predicament reduces drug abuse and dependency on an individual problem. Yet, participants with a greater number of constructive, or prosocial network members are more likely to enter treatment (Davey, Latkin, Hua, Tobin, & Strathdee, 2007), and those who are more motivated to enter are more likely to complete (Simpson & Joe 1993; Ball, Carroll, Canning-Ball, Rounssaville, 2006).



## **Formal Social Networks**

The judge and other drug court treatment providers represent the formal social network that receives considerable attention in the drug court literature. Reductions in recidivism and improved treatment outcomes are presumed to stem from the ability of drug courts to provide the appropriate balance of sanctions and rewards in addressing the underlying substance use. Some scholars argue that offenders with substance use disorders (SUD) cannot rationally perceive the value of punishment when weighed against the pharmacological pleasure of using drugs. Thus, the coercive model of monitoring, drug testing, and sanctions are ineffective at curbing drug use, as these are elements of punishment not supportive treatment (Tiger, 2013; Kleiman, 2001). Thus, “if treatment teams use punitive tactics and judgmental approaches, it compromises the quality of treatment, creating a barrier to graduating” (Gallagher, Nordberg, and Lefebvre, 2017, p.468).

Since judges possess the majority of discretion over sanctions, including repeating phases or jail time, and rewards, the perception of judicial concern for the participant’s progress is thought to be critical to participant success (Gallagher, Nordberg, and Lefebvre, 2017). Cooper and Barlett (1996) asked 157 participants about their interaction with the drug court judge, and 50 percent reported that talking to the judge about their progress and problems aided their chance of successful completion. Though Festinger & Lee (2004) discovered that the judge did not have an impact on outcomes related to criminal activity or drug use, there was an effect when accounting for individual characteristics of clients, such as the risk/need complex associated with different drugs and addiction severity. For example, those with higher need benefit more from judicial involvement than their counterparts (Marlow, Festinger, Lee, Dugosh, & Benasutti, 2006).

Studies that examine the role of other treatment team members in providing resilience are limited in drug court research. However, Mutschler and colleagues (2013) posit that the close and frequent contact with drug treatment teams is an important aspect of drug therapy. Carey, Waller, & Weller's (in press) research is progressive in examining the drug treatment team's effects on drug court outcomes. Results indicate that participants are most successful when the regular attendance of status hearings not only includes a judge, but defense counsel, case managers, and law enforcement personnel. When any one of these members is missing, outcomes are, on average, 50 percent less favorable. Problems with program staff are one of the most commonly endorsed reasons for prematurely terminating drug treatment (Ball, Carroll, Canning-Ball & Rounsaville, 2006). One explanation is the lack of social support from family and friends increases the need for social support from treatment team providers (Zschau et al. (2016). As one drug court graduate stated, in an interview conducted by the National Association of Drug Court Professionals (2017), "My parents loved me, my whole family loved me, but I needed drug court [team] to make me realize...If you do not change your ways, you are going to die."

While these studies establish the importance of the drug court treatment team as part of the formal social network, they do not disclose whether these outcomes are due to the level of instrumental or expressive capital provided by formal social networks. As highlighted, simply having social support from an informal or formal social network is found to be linked to drug recovery and drug court completion, but social support asks, "What behaviors do these networks provide that benefit a recipient, and for whom do these behaviors apply and when?"

### **Supportive Behaviors: Expressive and Instrumental Social Support**

As with other areas of social support and drug court research, there are very few studies

that examine the combination of informal and formal, expressive and instrumental social support in the context of adult drug court treatment. The firmest evidence is drawn from Zschau et al.'s (2016) research, distinguishing between the emotional/physical capital provided family/friends and the emotional/physical capital provided by work/therapeutic social networks. Results indicate that both types of social networks provide medium to high levels of emotional capital, except for informal social networks of employment. One participant reported:

[I]t was just all in the fact that they were out for my best interest, they want to see me succeed, they don't want to see me fail, and once I started realizing that they were actually there to help me, and that this was . . . that this was real, it wasn't just some kind of front to keep me out of prison . . . it just started clicking, it just worked, it grew on me.

Additionally, Zschau and colleagues (2016) discovered that the provision of physical capital from informal networks was severely limited during drug court treatment, which hindered program progress and success. Further, in a study that examined the meaning of informal instrumental social support, researchers discovered that instrumental support has expressive meaning to the recipient when provided by informal networks (Semmer, Elfering, Jacobshagen, Perrot, Beehr & Boos, 2008).

### **Perceived Social Support**

Subjective perceptions and environment can also alter the access to and receipt of supportive behaviors (Shorey & Lakey, 2011). In a study conducted by Salmon, Joseph, Saylor, & Mann (2000) on the perception of provider support in outpatient drug treatment, the social support received from friends and family was more satisfactory to participants than formal received support from treatment providers. Likewise, according to Mavandadi, Helstrom, Sayers, and Oslin (2015), participants who report higher levels of perceived family social support during

drug treatment experience more significant declines in heavy drinking. Contrarily, Westreich, Heitner, Cooper, Galanter, Guedj (1997) discovered that initial weak perceived support from family was correlated with program completion in an inpatient rehabilitation program. This finding is particularly important for stress-buffering research, which is typically measured as the perception that social support would be available when needed or wanted (Sarason, Levine, Basham, & Sarason, 1983). Wethington and Kessler (1986) argue that this operationalization is not sufficient enough to better understand the relationship between perceived support and the buffering effect, as it does not account for how the level of received support from the provider affects perception. After augmenting previous definitions of perceived support, Wethington and Kessler (1986) discovered that perceived support is dependent upon actual social network responses to the stressor; the situation is perceived as less threatening if the social network response is nonjudgmental.

### **Research Objectives and Hypothesis**

The available evidence demonstrates that positive social support might fortify the ability to desist from drug use and thus lead to successful drug treatment outcomes. However, the consensus on how to test related hypotheses has led to an impediment in the criminological development of social support. Subsequently, the first objective of this research is to investigate the link between social support and drug court completion. The second objective of this research is to advance the analytical limitations of previous drug court research, using multi-level modeling procedures that account for the nesting of individuals within 23 distinct drug court sites. To that end, this research aims to answer the following questions:

- 1) Does social support predict adult drug court completion?
- 2) Which type of social network and supportive behaviors predict drug court completion?

Prior research and theory produce two related hypotheses: First, *social support is positively associated with drug court completion*. Second, *drug court completion varies by the network and the type of social support*. These questions and hypotheses were answered using the Multi-site Adult Drug Court Evaluation data. All variables were assessed at 18-months, using three random-effects multi-level logistic regressions.

### **Methods**

This study uses secondary data from the Multi-Site Adult Drug Court Evaluation (Rossman, Roman, Zweig, Lindquist, Rempel, Willison, Downey, and Fahrney, 2012; [MADCE]), which was funded by the National Institute of Justice (NIJ) and conducted by the Urban Institute (UI), RTI International (RTI), and the Center for Court Innovation (CCI). The data were collected over a period of four years (2004-2008). Because the MADCE contains sensitive information, including but not limited to criminal histories and drug use, the data are restricted via the Inter-university Consortium of Political and Social Research (ICPSR). Institutional Review Board (IRB) approval was acquired through Georgia State University to obtain the data. The data are subject to an ICPSR data user agreement, National Archive of Criminal Justice Data (NACJD) privacy certificate, and a data management plan, to ensure the continued confidentiality of participant information.

The purpose of the MADCE survey was four-fold: (1) Test whether drug courts reduce drug use and crime in comparison with similar offenders that receive treatment as usual. (2) Understand how drug courts work and for whom. (3) Explain how offender attitudes and behaviors change when they are exposed to drug courts and how these changes help explain the effectiveness of drug court programs. (4) Examine whether drug courts generate cost savings (Rossman et al., 2011c). These components comprise three data sets: Data set 1 consists of

nationwide court survey data, data set 2 is participant/offender data, and data set 3 is cost-benefit analysis data. Of interest to the present study are items from datasets 1 and 2. However, this research utilizes drug court and participant data only since analyses are concerned with factors that predict drug court completion (Rossman, Roman, Zweig, Rempel, Lindquist, Willison, ... & Fahrney, 2011).

Drug court surveys and participant-level surveys do not coincide. The selection of adult drug court sites was conducted between February and June 2004, using a nationwide web-based survey. The sampling frame included all existing adult drug courts functional for one year or more at the outset of the study (Rossman et al., 2011c). Of the 593 courts that were identified by Rossman and colleagues, 379 completed the survey and were evaluated based on specific criteria to determine eligibility for participation in the study. Selection criteria included: (1) provision of substance abuse treatment, (2) leverage, and (3) sanctioning policies. After ensuring that the jurisdictions did not overlap, using HotSpot mapping from geographic information systems (GIS), and conducting in-person site visits, the final sample of 23 drug courts (3.88 percent of the 593 of the initial sampling and 6.05 percent of the 380 courts that completed the survey) was identified (Rossman et al., 2011c). Site locations include Florida (2), Georgia (2), Illinois (2), New York (8), Pennsylvania (2), South Carolina (1), and Washington (6).

The MADCE participant sample consists of 1,781 offenders (1,156 drug court participants and 625 comparison group members) derived from 23 of the selected adult drug courts as well as six comparison jurisdictions. MADCE drug court participant enrollment occurred between March 2006 and June 2006. Drug court participants from the 23 sites were surveyed in 3 waves, at baseline, six months after enrollment, and 18 months after enrollment (Rossman et al., 2011d). Baseline interviews were conducted between March 2006 and June

2006. The 18-month interviews were conducted between September 2006 and January 2008. Participants were offered a monetary incentive in the form of cash or money orders, to encourage continued participation in the study and reduce attrition. Surveys were administered via computer-assisted personal interviewing (CAPI). For individuals incarcerated within institutions that prohibited the use of laptops, paper surveys and pencils were provided (Rossman et al. 2011d).

Overall, 76 percent of the original sample participated in all three interview waves (Rossman et al., 2011d). Of the 1,533 interviewed at baseline, 85 percent participated in the six-month follow-up, and 83 percent (1,474) at the 18-month follow up (Rempel et al. 2012). Participants included as part of this study were all those reporting a definitive status (completion or failure to complete) at the 18-month follow-up interview, which represents 53 percent of the baseline cohort. Those who reported completed represent 35 percent of the sample, while those who failed to complete represent 23 percent. All those coded as missing or still in progress represent 42 percent of the sample. After excluding cases for missing data and non-completion status, the sample consisted of 672 drug court participants. An additional 133 cases were excluded due to missingness on the variable 18-month total social support. Due to listwise deletion on other control variables, the sample size was further reduced to 307. The final analytic sample size was 271, as an additional 39 cases were lost due to the perfect prediction of the variable primary drug of choice and race.

### **18-month Completion variable**

The outcome, *drug court completion*, is measured as a dichotomous variable that indicates whether a participant completed the drug court program within 18-months. The 18-month completion timeframe was selected instead of 6-month because the minimum period

required to complete a drug court program is 12- to 22- months, as reported by the 23 drug courts included in this study. Completion was measured by the question, “In what month and year did you graduate/drop out/get kicked out/get put in jail?” Participants who reported they were “still in progress” were dropped from the analyses. Participants who responded “graduate” were categorized as having “completed” the drug court program (coded ‘1’) and those who reported “dropped out/kicked out/put in jail” were categorized as having “failed to complete” the drug court program (coded ‘0’).

### **Social Support variables**

The variable social support was measured using a combination of social networks and received/perceived expressive and instrumental supportive behaviors. There are seven main scales (*see* Table 1 for Descriptive Statistics). It is assumed that participants’ social support increases over time; therefore, social support was measured at 18-months. This measures the cumulative level of social support. All scales were constructed using MADCE questionnaire items that proxy Barrera, Sandler, and Ramsay’s (1981) Inventory of Social Supportive Behaviors (ISSB) and Zimet, Dahlem, Zimet, and Farley’s (1988) Multidimensional Scale of Perceived Social Support (MSPSS). The ISSB is a 40-item self-report measure that was designed to assess how often individuals received various forms of assistance during the preceding month.<sup>2</sup> The MSPSS is a 24-item survey that addresses the need for and satisfaction with supportive behaviors from family, friends, and significant others. Though the items included in each scale of social support differ slightly from the items in the original ISSB and MSPSS

<sup>2</sup> The internal consistency reliability of the ISSB has been consistently above .9 (Barrera, 1981; Barrera, Sandler, & Ramsay, 1981; Cohen & Hoberman, 1983; Cohen et al., 1984; Stokes & Wilson, 1984).



surveys, the selection of MADCE survey questionnaire items included in each scale received careful consideration.

The questions included in each scale are generally ordinal level, utilizing a five-point Likert scale response to indicate the degree to which a participant agreed with a statement. “Strongly agree” responses received a score of “1” and “Strongly disagree” received a score of “5.” “Yes” responses received a score of “1” while “No” responses received a score of “0.” Some scales also include continuous items. Because each scale of social support was constructed from a varying number and type of items, the scales were standardized and evaluated for internal consistency using Cronbach’s coefficient alpha. However, all scales were multiplied by 10 to increase the range in variability. High values on all scales indicate that a participant has a higher level of social support, while low values indicate that a participant has a low value of social support (*see* Table 1 of Appendix A for 18-month Social Support Variable Descriptive Statistics).

*Informal Expressive Social Support* is a standardized scale that consists of four statements collected at the 18-month participant interview. It was designed to assess the strength of a participant’s received expressive capital from family members, such as affection, care, and understanding. The items included in the scale are as follows: “You have someone in the family to talk with about your interests or problems,” “You have someone in the family to turn to for suggestions about how to deal with a personal problem,” “You have someone in the family who understands your problems,” “You have someone in the family to love and make you feel wanted” (Cronbach’s alpha = 0.90).

*Formal Expressive Social Support* is a standardized scale that consists of five statements regarding the provision of received affection and understanding from the drug court treatment

team, including the judge, caseworker, and others involved in drug court proceedings, such as supervision officers. Though the ISSB was not explicitly designed to measure formal support from social institutions, this is a novel attempt at estimating expressive social support from the drug court. Thus, the ISSB was used as a guide for selecting the following items, collected at the 18-month participant interview: “The monitor lets you tell your side of the story,” Percentage of praise from judge or supervision officer, “Since your last interview, how many times has the courtroom applauded you,” “The judge emphasizes the importance of drug and alcohol treatment,” “The judge gives you a chance to tell your side of the story” (Cronbach’s alpha = 0.65).

The *Informal Instrumental Social Support* scale is a standardized scale that consists of four statements, collected at the 18-month participant interview. It was designed to measure the provision of received tangible capital from family members, such as financial support, transportation, or a place to live. The items included in the scale are as follows: “You have someone in your family who would provide help or advice on finding a place to live,” “You have someone in your family who would provide help or advice on finding a job,” “You have someone in your family who would provide you with financial support” (Cronbach’s alpha = 0.89).

The *Formal Instrumental Social Support* is a standardized scale that consists of six statements collected at the 18-month interview. It was designed to measure the provision of received tangible capital from the drug court treatment team, including supportive behaviors from the drug court judge, caseworker, and fellow drug court participants. The items included in the scale are as follows: “You received employment/education/skills support in the past year,” “You received administrative support (legal, financial, insurance, transportation, housing) in the

past year,” “You received help in the past year with money management,” “You received help in the past year with transportation,” “You received help in the past year finding/keeping place to live,” and “Did you receive any support services in the past year” (Cronbach’s alpha 0.70).

The *Informal Perceived Social Support* scale is a standardized scale that consists of three statements (on a five-point scale) collected at the 18-month participant interview. This scale was designed to measure the perception of received expressive and instrumental social support from family. Items related to informal perceived social support are limited in the MADCE questionnaire, as this understanding was not of principal interest to the original researchers. However, it was necessary to proxy family perceived social support in analyses, using the MSPSS, as its contribution to drug and crime desistence is thought to matters as much as, and perhaps more than, received support (Rodriguez & Cohen,1998; Wills & Shinar 2000; Staton-Tindall, Royse, & Leukfeld, 2007). The items included in the 18-month scale are as follows: “You want your family involved in your life,” “You feel close to your family,” and “You have someone in your family who would provide support for dealing with a substance abuse problem” (Cronbach’s alpha = 0.78).

*Formal Perceived Social Support* is a standardized scale that consists of 5 statements. The MADCE questionnaire contains several items related to the perception of formal supportive behaviors. Of the items selected, there are four dichotomous items, two 3-point Likert scale items, and one continuous item, collected at 18-month participant interviews. These items include: “How pleased were you to get praise by your caseworker?” “How pleased were you to get praised by a judge?” “You thought at least one select drug court reward was helpful, since your last interview?” “Thought at least one drug court courtroom motivation strategy was

helpful, since your last interview?” Lastly, a “pleasure from reward score,” constructed by MADCE researchers, was included (Cronbach’s alpha = 0.80).

The variable 18-month *Total Social Support* was calculated to examine the combination of informal and formal, received/perceived expressive and instrumental social support. This calculation was achieved by summing all scales of social support into a standardized index [Range= -10 – 5].

### **Controls**

In Appendix A, Table 1 depicts the descriptive statistics for the demographic controls included in all analyses, which are as follows: *Age* (measured in years), *gender* (Male or Female), *race/ethnicity* (4-category), *education* (3-category), *monthly income* (measured in dollars), *employment*, *marital/relationship status*, *primary childcare responsibilities*, and *homelessness*. Additional controls include: *Depression severity* (see Andersen, Malmgren, et al. 1994; [Range= 0-30]). This scale a multi-item inventory based on classic features of depression, such as feeling depressed, fearful, lonely, and unhappy, and having restless sleep. The scale was constructed by the Center for Epidemiologic Studies. Higher scores indicate increased depression severity. *Addiction severity* (Gavin, Ross, and Skinner, 1989; [Range= 0-18]), *drug of choice*, *total prior arrest history*, and *treatment readiness* (Miller and Tonigan, 1996; [Range= 1 – 8]).

It was necessary to include these controls in the analyses because research suggests that these variables influence the likelihood of completing a drug court program. For instance, participants with primary care responsibilities for at least one child are more likely to complete (NADCP, 2011), while those not motivated to participate in drug treatment are less likely to do so (Roberts, Contois, Willis, & Worthington, 2007). Likewise, participants with higher scores on

the depression severity index may have less social support than those with lower scores (Daughters, Braun, Sargeant, Reynolds, Hopko, Blanco & Lejuez, 2008).

### **Programmatic Variables**

According to Rossman, Roman, Zweig, Rempel, and Lindquist (2011), within-court level practices influence the effectiveness of drug courts: “Drug courts with higher scores on leverage and eligibility, measured as medium predictability of sanctions, flexibility in prescribing sanctions and allowing participants to enter drug court at the same time they entered the criminal justice system, were more effective” (Mateyoke-Scrivner, Webster, Staton & Leukefeld, 2004; Lindquist, 2010; Rossman, Roman, Zweig, Rempel & Lindquist, 2011; Zweig, 2012). Although Anglin and Hser (1990) found that nearly all categories of offenders benefitted comparably from the drug court intervention, completion rates and levels of social support for a drug court that only accepts first-time offenders are expected to differ from a drug court that accepts offenders with an extensive criminal history of drug involvement. Additionally, drug courts treatment modalities that demonstrate positive treatment outcomes are generally linked to medication-assisted treatment, therapeutic community, residential/outpatient treatment, and individualized treatment plans (Polcin, 2001; Rossman et al., 2011; Zhangm, Friedman & Gerstein (2003).

Based on this research, drug court level controls related to sanction severity, eligibility, and medication-assisted treatment were included in Model 3 to investigate court level differences and any effects these provisions have on social support and the likelihood of completion (*See* Table 1 for descriptive statistics). Sanction severity is a scale coded by Rossman and colleagues (2011a). The scale ranges from 0-3. Eligibility was measured by the question, “Does the drug court limit entry based on criminal history?” “Yes” responses received a score of “1” while “No” responses received a score of “0.” Medication assisted treatment was measured by the question,

“Does the drug court offer pharmacological interventions?” “Yes” responses received a score of “1” while “No” responses received a score of “0.”

### **Analytic Procedure**

The following procedures were conducted using Stata SE statistical software package, version 15.1 (64 bit). Because the MADCE drug court participant observations are nested between and within 1 of 23 distinct sites and structured as panel style data, there are three possible levels of analysis: participants, courts, and time. While this analytic design recognizes that a longitudinal design would better fit these data, a cross-sectional analysis is reasonable since this research is a novel attempt at investigating the effects of social support on drug court completion. As a result, partial pooling was only considered for the nesting of individuals between and within courts, using multilevel logistic modeling (MLM). In effect, participants represented level-1, and drug court site represented level-2, forgoing the nesting of participant data within time. This reduced error due to violating the assumption of independence and overstating the variation among units, as is required by the assumptions of standard multivariate methods. In short, using MLM reduces the probability of Type I errors that involve incorrectly reporting an effect as significant, making this a conservative and more rigorous option (Rossman et al., 2011).

Implementing this approach required several steps. The first step was to evaluate the interclass correlation (ICC) or “null model” to determine the proportion of variance in the outcome that can be accounted for by court grouping (between-court variance). Ultimately, the question is, “do courts inherently vary in their outcomes?” The ICC regression estimates indicated that the Rho is equal to .114. Therefore, the total variability in the outcome that is attributable to the level-2 is 11.4 percent, leaving 88.6 percent of the variance at level-1. These

estimates concluded that the clustering of the data is a relevant factor in this analysis, as the “rule of thumb” is that an ICC of 5 percent or more suggests that MLM is necessary for robust estimations of standard errors (Mehmetoglu & Jakobsen, 2017).

The second step was to determine whether the models should be estimated using random-effects or fixed effects. This determination was accomplished using a Hausman specification test, which revealed that the beta estimates of the random effects model were consistent with the assumption that error terms are uncorrelated with the covariates. Also, using a random-effects approach is appropriate since it accounts for the impact of time-invariant variables (Allison, 1999; Mehmetoglu & Jakobsen, 2017). Lastly, a Likelihood-ratio test was calculated, comparing the random slope model against the random intercept model. This test revealed that the random slope model was not worthwhile (LR=0.91,  $p \leq 0.01$ ). Therefore, the data were analyzed using random-effects multilevel logistic regression modeling.

## **Results**

In Table 4 of Appendix A, Model 1 depicts the unique effect of 18-months total social support on 18-month completion, controlling for age, gender, race, education, employment, monthly income, relationship status, primary childcare responsibilities, homelessness, depression severity, addiction severity, treatment readiness, drug of choice, and total prior arrest. Overall, Model 1, when compared to the null model, was statistically significant (LR $\chi^2$ = 20.61,  $p \leq 0.0000$ ). The proportion of the total variability in 18-month completion that is attributable to the level-2 (court) is 49.1 percent, thus 50.9 percent of the variance is at level-1 (participant) when accounting for 18-month total social support, participant demographics, homelessness, depression severity, addiction severity, treatment readiness, drug of choice, and total prior arrests.

Estimates indicate that there is a statistically significant strong and positive correlation between 18-month total social support and 18-month completion ( $\beta=1.704$ ,  $p\leq 0.001$ ). Participants are more likely to complete when total social support increases by one unit (OR= 5.5 and 95% CI =2.168, 13.940). Age ( $\beta= 0.082$ ,  $p\leq 0.001$ ), total prior arrests ( $\beta= -0.066$ ,  $p \leq 0.01$ ), African American/Black ( $\beta= -1.847$ ,  $p\leq 0.01$ ), primary childcare responsibilities ( $\beta= 1.459$ ,  $p \leq 0.05$ ), and participants' whose drug of choice is marijuana or hashish ( $\beta = -1.755$ ,  $p \leq 0.05$ ) all significantly predict 18-month completion. Because age was positively correlated with completion, this suggests that older participants are more likely to complete. However, total prior arrests and 18-month completion were negatively correlated. When total prior arrest increase by one unit, participants are 0.9 times less likely to complete. In addition, those who identify as African American/Black are 0.2 times less likely to complete when compared White participants. However, participants with primary childcare responsibilities are more likely to complete when compared to those who do not have primary childcare responsibilities (OR=4.3 and 95% CI= 0.856, 21.628). Participants whose drug of choice is marijuana or hashish are 0.2 times less likely to complete.

In Table 5 of Appendix A, Model 2 depicts the effects of 18-month informal expressive social support, informal instrumental social support, informal perceived social support, formal expressive social support, formal instrumental social support, and formal perceived social support on 18-month completion, controlling for participant demographics, depression severity, addiction severity, treatment readiness, drug of choice, and total prior arrests. When compared to the null model, model 2 was statistically significant ( $LR\chi^2= 23.19$ ,  $p\leq 0.0000$ ). The proportion of the total variability in 18-month completion that is attributable to the level-2 (court) is 56



percent. Thus, 44 percent of the variation in 18-month completion is attributable to the participant level.

While none of the informal social support variables were statistically significantly correlated with 18-month completion, there is a statistically significant strong and positive correlation between 18-month formal expressive social support and 18-month completion ( $\beta=1.997$ ,  $p\leq.01$ ). Participants are more likely to complete drug court within 18-months when formal expressive social support increases by one unit (OR= 7.3 and 95% CI =1.551, 35.032). There is also a statistically significant strong and positive correlation between 18-month formal perceived social support ( $\beta= 0.967$ ,  $p\leq 0.001$ ). Specifically, participants are more likely to complete a drug court program within 18-months when formal perceived social support increases (OR= 2.6 and 95% CI =1.285, 5.384). However, instrumental perceived social support does not predict 18-month completion.

Regarding controls, older participants are 10 percent more likely to complete (95% CI =1.017, 1.157). While participants with more total prior arrests are less likely to complete (OR= 0.925 and 95% CI= 0.870, 0.984), participants who were homeless within the past 6-months are more likely to complete than those who were not (OR= 6.6 and 95% CI =0.738, 58.662). Also participants who identify as African American/Black are less likely to complete within 18-months, compared to those who are White (OR 0.2 and 95% CI =0.031, 0.853) and participants' whose drug of choice is marijuana/hashish are 10 percent less likely to complete within 18-months (OR= 0.1 and 95% CI =0.014, 1.132).

Model 3 (full model) appears in Table 6 of Appendix A. In addition to baseline controls, Model 3 also includes the programmatic (or level 2) variable scales. Although none of the programmatic variables included in this model are significant, when compared to the null model,

Model 3 was statistically significant ( $LR\chi^2= 15.96, p\leq 0.0000$ ). Fifty percent of the variation in 18-month completion is occurring between courts. In effect, the programmatic controls decreased the court level variation from Model 2 to 3. Similar to the previous models, informal social support variables do not predict completion. This finding is significant because even without programmatic controls, informal social support did not significantly predict 18-month completion or failure of a drug court. However, formal expressive ( $\beta= 2.032, p\leq 0.001$ ) and formal perceived ( $\beta= 1.014, p\leq 0.001$ ) social support remained statistically significant, even with the addition of the programmatic controls, while formal instrumental social support remained insignificant.

In addition, age ( $\beta= 0.079, p\leq 0.01$ ), African American ( $\beta= -1.971, p\leq 0.01$ ), homelessness ( $\beta= 1.951, p\leq 0.05$ ), drug of choice marijuana/hashish ( $\beta= -2.087, p\leq 0.05$ ), and total prior arrest ( $\beta = -0.078, p\leq 0.01$ ) all significantly predicts 18-month completion. Older participants are more likely to complete drug court within 18-months (OR= 1.1 and 95% CI= 1.014, 1.156). As with the other models, the correlation between total prior arrests and 18-month completion is negative, and the magnitude of the effect is weak ( $\beta= -0.079, p\leq 0.01$ ). This implies that as total prior arrests increase, a participant is less likely to complete a drug court program within 18-months (OR= 0.925 and 95% CI= 0.870, 0.983). Likewise, African Americans are less likely to complete when compared to those who are White (OR= 0.13 and 95% CI= 0.026, 0.738) and those whose drug of choice is marijuana/hashish are less likely to complete than those whose drug of choice is alcohol (OR= 0.925 and 95% CI= 0.870, 0.983).

## **Discussion**

As hypothesized, total social support predicted completion in Model 1. When social support was disaggregated by network and type in Model 2, informal received and perceived

expressive and instrumental social support was insignificant across all models, formal expressive and perceived social support significantly predicted completion in Model 2 and 3. However, informal instrumental social support remained insignificant throughout all models. This supports the second hypothesis that the relationship between social support and completion varies by type of network and supportive behavior. The finding that those who identify as African Americans are less likely to complete when compared to those that are White indicates that formal social support, though a significant predictor of completion, may be more helpful to those who are White.

### **Implications**

Consistent with Florentine, Anglin, Gi-Rivas, & Taylor's (1997) findings, informal social support from family remained insignificant throughout all model specifications. Likewise, Zschau, Collins, Lee, and Hatch (2016) found that informal instrumental social support from family was limited, which could have increased reliance on formal instrumental social support. However, the informal scales used in the analyses only included family. Some literature suggests that significant others and friends have a stronger correlation with drug court treatment than familial relationships (Hickert, Boyle, and Tollefson, 2009). Yet, being in a relationship did not predict completion, but Shorey and Lakey (2011) posit that there is a distinction in perceived support based upon provider traits and social influences. Therefore, informal social support may not be an essential component of completion if the provider is also a drug user (Falkin and Strauss, 2003). This is also consistent with the *homophily principle* (McPherson, Smith-Lovin & Cook, 2001). As highlighted, the nature of illegal drugs forces users to network with subcultures, and these groups, in turn, provide a form of social support that reinforces drug use (Goode, 1970; Colvin, Cullen & Ven, 2002).

Network theories of race suggest that persons of color have smaller social networks but more contact with family and friends. Social support theory assumes that more contact is associated with improved well-being, yet those who identified as African American were less likely to complete. Thus, while those who identify as African American may be closer to their network, informal network support providers are either more judgmental of the recipient's drug abuse or possibly drug users. As Rose and Clear (1988) suggest, informal support should be well-functioning to be beneficial. To that end, the closeness of the provider and the recipient could point to theories of network coercion (*see* Colvin; Antonucci, and Janevic's, 2001). Alternatively, provider perception also skews the individual's perception of social behaviors since perception is dependent upon actual social network responses to the stressor.

The significant relationship between formal expressive social support and 18-month completion throughout all models in this study is critical to the continued backing for drug court. This type of support is more predictive of completion than providing participants with transportation, education services, and employment opportunities since formal instrumental social support was not correlated with completion in Model 2 or Model 3. This finding signifies that those who are in drug treatment need respect and encouragement from the drug court treatment team more so than monetary provisions. However, as Semmer and colleagues (2008) presuppose, instrumental social support has an expressive meaning when provided by informal networks. Since formal perceived social support was measured as both the perception of instrumental and expressive social support, this indicates that participants seem to perceive the provision of instrumental support as more significant than the receipt. The provision of instrumental social support may only further supplement emotional support and lead to stronger correlations while negating or supplanting received instrumental supportive provisions, but it

could also signify the importance of the combination of expressive and instrumental social support.

Despite differences in contextual level components, formal expressive and perceived social support remained significant, but neither sanction severity, eligibility requirements, or medication-assisted treatment predicted completion. Previous research on drug court requirements do find that these components are essential to completion, but in the presence of formal social support, contextual level factors are debatable. Specifically, with respect to eligibility requirements, participants with a higher number of total prior offenses were statistically less likely to complete, yet drug court eligibility based on previous criminal history was insignificant.

As Marlow et al. (2006) discovered, participants with higher risk/need benefited more from formal involvement than did their counterparts. While the risk/need complex may explain other associations in this study, such as the significance of homelessness on drug court completion, for those with a higher number of offenses, this explanation is inconsequential. Participants with substantial criminal histories should be more likely to complete, but formal social support may not be enough to overcome the associations of their coercive informal networks. Since the current research included other controls that are often a function of receiving social support, such as race, drug of choice and total prior offense (Marlowe, 2013), which all predicted completion, this could indicate a mediation effect or cross-level interactions.

### **Limitations**

One assumption of regression analysis is random assignment. Though drug court is voluntary, which mimics random assignment, the alternative to treatment is probation, jail or prison. Therefore, some participants may be coerced into treatment in lieu of the subjectively

harsher alternatives. “Ironically, incarceration may be preferred by defendants because it may be a less onerous alternative” (Burns & Peyrot, 2008). A second limitation is observed missingness. Formal perceived social support at 18-months had high percentages of missing values. This missingness was due to the use of contingency question items in the formal perceived social support scale scales. Justifiably, before questions of perception are posed, there must be a question of receipt. This acknowledgment leads to another limitation: the small sample size and potentially low power of analyses. Lastly, the lack of significance between informal social support variables and completion could be a product of endogeneity. Though great care was taken to ensure the construct validity of all social support variables, the items used for the informal expressive and instrumental social support were more indicative of perceived social support and did not include the contributions of friend networks. However, the MADCE was not explicitly designed to measure social support.

### **Future Directions**

Moffitt (1997), suggests that coercion is linked to “life-course-persistent offenders,” which may explain why social support may not be able to mitigate substance abuse and dependency. Future studies should consider whether coercion has a mediating effect on the association between social support and drug court completion. Additionally, the effects of social support on 18-month completion should be modeled using cross-level interactions due to the variation observed at the court level. Using a Cox regression and longitudinal modeling would also capture the latent growth in social support and allow estimates to include all those still in progress, which would also increase the power of the overall model.

### **Conclusion**

This study sought to address a gap in the literature regarding the effect of social support on drug

court completion while providing a more consistent framework for evaluating social support. After an extensive literature review, it is evident that this is the first study that specifically addressed all three components of Cohen's (1992) theory in connection with drug court completion. Though this research does not entirely reconcile the understanding of informal social support predictors and 18-month completion, it accounted for social network, supportive behaviors, and perceived social support—a unique component of this research.

As the drug court movement continues its development, it is imperative to improve the conceptual clarity of informal and formal social support to better understand for whom drug courts work and why. Of course, policymakers and practitioners should always use caution when deciding on new strategies based on research findings, but the main purpose of this research was to attempt to bridge the gap between theory and practice because “theory work is only relevant to criminal justice only insofar as theories of crime causation point to more effective crime control policies” (Einstadter & Henry (1995). To that end, the results from this research suggest that drug courts consider less punitive approaches and focus on connecting with participants in a meaningful way by adding to the training and development of drug court professionals who can make a difference in the problem-solving courts of the future.

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## Appendix A

**Table 1** 18-month Social Support Variable Descriptive Statistics for Analytic Sample

	Mean	SD	[Min	Max]
<b>18-Month Social Support Variables</b>				
Informal Expressive Social Support	0.181	0.801	-3.531	0.870
Informal Instrumental Social Support	0.135	0.828	-2.884	0.932
Informal Perceived Social Support	0.180	0.720	-2.606	0.767
Formal Expressive Social Support	0.269	0.420	-1.176	1.130
Formal Instrumental Social Support	-0.044	0.584	-0.850	1.711
Formal Perceived Social Support	0.006	0.783	-3.226	0.568
Total Social Support	0.726	2.669	-10.453	5.721

N=307

Source: Rossman et al. 2011a

**Table 2** 18-month completion and 18-month Social Support Pearson Correlations

	Completion	IESS	IISS	IPSS	FESS	FISS	FPSS
Completion	1.0000						
IESS	0.1462	1.0000					
IISS	0.0725	0.7566	1.0000				
IPSS	0.0749	0.6952	0.6960	1.0000			
FESS	0.2240	0.2762	0.2520	0.2401	1.0000		
FISS	-0.1456	-0.0706	-0.0533	0.0001	0.0105	1.0000	
FPSS	0.2776	0.2581	0.2030	0.2059	0.3704	-0.0548	1.0000

N=307

Source: Rossman et al. 2011a

**Table 3** Adult Drug Court Descriptive Statistics of Baseline Participants

	<b>Mean/Percentage (SD)</b>	
	<b>Full Sample</b> N=1,1049	<b>Analytic Sample</b> N=307
<b><u>Level-1 Participant Controls</u></b>		
<b>Age</b>	32.9 (10.4)	34.6 (11.1)
<b>Gender</b>		
<i>Female</i>	32.0% (-)	31.9%
<i>Male</i>	67.9% (-)	68.1%
<b>Race</b>		
<i>White</i>	57.0%(-)	64.2%
<i>Black/African American</i>	28.6% (-)	26.1%
<i>Hispanic/Latino/Spanish</i>	7.2% (-)	4.6%
<i>Other</i>	7.1% (-)	5.2%
<b>Level of education</b>		
<i>Less than HS degree/Vocational/Trade</i>	38.8% (-)	37.1%
<i>HS degree/GED/HS Equivalency</i>	35.0 % (-)	35.9%
<i>More than HS degree</i>	26.2% (-)	27.0%
<b>Job for pay</b>		
<i>Employed</i>	38.4% (-)	42.4%
<i>Not employed</i>	61.5% (-)	57.7%
<b>Monthly Income</b> (all sources in dollars)	\$971.6 (\$1,503)	\$1,093 (\$1,511)
<b>Relationship Status</b>		
<i>Yes</i>	52.13	52.8%
<i>No</i>	47.87	47.2%
<b>Primary Child Care Responsibilities</b>		
<i>Yes</i>	19.5% (-)	20.2%
<i>No</i>	80.5% (-)	79.8%
<b>Homelessness</b> (Homeless-Prior 6 months)		
<i>Yes</i>	11.4% (-)	7.5%
<i>No</i>	88.6 % (-)	92.5%
<b>Addiction Severity Index</b> (Range 0-18)	9.5 (3.4)	9.2 (3.6)
<b>Depression Severity Index</b> (Range 0-30)	8.6 (5.8)	8.1 (5.9)
<b>Treatment Readiness</b> (Range 1-8)	3.3 (0.7)	3.4 (0.7)
<b>Drug of Choice</b>		
<i>Alcohol</i>	12.0% (-)	15.3%
<i>Marijuana/hashish</i>	22.2% (-)	19.5%
<i>Powder cocaine</i>	11.4% (-)	12.7%
<i>Crack cocaine</i>	26.2% (-)	25.1%
<i>Heroin</i>	3.9% (-)	3.3%
<i>Methamphetamine</i>	1.7% (-)	3.6%
<i>Other amphetamines</i>	9.1% (-)	10.4%
<i>Hallucinogens</i>	0.1% (-)	-
<i>Prescription medication</i>	4.0% (-)	2.6%
<i>Multiple drugs</i>	2.0% (-)	1.0%
<i>Not using drugs</i>	6.7% (-)	6.5%
<b>Total Prior Arrests</b> (N=1,016)	9.0% (10.4)	7.9 (9.7)
<b><u>Level-2 Programmatic Controls</u></b>		
Severity of Sanction	2.2 (0.7)	2.2 (0.75)
Eligibility		
<i>Yes</i>	92.7 (-)	91.2% (-)
<i>No</i>	7.2 (-)	8.8% (-)

## Medication Assisted Treatment

*Yes*

20.2%

*No*

79.8%

Percentages were rounded to nearest tenth.

Source: Rossman et al. 2011a; Gilbertson, 2013

**Table 4 Model 1** Multi-Level Logistic Regression Coefficients, Odds Ratios (CI), and Standard Errors—Predictors of 18-Month Completion and Total Social Support

Predictors	<i>B</i>	Std. Error	OR	[95% Confidence Interval]	
18-month Total Social Support	1.704***	0.475	5.497	2.168	13.940
Age	0.082***	0.028	1.086	1.028	1.147
Gender					
<i>Female</i>	-	-	-	-	-
<i>Male</i>	-0.219	0.568	0.803	0.264	2.446
Race					
<i>White</i>	-	-	-	-	-
<i>Black/African American</i>	-1.847**	0.727	0.158	0.038	0.656
<i>Hispanic/Latino</i>	-	-	-	-	-
<i>Other (Including multiracial)</i>	-1.130	1.179	0.323	0.032	3.258
Education					
<i>Less than HS / vocational / trade</i>	-	-	-	-	-
<i>HS degree/GED/HS equivalency</i>	0.462	0.597	1.588	0.493	5.118
<i>More than HS</i>	0.930	0.661	2.535	0.694	9.259
Job for pay					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	0.099	0.655	1.104	0.306	3.983
Monthly Income	-0.000	0.000	1.000	1.000	1.000
Marital/Relationship					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	0.146	0.493	1.158	0.441	3.040
Primary Childcare Responsibilities					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	1.459*	0.824	4.303	0.856	21.628
Homelessness					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	0.976	0.964	2.653	0.401	17.568
Depression Severity Index	-0.014	0.048	0.986	0.898	1.083
Addiction Severity Index	-0.054	0.093	0.947	0.789	1.138
Treatment Readiness	0.253	0.467	1.287	0.516	3.215
Drug of Choice					
<i>Alcohol</i>	-	-	-	-	-
<i>Marijuana/hashish</i>	-1.755*	0.969	0.173	0.026	1.154
<i>Powder cocaine</i>	-0.551	1.071	0.577	0.071	4.700
<i>Crack cocaine</i>	-0.657	1.050	0.519	0.066	4.059
<i>Heroin</i>	-1.477	1.504	0.228	0.012	4.348
<i>Methamphetamine</i>					
<i>Other amphetamines</i>	-0.133	1.260	0.875	0.074	10.349
<i>Hallucinogens</i>	-	-	-	-	-
<i>Prescription medication</i>	-	-	-	-	-
<i>Multiple drugs</i>	-	-	-	-	-
<i>Not using drugs</i>	-1.408	1.089	0.245	0.029	2.066

Total Prior Arrest	-0.066**	0.026	0.929	0.878	0.982
Constant	0.869		0.990		
Log Likelihood		-82.978			

N=271\* (39 cases were omitted due to perfect correlation)

Number of groups =21

\*p ≤ 0.05

Source: Rossman et al. 2011

\*\*p ≤ 0.01

Standard Errors of Coefficients

\*\*\*p ≤ 0.001

Confidence Intervals of Odds Ratio

**Table 5 Model 2** Multi-Level Logistic Regression Coefficients, Odds Ratios (CI), and Standard Errors for 18-Month Completion and 18-month Social Support by type

Predictors	B	Std. Error	OR	[95% Confidence Interval]	
Informal Expressive Social Support	0.417	0.528	1.517	0.539	4.266
Informal Instrumental Social Support	0.596	0.535	1.814	0.636	5.177
Informal Perceived Social Support	-0.764	0.615	0.466	0.140	1.554
Formal Expressive Social Support	1.997**	0.795	7.370	1.551	35.032
Formal Instrumental Social Support	-0.714	0.538	0.490	0.170	1.406
Formal Perceived Social Support	0.967***	0.366	2.630	1.285	5.384
<b>Demographic Controls</b>					
Age	0.081**	0.033	1.085	1.017	1.157
Gender					
<i>Female</i>	-	-	-	-	-
<i>Male</i>	-0.553	0.651	0.575	0.161	2.062
Race					
<i>White</i>	-	-	-	-	-
<i>Black/African American</i>	1.824**	0.849	0.161	0.031	0.853
<i>Hispanic/Latino</i>	-	-	-	-	-
<i>Other (Including multiracial)</i>	-0.299	1.340	0.742	0.054	10.261
Education					
<i>Less than HS / vocational / trade</i>	-	-	-	-	-
<i>HS degree/GED/HS equivalency</i>	0.478	0.667	1.612	0.436	5.964
<i>More than HS</i>	1.068	0.740	2.910	0.683	12.405
Job for pay					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	-0.031	0.729	0.970	0.232	4.045
Monthly Income	-0.000	0.000	1.000	1.000	1.000
Marital/In a Relationship					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	0.284	0.548	1.328	0.454	3.886
Primary Childcare Responsibilities					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	1.247	0.916	3.481	0.578	20.970
Homelessness					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	1.884*	1.116	6.582	0.738	58.662
Depression Severity Index	0.014	0.054	1.014	0.911	1.128

Addiction Severity Index	-0.085	0.099	0.918	0.756	1.117
Treatment Readiness	0.128	0.459	1.137	0.413	3.133
Drug of Choice					
<i>Alcohol</i>					
<i>Marijuana/hashish</i>	-2.085*	1.127	0.124	0.014	1.132
<i>Powder cocaine</i>	-0.583	1.189	0.558	0.054	5.736
<i>Crack cocaine</i>	-1.035	1.213	0.355	0.033	3.825
<i>Heroin</i>	-1.324	1.702	0.266	0.009	7.484
<i>Methamphetamine</i>	-	-	-	-	-
<i>Other amphetamines</i>	-1.137	1.436	0.320	0.019	5.354
<i>Hallucinogens</i>	-	-	-	-	-
<i>Prescription medication</i>	-	-	-	-	-
<i>Multiple drugs</i>	-	-	-	-	-
<i>Not using drugs</i>	-0.791	1.233	0.453	0.040	5.078
Total Prior Arrest	-0.078**	0.031	0.925	0.870	0.984
Constant	1.561		4.765		
Log Likelihood		-77.034			

N= 271\* (39 cases were omitted due to perfect correlation)

Number of groups= 21

\*p ≤ 0.05

Source: Rossman et al. 2011

\*\*p ≤ 0.01

Standard Errors of Coefficients

\*\*\*p ≤ 0.001

Confidence Intervals of Odds Ratio

**Table 6 Model 3** Multi-Level Logistic Regression Coefficients, Odds Ratios (CI), and Standard Errors—Predictors of 18-month Completion and Social Support by Type with Level-2 (Court) Programmatic Predictors

Predictors	<i>B</i>	Std. Error	OR	[95% Confidence Interval]
<b>Level-1 Participant</b>				
Informal Expressive Social Support	0.520	0.527	1.683	0.599 4.730
Informal Instrumental Social Support	0.553	0.540	1.738	0.603 5.009
Informal Perceived Social Support	-0.851	0.613	0.426	0.128 1.420
Formal Expressive Social Support	2.032***	0.788	7.630	1.629 35.752
Formal Instrumental Social Support	-0.709	0.541	0.492	.1704 1.422
Formal Perceived Social Support	1.014***	0.363	2.757	1.354 5.613
<b>Demographic Controls</b>				
Age	0.079**	0.033	1.083	1.014 1.156
Gender				
<i>Female</i>	-	-	-	-
<i>Male</i>	-0.532	0.652	0.587	0.164 2.109
Race				
<i>White</i>	-	-	-	-
<i>Black/African American</i>	-1.971**	0.851	0.139	0.026 0.738
<i>Hispanic/Latino</i>	-	-	-	-
<i>Other (Including multiracial)</i>	-0.117	1.348	0.890	0.063 12.496
Education				
<i>Less than HS / vocational / trade</i>	-	-	-	-
<i>HS degree/GED/HS equivalency</i>	0.530	0.663	1.699	0.464 6.225
<i>More than HS</i>	1.091	0.729	2.978	0.713 12.437

Job for pay					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	-0.039	0.725	0.962	0.232	3.982
Monthly Income	-0.000	0.000	1.000	1.000	1.000
Marital/Relationship Status					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	0.320	0.549	1.376	0.470	4.038
Primary Childcare Responsibilities					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	1.351	0.917	3.861	0.640	23.312
Homelessness (prior 6 months)					
<i>No</i>	-	-	-	-	-
<i>Yes</i>	1.951*	1.103	7.037	0.810	61.144
Depression Severity Index	0.020	0.055	1.020	0.917	1.135
Addiction Severity Index	-0.073	0.100	0.930	0.765	1.130
Treatment Readiness	0.032	0.526	1.032	0.368	2.896
Drug of Choice					
<i>Alcohol</i>	-	-	-	-	-
<i>Marijuana/hashish</i>	-2.087*	1.110	0.124	0.014	1.093
<i>Powder cocaine</i>	-0.472	1.172	0.624	0.063	6.204
<i>Crack cocaine</i>	-0.930	1.201	0.394	0.037	4.155
<i>Heroin</i>	-1.198	1.708	0.302	0.011	8.582
<i>Methamphetamine</i>	-	-	-	-	-
<i>Other amphetamines</i>	-1.136	1.417	0.321	0.020	5.156
<i>Hallucinogens</i>	-	-	-	-	-
<i>Prescription medication</i>	-	-	-	-	-
<i>Multiple drugs</i>	-	-	-	-	-
<i>Not using drugs</i>	-0.704	1.237	0.495	0.044	5.587
Total Prior Arrest	-0.078**	0.031	0.925	0.870	0.983
<b>Level-2 Programmatic Controls</b>					
Severity of Sanctions	-0.876	0.843	0.417	0.080	2.176
Eligibility (based on criminal history)					
<i>Yes</i>					
<i>No</i>	-1.499	2.057	0.223	0.004	12.595
Medication Assisted Treatment					
<i>Yes</i>	1.517	1.583	4.559	0.205	101.392
<i>No</i>					
Constant	3.529		34.079		
Log Likelihood		-75.195			

N= 271\* (39 cases were omitted due to perfect correlation)

Number of groups = 21

\* $p \leq 0.05$

\*\* $p \leq 0.01$

\*\*\* $p \leq 0.001$

Source: Rossman et al. 2011

Standard Errors of Coefficients

Confidence Intervals of Odds Ratio