AN EXAMINATION OF SUBSTANCE USE TREATMENT AVAILABILITY AND CONTINUUM OF CARE WITHIN JUVENILE JUSTICE AGENCIES

by

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Substance use among youth is prevalent and is often related to an increased risk of substance use disorders during adolescence and later in life (Englund, Egeland, Oliva, & Collins, 2008; Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2014; Stone, Becker, Huber, & Catalano, 2012; Swift, Coffey, Carlin, Degenhardt, & Patton, 2008). There is a strong association between substance use (SU) and delinquent behaviors among adolescents (Barnes, Welte, & Hoffman, 2002; Dembo & Sullivan, 2009; Mason, Hitchings, McMahon, & Spoth, 2007). The links between use and delinquency suggest a self-perpetuating cycle for youth within the juvenile justice system that may hinder recovery (D'Amico, Edelen, Miles, & Morral, 2008). Addressing substance use among juvenile justice-involved youth may improve their recovery efforts and reduce recidivism. Although treatment and prevention programs are known to be effective for adolescents (Chassin, Knight, Vargas-Chanes, Losoya, & Naranjo, 2009; Tripodi & Bender, 2011), research has yet to examine treatment availability, best practices for adolescent treatment, continuing or after care, and the extent to which these services are being accessed and utilized within the juvenile justice system.

The purpose of this study was to contribute to knowledge regarding SU treatment availability within the juvenile justice system and examine the continuum of care treatment characteristics that are associated with outcomes (i.e., completion of SU treatment and completion of supervision) for juvenile offenders. Specifically, the study explored treatment service availability, the degree to which a continuum and continuity of care exists, continuum of care treatment characteristics (e.g., movement from one treatment episode to the next), and

which treatment characteristics are associated with positive treatment outcomes among youth within the juvenile justice system.

Substance Use and Delinquency among Adolescents

The prevalence of SU among adolescents has increased over the past few decades (Johnston et al., 2014). Sixty-six percent of youth consume alcohol by the end of high school (Johnston et al., 2014). The use of illicit drugs, such as cocaine and amphetamines, gradually increases as adolescents get older, for 8th graders (14.6%), 10th graders (29.9%), and 12th graders (38.7%; Johnston, et al., 2014). With these high rates of substance use, there is concern that experimentation could progress to a substance use disorder (SUD) during adolescence or later in adulthood (Winters & Lee, 2008). The risk for SUDs increases when youth begin using substances at an early age (Englund et al., 2008; Stone et al., 2012; Swift et al., 2008). Studies have found high rates of SU and dependence among older youth (Chen, Sheth, Elliott, & Yeager, 2004; Tarter, 2002; Young, Corley, Stallings, Rhee, Crowley, & Hewitt, 2002).

In addition to placing youth at higher risk for SUDs, drug use is also associated with behavioral problems, such as externalizing behaviors, conduct disorders, and hyperactivity (Stone et al., 2012). Furthermore, drug use can be related to delinquency, psychopathology, social problems, risky sex and sexually transmitted infections (STIs), as well as other health problems (Clark, 2004; Hicks, Iacono, & McGue, 2010). There is a strong link between substance use and illegal behavior among adolescents. Juvenile delinquency, also known as juvenile offending, occurs when a minor violates the law (Drug Strategies, 2005). Many studies provide evidence for the link between delinquency and substance use among adolescents (Barnes et al., 2002; D'Amico et al., 2008; Dembo & Sullivan, 2009; Mason et al., 2007). Research shows higher alcohol consumption predicts greater delinquency (e.g., cutting class, being sent to

principal's office, stealing, bullying, or weapon possession) and higher illicit drug use (e.g., marijuana, pain killers, cocaine; Barnes et al., 2002). Further, increased delinquency predicts higher alcohol use, which in turn predicts problem substance use at age 18 (Mason et al., 2007). The relationship between substance use and delinquency appears consistent over time and across different types of crimes (e.g., drug related, aggression, property; D'Amico et al., 2008).

Adolescents involved in the juvenile justice system are at an even greater risk than their non-involved counterparts. Juvenile justice system-involved youth have higher rates of SUDs compared to adolescents with no juvenile justice involvement (Aarons, Brown, Hough, Garland, & Wood, 2001; Substance Abuse Mental Health Services Administration [SAMSHA], 2013; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Wasserman, McReynolds, Schwalbe, Keating, & Jones, 2010). SUDs are more common among older adolescents and repeat offenders (Wasserman et al., 2010). The association between SU and delinquency can be viewed as reciprocal; more delinquent behaviors are associated with more drug use, which is associated with more delinquent behaviors. This relationship suggests that juvenile justice agencies should actively address SU among their youth.

Best Practices for Adolescent Substance Use Treatment Services

Given the prevalence of SU among adolescents and associated behavioral problems, it is imperative that youth receive the best treatment available. Evidence-based interventions and levels of care have shown positive outcomes with youth. The key is to provide the right level of care (e.g., prevention/intervention, residential) for each individual.

Treatment Models. There are many diverse SU treatment models that represent a range of theoretical frameworks. Treatment models offer a structure that institutions (e.g., juvenile justice agencies) and behavioral health providers can use to meet the youth's needs. Programs

that incorporate treatment models should address nine key elements (Brannigan, Schackman, Falco, & Millman, 2004; Drug Strategies, 2003). (1) Assessment and treatment matching – use of standard screening instruments and comprehensive assessments to match the youth to the best treatment available for that specific youth's needs. (2) A comprehensive, integrated treatment approach that emphasizes the need to address all aspects of a youth's life to increase the chance the adolescent will be able to reduce substance use. (3) Family involvement in treatment to improve treatment outcomes for adolescents; engaging parents in the treatment process will increase the likelihood that the youth will stay in treatment. (4) Developmentally appropriate programs should include activities and materials that consider biological, behavioral, and cognitive changes specific to adolescents. (5) Engaging and retaining teens in treatment by creating a climate of trust, which allows youth to fully engage in treatment. (6) Qualified staff should have training and experience specific to adolescent development, co-occurring mental disorders, substance abuse, and addiction. (7) Gender and cultural competence trainings are necessary to address gender and cultural differences that may provide unique challenges for treatment. (8) Continuing care that stresses the importance of relapse prevention training, aftercare plans, referrals to community resources, and post-treatment follow-up. (9) Treatment outcomes should be routinely measured, such as ongoing urine tests, to establish positive treatment outcomes. By employing these nine key components, programs can more effectively meet the needs of their clients (i.e., youth).

The TCU Treatment Process Model also illustrates key elements of treatment by providing a model of sequential influences that can specifically improve treatment engagement and outcomes (Simpson, 2004). This model incorporates several stages within treatment: Initiation into treatment, engagement (individuals show up for treatment and are actively

engaged in the process), early recovery (identified by changes in thinking and acting; individuals are focused more on decision making with respect to preparation and action), retention before treatment release (individuals stay in treatment long enough to create stable recovery habits and support networks), and preparation for re-entry into the community (Simpson, 2004). The model focuses on phases of recovery and how different interventions throughout treatment can improve overall outcomes for individuals. Simpson (2004) emphasized the importance of evidence-based interventions used throughout the treatment process. By examining the individual at each stage (e.g., initiation, engagement), counselors and clients can introduce interventions when needed. This allows for a more comprehensive and targeted approach to the improvement of the whole individual. Interventions should be matched to client needs and involve a multisystemic approach (addressing individual, family, & community factors), while addressing treatment readiness, participation, and establishing therapeutic alliances (National Institute on Drug Abuse [NIDA], 2014; Simpson, 2004).

Treatment Interventions. While treatment models offer a framework that agencies and behavioral health programs can use to better understand the structure and explain the process of treatment, interventions provide techniques and strategies for improving individual behavior, cognitive processes, and overall family functioning. According to the NIDA (2014), two evidence-based individual interventions that address adolescent behaviors include Cognitive Behavioral Therapy (CBT; Kaminer & Waldron, 2006) and Motivational Enhancement Therapy (MET; Barnett, Sussman, Smith, Rohrbach, & Spruijt-Metz, 2012). Both approaches raise the youth's commitment to treatment as well as increase the youth's understanding of feelings and thoughts that trigger the desire to use drugs. Family approaches improve communication, problem-solving, and conflict resolution among members of the family and include

Multidimensional Family Therapy (MDFT; Liddle, 2009) and Functional Family Therapy (FFT: Sexton & Alexander, 1999). A few examples of other evidence-based interventions include Contingency Management (CM; Stanger & Budney, 2010), Brief Strategic Family Therapy (BSFT; Robbins, Feaster, Horigian, Rohrbaugh, Shoham, Bachrach, et al., 2011), and Family Behavior Therapy (FBT; Donohue, Allen, & Lapota, 2009). CM uses immediate reinforcements, such as prizes or vouchers, for positive behaviors and avoiding drug use. BSFT focuses on the family systems approach in which the counselor assists in changing negative family patterns to improve family interactions. Lastly, FBT combines behavioral contracting and contingency management. Family members are able to use behavioral strategies gained from treatment sessions and apply the skills to improve the family situation. By participating and engaging throughout treatment, youth can begin to improve behavior, cognitive skills, and the general function and wellbeing of their family.

Levels of Care. Not only are there a multitude of interventions, there are specific levels of care that can impact the type of treatment adolescents receive. The American Society of Addiction Medicine (ASAM; Mee-Lee, 2001) lists five different levels of care: (1) early intervention (prevention activities addressing risk factors among individuals with problems related to substance use), (2) outpatient (treatment services provided by addiction or mental health professionals; less than 6 hours of treatment per week), (3) intensive outpatient (counseling and education related to substance use and/or mental health disorders; six or more hours per week), (4) residential/inpatient (counseling and education are provided in a residential setting), and (5) medically managed intensive inpatient (services provided for substance abuse and co-occurring mental health or biomedical conditions; 24 hours per day in a permanent

facility with inpatient beds). Determining which level of care is appropriate for the youth is dependent on their precise needs regarding substance abuse treatment.

Treatment Outcomes. There are many factors, such as treatment engagement and length of stay, that can impact youth outcomes following treatment. Specific to treatment engagement, client motivation predicts stronger relationships with both counselors and peers (Joe, Knight, Becan, & Flynn, 2014). These positive therapeutic relationships in turn lead to lower post-treatment arrests and illegal drug use at follow-up (Joe et al., 2014). Length of stay in treatment is one of the most important factors attributed to recovery (Drug Strategies, 2005). Adolescents with longer treatment retention had less drug use at follow-up as well as lower rates of arrests after treatment (Hser et al., 2001; Joe et al., 2014). Once youth have initiated, engaged, and completed treatment, they should be equipped to re-enter the community. However, many youth who are in need of SU services are not fully successful in recovery after completing their first treatment episode. Relapse is always a possibility and is a part of the recovery process (CSAT, 2006; Cornelius et al., 2003). Research has shown that individuals who continue to receive treatment services after an episode of treatment have greater outcomes in reduction of substances (McKay et al., 2002). Recognizing that relapse is possible and understanding multiple treatment services are beneficial, treatment can be seen as a process and for many, a continuing course of action.

Continuum and Continuity of Care. When considering optimal service placement, two constructs are critical: Continuum of care and continuity of care (NIDA, 2014). Continuum of care can be defined in different ways. Chi and colleagues (2011) offer a simple definition stressing yearly primary care visits and readmission of an individual into substance abuse treatment programs. Readmission occurs when one is admitted into the same or different

program after an initial entry or episode. Alternatively, McKay and colleagues (2002) described their procedures regarding the continuum of care as "following the completion of this initial episode of treatment, clients were typically referred to one or more continuing care interventions, such as a lower intensity residential program, intensive outpatient care, or standard outpatient care" (p. 311). This definition focuses on the long term care for individuals who have transitioned out of intensive services, such as residential inpatient treatment. NIDA (2014) expands the continuum of care definition further to include "drug use monitoring, follow-up visits at home, and linking the family to other needed services" (p. 11). NIDA's definition emphasizes treatment monitoring and provision of comprehensive services (e.g., mental health services, job placement, living arrangements; Ducharme, Mello, Roman, Knudsen, & Johnson, 2007; Knight, Edwards, & Flynn, 2010; Pullmann, Kerbs, Koroloff, Veach-White, Gaylor, & Sieler, 2006) rather than transitioning to another program. Flynn and Brown (2016) refer to this as extending services beyond an acute episode of care. Specific to this study, continuum of care will be defined as the movement from one treatment program or service to another.

By definition, continuum of care inherently addresses the intensity of treatment services and transitions that occur between various levels of care, dependent on the client's needs. It assumes that the level of service intensity matches the level of need (Center for Substance Abuse Treatment [CSAT], 2005). As discussed previously, youth with SU problems typically have a variety of needs when entering treatment; issues such as mental health problems, SU, and poor school performance often need to be addressed. Services, such as family counseling, life skills, anger management, and case management, are often provided to address specific needs. The degree to which comprehensive services are offered within a given program depends in part on the treatment modality and level of care (Ducharme et al., 2007). For example, intensive

outpatient services are more likely to address multiple issues and offer varying services such as SU counseling as well as mental health counseling, but drug education programs often focus solely on SU prevention and education on SU associated risk factors rather than providing counseling. It is important to design treatment services that are tailored toward meeting the needs of the adolescent (Project MATCH Research Group, 1998). Much of the literature for continuum of care for adolescents emphasizes the importance and need for a continuum of care, but does not provide empirical evidence (Chassin, 2008; Drug Strategies, 2005).

The related construct, continuity of care, differs from continuum of care in its focus on the overall treatment experience, including the transitions between treatment services. It is defined as a treatment philosophy, where the substance abuse treatment "systems should be held accountable for the entire process of care for people with alcohol and other drug (AOD) disorders" (McCorry, Garnick, Bartlett, Cotter, & Chalk, 2000, pg. 636). Continuity of care encompasses multiple treatment service experiences, emphasizing the length of time it takes to transition between programs. Research shows continuity of care predicts engagement in continuing treatment services (Shaefer, Ingudomnukul, Harris, & Cronkite, 2005). Ideally, youths complete residential treatment and transition to outpatient or aftercare, entering the subsequent program within 14 days of completing residential care (Garnick, 2007).

Both constructs emphasize attention to the transition and timing between different treatment services (i.e., SU treatment). Specific to this study, one aim is to determine if a continuum and continuity of care is being employed by the juvenile justice agencies when youth are entering/completing different substance use treatment programs. There are a multitude of best practices that can be utilized for adolescents, whether in regards to treatment models, interventions, or service intensity. The degree to which these practices are utilized within the

juvenile justice settings has not been fully explored. Another study aim is to explore treatment availability (e.g., level of service intensity, length of stay, and continuum/continuity of care) within the juvenile justice system.

Overview of Texas Juvenile Justice System

According to the National Center for Juvenile Justice, in 2013 there were 1,058,500 juvenile delinquency cases within the United States (Hockenberry & Puzzanchera, 2015). In Texas alone, there were 68,386 formal referrals to juvenile probation departments in 2013 (Griffiths, 2013). Over the past decade, the Texas state legislature has taken steps to reform the juvenile justice system. Beginning in 2007, Texas state leaders began an initiative to reduce the number of youth committed to state-run secure correctional facilities and instead supervise them within their home county through county-run juvenile probation departments (Fabelo, Arrigona, Thompson, Clemens, & Marchbanks, 2015). Given the link between delinquency and SU and knowing the majority of youth are supervised through county juvenile probation departments, it is important to understand the types of services available at a local level.

Typical Juvenile Justice Pathway. Throughout the course of supervision, justice agencies play a key role in providing the youth and the youth's family with information and guidance for the adolescent's specific needs. Even though differences exist between specific agencies, there is a typical pathway youth will go through once an arrest and subsequent referral to the agency occurs. Ideally, youth referred to the juvenile justice system for delinquent behavior are screened for mental health concerns, SU problems, suicide risk, and criminogenic needs. Criminogenic needs include traits and characteristics that directly relate to the individual's likelihood to reoffend or commit another crime (e.g., anti-social attitudes, lack of self-control; Latessa & Lowenkamp, 2005). Youth shown to have a high risk and increased need

when screened are then referred for a full assessment (Binard & Prochard, 2008). Wasserman and colleagues (2010) emphasize the need for agencies to use standardized screenings and assessments. Youth assessments (e.g., clinical interview, GAIN; Dennis, Titus, White, Unsicker, & Hodgkins, 2003; TCU FORMS; Knight, Becan, Landrum, Joe, & Flynn, 2014) can be conducted by either the juvenile justice agency or via referral to an outside agency. In-depth assessments allow agencies to determine the appropriate type and level of care needed. If during the assessment the youth is identified as having a substance abuse problem, the probation officer then refers the youth to a treatment program (NIDA, 2014). After the treatment referral occurs, ideally the probation officer would actively monitor the youth's progress. For example, the probation officer might call the treatment provider for an initial appointment, make sure the youth and family appear for the initial appointment, and continue to monitor the child's treatment sessions and completion of treatment.

Youth can have one or multiple admissions into treatment programs depending on their need and on the degree to which the department utilizes a continuity of care model. For example, a youth who has been identified as having a severe SUD and who lives in a community where various options are available would ideally be placed in a residential treatment center or intensive outpatient program. A residential treatment center or intensive outpatient program would be considered their first treatment episode. Once completing residential treatment, the transition into an aftercare program is essential to maintaining the ongoing care of the individual (McKay, 2009). An example in which a youth would only have one treatment episode would occur if the youth needs a lower level of care (e.g., experimental use of a drug). The youth may be better suited for a prevention or intervention program (e.g., drug education class) designed to help the youth gain insight and skills to help avoid or discontinue the use of drugs. It is

imperative that juvenile justice agencies screen and assess youth correctly, refer them to a treatment provider that meets their needs, and monitor their progress throughout the probation period.

Treatment Components Specific to Juvenile Justice Systems. Youth who are in the juvenile justice system are not only involved in treatment services, but are also under some type of court supervision. According to Lipsey and colleagues (2010), two components are important in juvenile justice interventions: supervision and a counseling-oriented approach. The supervision component consists of monitoring the youth's behavior (e.g., probation supervision, electronic monitoring) in order to prevent the individual from engaging in further delinquent activities. When a juvenile violates probation (e.g., positive urinalysis), there is a consequence from the probation department. The consequence will typically emphasize punishment or corrective action rather than rehabilitation. Research has shown deterrence-oriented programs, such as boot camps, have no effect of recidivism (Lispey, Howell, Kelly, Chapman, & Carver, 2010). In contrast, the counseling-oriented component consists of services provided to facilitate positive behavioral change that will continue after supervision has ended. Interventions that fall under a more counseling-oriented approach include CBT, SU treatment, and CM. For justice-involved youth, the counseling-oriented component has shown to reduce recidivism, increase school attendance, and create positive family and peer relationships (Lipsey et al., 2010). Both components or approaches are necessary to improve overall outcomes while youth are on probation.

There is limited research on SU treatment outcomes for juvenile justice youth. Tripodi and Bender (2011) conducted a literature review to assess the effectiveness of substance use treatment for alcohol and marijuana use for juvenile justice offenders. Substance abuse

treatment programs with individual- and family-based interventions had a small to moderate effect on reducing alcohol and marijuana use among juvenile offenders. Length of stay in treatment reduces drug use and delinquent behavior and increases school performance (Chassin et al., 2009; Drug Strategies, 2005). However, with little research examining treatment availability and continuation of care within the juvenile justice system; it is difficult to determine how these components might impact treatment and probation outcomes for youth.

Research Questions/Hypotheses

Research has established that there is a connection between high rates of SU and juvenile delinquency (Barnes et al., 2002; Mason et al., 2007; D'Amico et al., 2008; Dembo & Sullivan, 2009). There are also effective treatment approaches developed for adolescents (NIDA; 2014). Within the juvenile justice setting, treatment has shown to be beneficial in decreasing SU (Chassin et al., 2009; Tripodi & Bender, 2011). It is imperative to understand treatment availability and continuation of care within the justice system for youth that are in need of SU treatment. Determining which treatments or treatment patterns provide youth with the best outcomes will help clarify the importance of SU treatment in accordance with probation monitoring.

The current study aimed to (1) document availability of SU treatment for youth in the juvenile justice system, (2) explore the continuum and continuity of care, and (3) determine which of the continuum of care treatment characteristics are associated with the most desirable outcomes. Aims 1 and 2 are exploratory and are framed in terms of research questions. Aim 3 examined outcomes associated with different continuum of care treatment characteristics and included specific hypotheses.

Aim 1: With high rates of SUDs among juvenile justice offenders, SU treatment services are critical for the juvenile justice population. This study sought to document the availability of SU treatment for youth in the juvenile justice system.

RQ1a: What levels of care (i.e., residential, supportive outpatient, drug education) are utilized?

RQ1b: How many treatment episodes do youth engage in while under community supervision?

Aim 2: Research has stressed the importance of a continuum of care and continuity of care within substance abuse treatment. This study aimed to identify typical substance abuse treatment patterns within the juvenile justice system.

RQ2a: Is a continuum of care [step-up/step-down movement of treatment services] available to justice-involved youth?

RQ2b: To what degree does continuity of care exist within the juvenile justice system? What is the average length of time in treatment across all episodes?

Aim 3: Research indicates that a continuum/continuity of care within substance abuse treatment is associated with better outcomes for justice-involved youth (Garner, et al., 2010). This study determined which continuum of care characteristics are associated with better youth outcomes.

RQ3: Are different continuum of care characteristics associated with positive youth outcomes?

H1: Youth with greater availability and continuum of substance abuse treatment should have (a) higher rates of treatment completion and (b) higher rates of successful supervision completion.

Method

Procedure

The data include de-identified youth records shared with Texas Christian University (TCU) derived from justice department management information systems (MIS). Generally, probation officers enter youth-specific information into a web-based electronic system. The Juvenile Case Management System (JCMS) includes juvenile justice information (e.g., offense charge, juvenile demographics) along with case management information (e.g., screener completion date, assessment scores, treatment information). Probation officers and mental health counselors, along with other officials within the juvenile justice (JJ) agencies, have the capability to enter information into the system. The JCMS system provides data-sharing between local juvenile probation departments and the Texas Juvenile Justice Department (TJJD). All data entered into JCMS are sent to TJJD monthly. TJJD aggregates all of the information into an Electronic Data Interchange (EDI).

TJJD, TCU, and the involved county agencies entered into data sharing agreements to allow for monthly data sharing. TCU receives de-identified youth records from TJJD using a secure network. Data are received in the form of SPSS 22 files. Once files are received, youth identifiers are scrambled and records are renamed and merged into agency-specific SAS 9.4 files. All youth identifiers are stored separately on a secure, encrypted/password-protected computer. Data collection procedures were reviewed and approved by the Institutional Review Board at TCU and by governing boards associated with each agency involved.

Sample

County Sample. Data were collected from six juvenile justice agencies corresponding to counties located within the Southwest region of the United States. The six agencies referred

youth to a total of 59 different treatment programs ranging from early intervention to recovery. For early intervention, youth were referred to seven programs (11%). For outpatient treatment, there were a total of 17 programs to which the youth were referred (29%). Intensive outpatient treatment comprised of three treatment programs (5%). Residential treatment included 31 programs (53%). Recovery consisted of only one program (2%). See Table 2 for number of youth in the study sample who were referred to each county as well as to each starting level of care within each county.

Population Sample. Youth data were collected from six juvenile justice agencies located within the Southwest region of the United States. Data were restricted to juvenile justice referrals processed from January 1, 2014 to December 31, 2014. According to the Texas Department of Housing and Community Affairs, the agencies are located in urban areas (http://www.tdhca.state.tx.us/community-affairs/esgp/docs/14-ESG-App-UrbanRuralCounties.pdf). Across agencies, a total of 3,823 unique youth entering the juvenile justice system in 2014 were placed under court ordered probation supervision (49%) or deferred prosecution supervision (54%). Youth could have multiple supervisions under one juvenile justice referral. A majority of the youth had a misdemeanor offense (67%). Most of the overall youth population were White (62%), male (75%), and had a mean age of 15.3 (SD = 1.4).

Study Sample. A total of 675 unique youth were included in the SU treatment study sample (18% of overall population). The study sample was limited to youth who had a formal or paper formalized referral to JJ, a supervision type of court ordered probation or deferred prosecution, a disposition date, not currently in SU treatment (at the time of the offense), and had a start date to either substance abuse treatment program or substance abuse residential placement. The majority of youth were under court ordered probation (75%) and had a misdemeanor offense

(73%). Most were White (71%), male (84%), and had a mean age of 15.5 (*SD* = 1.2). In regards to mental health, 43% of the youth had a mental health diagnosis (29% externalizing, 14% internalizing). See Table 1 for population and study sample demographics and juvenile justice involvement.

Table 1

Population and Sample Demographics and Juvenile Justice Involvement

	Population Sample (n = 3823)		Treatment Sample (n = 675)	
	N (%)	M (SD)	N (%)	M (SD)
Demographics				
Age	3823 (100)	15.29 (1.42)	675 (100)	15.54 (1.19)
Ethnicity				
Non-Hispanic	2203 (58)		333 (49)	
Hispanic	1595 (42)		336 (50)	
Missing	25 (1)		6 (1)	
Race				
Black	1398 (37)		189 (28)	
White	2376 (62)		476 (71)	
Other	48 (1)		10 (1)	
Gender				
Male	2852 (75)		570 (84)	
Female	971 (25)		105 (16)	
Mental Health Dx				
No Disorder	2653 (69)		384 (57)	
Externalizing	782 (21)		194 (29)	
Internalizing	388 (10)		97 (14)	
Offense				
Misdemeanor	2542 (67)		493 (73)	
Felony	703 (18)		182 (27)	
Missing	578 (15)		0	
Drug Offense	84 (2)		43 (6)	
Supervision				
Type of Supervision				
Court Ordered Probation	1875 (49)		506 (75)	
Deferred Prosecution	2050 (54)		202 (30)	
Total Number Supervisions				
1	3645 (95)		625 (95)	
2	170 (5)		48 (7)	
3	7 (< 1%)		2 (< 1%)	
Missing	1 (< 1%)		0	
Average length across all supervisions (days)			546	244.56 (125.59)
Placement				
Average length across all substance use placements (days)	NA		75	58.86 (65.01)
Program				
Average length across all substance use programs (days)	NA		586	78.28 (47.13)

*NA=Not Applicable

Measures

County level data. A county variable was created to identify which probation department the youth was involved with. To determine whether a continuum of care was available for justice-involved youth, the juvenile justice program registry (http://www.tjjd.texas.gov/programregistry.aspx) was used to gather more descriptive information about each program to which youth were referred. The juvenile justice program registry is a compilation of all programs and services offered by or available to probation departments through contractual agreements. The registry is available for public use on the TJJD website. Specific information included the description of the program, program type (e.g., education, treatment, intervention), program provider (contract vs. in-house), status of program (active vs. inactive), and level of care.

Several steps were taken to create the "level of care" variable. First, all programs within the program registry within each county, either substance abuse prevention/intervention or substance use treatment, were gathered. Second, all programs from the program registry were then compared to the county programs recorded within the youth records to create a final program dataset. Third, general program details (i.e., length of program, hours per week, program description) were obtained from the program registry and program websites. Fourth, program details were compared to the ASAM adolescent placement criteria for SU treatment to categorize the level of care of each program. Using this information, treatment programs were categorized into five different levels of care: Early intervention, outpatient, intensive outpatient, residential, or recovery services. Early intervention services examine and address youth's risk factors related to substance use and consequences of substance use by providing prevention and treatment. Length of services varies depending on the youth's capacity to understand

information provided, ability to change behavior, and avoid problems related to SU. Outpatient services are provided by credentialed treatment staff who administer evaluations, treatment, and recovery services for youth who have a substance-related disorder. These services are typically less than six hours per week and could include individual, group, and family counseling. Intensive outpatient is a structured day or evening treatment program providing at least six hours or services per week and hours could increase depending on the need of the youth. Residential services are provided in a 24-hour residential setting. They provide stable living environments for the youth in order to cultivate youth's recovery skills while also providing on-site psychiatric services and a wide range of psychosocial interventions. Recovery services provide support to maintain sobriety.

After each program was assigned a level of care, the youth and program level datasets were merged so that each treatment episode the youth experienced was coded for level of care received. Finally, each treatment program entry was categorized into dichotomous level of care variables (yes/no; on early intervention, outpatient, intensive outpatient, residential, recovery).

Table 2

Youth Frequencies: Starting Levels of Care by County

	N (%)
County	675 (100)
County A	60 (9)
Outpatient	59 (9)
Residential	1 (<1)
County B	40 (6)
Outpatient	39 (6)
Residential	2 (<1)
County C	379 (56)
Early Intervention	129 (19)
Outpatient	164 (25)
Intensive Outpatient	74 (11)
Residential	9 (1)
Recovery Services	3 (<1)
County D	79 (12)
Early Intervention	6 (1)
Outpatient	59 (9)
Intensive Outpatient	0 (0)
Residential	6 (1)
County E	37 (5)
Early Intervention	33 (5)
Outpatient	0 (0)
Residential	2 (<1)
County F	80 (12)
Early Intervention	25 (4)
Outpatient	0 (0)
Intensive Outpatient	1 (< 1)
Residential	53 (8)

Youth-level data. Youth-level data were gathered from the electronic record system described above.

***Demographics*.** Age, gender, ethnicity, race, and mental health diagnosis were used to describe the overall sample. The gender variable consisted of male or female. Race included American Indian or Alaskan Native, Asian or Pacific Islander, Black and White. Ethnicity included Non-Hispanic and Hispanic. Mental health diagnosis, defined as the child's primary

mental health diagnosis (based on documentation from youth records), was categorized as an externalizing diagnosis, internalizing diagnosis, or none. A dichotomous mental health variable was defined as either having a mental health diagnosis or not (yes/no).

Justice involvement. Data were restricted to formal or paper formalized referral. Formal referral is defined as having four conditions: (1) Delinquent conduct, (2) "the juvenile probation department has jurisdiction and venue," (3) "face-to-face contact occurs with the office or official designated by the department of juvenile board," and (4) "the alleged offense has been discussed at the time of contact" (Texas Juvenile Justice Department, 2015, p. 1). Paper formalized referral is defined as "a referral that began as a Paper Complaint (paperwork only) is later formalized with face-to-face contact" (Texas Juvenile Justice Department, 2015, p. 1). Both formal and paper formalized referrals have face-to-face interaction with the court to determine the youth's placement within the juvenile justice system. Referral start date described the date when the juvenile and the probation officer had their first face-to-face meeting (i.e., formal referral or formalized paper referral).

Offense severity, defined as a felony or misdemeanor, was used to describe the youth's level of criminal involvement. Offense type, categorized as whether the youth had a drug offense, was dichotomous (yes/no). Supervision type specified the type of supervision in which the youth engaged. A youth can be placed on eight different supervision types; however, for the current research study, the main focus was youth who were on community supervision. Therefore, to be included in the study sample, youth could be placed on either court ordered probation (i.e., youth is adjudicated by the court and placed on formal court ordered supervision) or deferred prosecution (voluntary supervision where agreement is signed by parents/guardian,

youth, and department; typically lasts 3 to 6 months but can be extended by the court for an additional 6 months).

Supervision type, defined as court ordered probation or deferred prosecution (above), was used to specify the type of supervision in which the youth was engaged. Youth can have one or multiple supervisions. A total number of supervisions was created by summing the number of supervisions for each youth. Length of supervision was calculated by subtracting the start date of the supervision from the end date (number of days). Average length of supervision was created by averaging the length across all supervisions.

Substance use screeners/assessments. JJ agencies typically conducted screening and assessments when the youth entered the system. All agencies in Texas are required to administer the Massachusetts Youth Screening Instrument-Version 2 (MAYSI-2; Grisso & Barnum, 2006). The MAYSI-2 is an evidence-based self-report screening tool allowing juvenile justice agencies to determine mental health and substance use needs. The MAYSI-2 Alcohol/Drug Use (e.g., "Have you done anything you wish you hadn't, when you were drunk or high?") portion of the screening instrument is an eight item scale. The caution cutoff score (indicating "possible clinical significance") is four, and the warning cutoff score is seven (indicating "the youth has scored exceptionally high in comparison to other youth in the juvenile justice system;" (Grisso & Barnum, 2006, pg. 21-22).

JJ agencies have discretion to determine which additional substance use screeners (e.g., Substance Abuse Subtle Screening Inventory-A2), assessments (e.g., clinical diagnostic interview), criminogenic risk and needs assessments (e.g., Risk and Needs Assessment Instrument), and diagnostic and clinical interviews they deem relevant. In some instances, departments refer out for assessment services. The most common screening instrument used is

the Substance Abuse Subtle Screening Inventory-A2 (SASSI-A2), a brief, self-report evidence-based screening measure designed to identify individuals with substance dependence (Miller & Lazowski, 2001). The SASSI-A2 includes five scales: Family and Friends Risk Scale, Attitudes Towards Substance Use, Symptoms of Substance Misuse, Validity Check and Secondary Classification Scale. Youth determine if statements listed are "Mostly True" or "Mostly False" for themselves (e.g., "People who use more drugs have more fun.") and also report alcohol and other drug use. The SASSI-A2 manual outlines a series of decision rules for the mentioned five scales, qualifying the youth as having "low probability" or "high probability" for a SUD (Stein et al., 2005).

To measure criminogenic needs, departments typically used one of two instruments: Risk and Needs Assessment Instrument (RANA) or Positive Achievement Change Tool (PACT). All departments within the study sample view the RANA and PACT as screeners. The Texas Juvenile Probation Commission RANA is designed to identify a juvenile's risk of re-offense and need for specialized services. It is not considered to be an "evidence-based screener" or assessment. The RANA includes a Substance Abuse Domain classifying the youth's alcohol and drug use as either "Frequent", "Occasional", or "None or Rare" ("Texas Juvenile Probation Commission"). For a youth to be categorized as "Frequent," the youth must have a minimum use of three times per month or a maximum of daily use. For "Occasional," the youth must have a minimum use of twice and a maximum use of twice a month. For "None or Rare," a youth has either never used or only used once. The PACT is an evidence-based risk and needs assessment designed to determine risk of re-offending and risk factors for twelve major domains including substance use (Barnoski, 2009). Specifically for the Drug and Alcohol Use, history of alcohol and drug use and current alcohol and drug use are assessed to determine whether alcohol and

drugs disrupts the youth's life (e.g., education, family conflict, peer relationships). Youth may receive urinalysis (UA) testing as part of the screening process to detect illegal use of alcohol or other drugs while under supervision at TJJD.

Receipt of an assessment was determined by whether the youth records documented a SU assessment. The results of assessments interviews (clinical recommendations) are not available, except in instances where the assessment resulted in a Diagnostic and Statistical Manual diagnosis (DSM; psychological diagnosis; American Psychiatric Association, 2013). Substance use diagnoses are documented within youth records if the youth received a DSM diagnosis from a licensed professional: Substance use, cannabis use, cannabis dependence, or polysubstance dependence. The majority of assessments are referred to licensed professionals outside of the JJ agency. The administration date for each type mentioned above was used to determine when the youth was screened or assessed.

In need of substance use treatment. Level of need was defined using several variables, extracted from youth records. These included (a) receiving one of the four screeners (MAYSI, SASSI, RANA, PACT; screener = yes/no); (b) screener was positive for a substance use need on the MAYSI "warning" score on the Alcohol/Drug Use section, "frequent" score on RANA Drug Use variable, or "high for dependence," or "high for disorder" on SASSI Outcome variable (screener positive = yes/no); (c) receiving a urinalysis test (UA; yes/no); (d) a positive UA prior to entering the treatment program (positive UA = yes/no); (e) receiving an assessment (assessment = yes/no); (f) receiving a SU diagnosis (primary or secondary) of "Substance Abuse," "Cannabis Abuse," "Cannabis Dependence," or "Polysubstance Dependence" (SU diagnosis = yes/no).

The above indicators were combined to create a level of need variable based on the increasing certainty that a youth had a substance use problem based on the information available within youth records. First, all possible combinations of screeners, assessments, and SU diagnoses were examined. A total of 12 combinations were determined. Second, categories were combined based on the strength of evidence from youth records to determine the level of need for each youth. From the 12 combinations, there were a total of five general groupings in regards to level of need (see Table 3). First, all youth who received a SU diagnosis regardless of results from the screeners, UAs, and assessments were grouped together. Specifically, these youth have the highest level of need due to having a SUD. Second, youth who had any positive screener or UA result, and received an assessment, and had no SU diagnosis were categorized as having the next lower level of need. These youth have indications of SU problems based off of a positive screener or UA as well as received an assessment. Third, youth who had any positive screener or UA result, did not receive an assessment, and had no SU diagnosis were categorized as having the next lower level of need. These youth have indications of SU problems based off of a positive screener or UA result, but do not have any other evidence (i.e., assessment or SU diagnosis). Fourth, youth who had a negative screener and UA result, received an assessment, and had no SU diagnosis were categorized as having the next lower level of need. These youth only received an assessment with no other evidence of a substance use need. Fifth, youth who had a negative screener and UA result, no assessment, and had no SU diagnosis was categorized as having the least level of need. These youth had no indication of SU need based off of the information provided within the youth records. All five general groupings were also dichotomized for each level of need.

Table 3

Determination of Substance Use Need

	N	%
Cases with a SU diagnosis (*SU diagnosis*)	208	31
2 positive screens and a SU diagnosis	7	1
1 positive screen and SU diagnosis	64	10
2 positive screens and an assessment and SU diagnosis	8	1
1 positive screen and an assessment and SU diagnosis	53	8
No positive screen and assessment and SU diagnosis	46	7
No positive screen, no assessment and SU diagnosis	30	4
Any positive screen and assessment, no SU diagnosis (*Positive screen & assessment*)	78	12
2 positive screens and an assessment, no SU diagnosis	7	1
1 positive screen and an assessment, no SU diagnosis	71	11
Any positive screen, no assessment, no SU diagnosis (*Only positive screen*)	143	21
2 positive screens, no assessment, no SU diagnosis	15	2
1 positive screen, no assessment, no SU diagnosis	128	19
Negative screen and assessment, no SU diagnosis (*Negative screen & assessment*)	91	13
Negative screen, no assessment, no SU diagnosis (*Only negative screen*)	155	23

Youth treatment services. Treatment services were limited to youth who entered substance abuse intervention, substance use treatment, or a substance abuse residential placement facility (i.e., entry into programs such as anger management or cognitive general education were excluded). A program treatment episode was defined as a youth having a treatment program categorized as "substance abuse prevention/intervention" or "substance use treatment." A placement episode was defined as a youth having residential placement in a non-secure setting for substance abuse. A variable was created summing all treatment episodes together (total episodes). Length of stay was calculated by subtracting treatment end date and treatment start date for each treatment episode. Average length of stay was created by averaging the length of stay across all treatment episodes.

For youth who had more than one treatment episode, four dichotomized continuing care variables were created to denote movement from one treatment level of care to another. To

create the four dichotomous continuing care variables the following steps were taken. First, description of general treatment movements was created. Youth with only one substance use treatment episode were categorized as "single episode." Youth with more than one episode could either move to another episode that was the same level of care (same), step-down in level of care (step-down), or step-up in level of care (step-up). Each movement was coded as a dichotomous variable (yes = 1, no = 0). Second, for youth with two or more episodes, a scoring guide was developed, listing all possible movements (see Table 4). Third, each youth was categorized according to his/her treatment sequence. For example, if a youth's first treatment episode was intensive outpatient and the second treatment episode was outpatient, the youth's continuing care would be categorized as a "step-down." For youth with three or more episodes, there is a possibility of having more than one movement category. If this was the case, each movement was coded as 1 (e.g., youth could have multiple "step down" movements). A starting level of care variable was created to indicate the level of care (early intervention, outpatient, intensive outpatient, residential, or recovery) of the first episode.

Table 4

Continuing Care Scoring Guide

	Early Intervention	Outpatient	Intensive Outpatient	Residential	Recovery Services
Early Intervention	Same	Step-Up	Step-Up	Step-Up	Step-Down
Outpatient	Step-Down	Same	Step-Up	Step-Up	Step-Down
Intensive Outpatient	Step-Down	Step-Down	Same	Step-Up	Step-Down
Residential	Step-Down	Step-Down	Step-Down	Same	Step-Down
Recovery Services	Step-Down	Step-Down	Step-Down	Step-Down	Same

Youth outcome variables. Successful completion of substance use treatment included completion of either a substance use placement or a substance use program ("completed" on program or placement outcome variable; yes/no). Youth with non-completion of substance use treatment have the following outcomes: Failure to comply, absent without permission,

unsuitable or not eligible, supervision ended, transferred out of jurisdiction, depletion of funds or closure, or deceased. If a youth had multiple treatment episodes, he/she could also have multiple treatment outcomes. Therefore, a total treatment outcome variable was created by determining whether the youth ever had a successful completion of treatment (yes/no).

Successful completion of supervision was used as a youth outcome variable ("completed" on supervision outcome variable; yes/no). Non-completion of supervision included the following outcomes: Failure to comply, transferred out of jurisdiction, TJJD committed, absent without permission, transferred to the adult system, or deceased. If a youth had multiple supervisions, he/she could also have multiple supervision outcomes. Therefore, a total supervision outcome variable was created by determining whether the youth ever had a successful completion of supervision (yes/no) across placements and programs.

Results

First, cross-tabulations were conducted on youth demographics, offense, and mental health diagnosis to examine whether there were significant differences between the non-study population versus the study sample population. There was a significant association between ethnicity and sample [χ^2 (1) = 21.14, $p \leq .0001$]. The population sample had a higher proportion of Non-Hispanic (60%) compared to the study sample (50%). The study sample had a higher proportion of Hispanic (50%) compared to the population sample (40%). There was a significant association between race and sample [χ^2 (2) = 36.27, $p \leq .0001$]. The population sample had a higher proportion of Black youth (39%) compared to the study sample (26%). The study sample had a higher proportion of White youth (72%) compared to the population sample (60%). There was a significant association between gender and sample [χ^2 (1) = 38.61, $p \leq .0001$]. The population sample had a higher proportion of females (27%) compared to the study sample

(16%). The study sample had a higher proportion of males (84%) compared to the population sample (73%). There was a significant association between mental health diagnosis and sample [χ^2 (2) = 45.99, $p \leq .0001$]. The population sample had a higher proportion of youth with no mental health diagnosis (72%) compared to the study sample (58%). The study sample had a higher proportion of externalizing (28%) and internalizing (13%) mental health disorders compared to the population sample (19%, 10%, respectively). There were no proportion differences for offense type.

Sample Characteristics

Frequencies and percentages were computed on study sample demographics (ethnicity, race, gender, mental health) to obtain an understanding of the study sample population. For age, a mean and standard deviation was calculated. Frequencies and percentages were also computed to gain a greater understanding of the youths' involvement within the juvenile justice system in regards to offense type, drug offense, supervision type, and total number of supervisions. See Table 1 for demographic and juvenile justice involvement frequencies. All youth received a screener (n = 675, 100%), 72% of youth received a urinalysis test (n = 484), 41% of youth received an assessment (n = 276), and 31% received a substance use psychological diagnosis (n = 208).

Cross-tabulations were conducted on youth demographics to examine specific relationships between background variables. There was a significant association between gender and offense type [χ^2 (1) = 8.68, p = .003]. Females (85%) had a higher proportion of misdemeanors compared to males (71%). Males (29%), on the other hand, had a higher proportion of felonies compared to females (15%). There was a significant association between gender and mental health diagnosis [χ^2 (2) = 15.26, $p \leq .001$]. Females (26%) had a higher

proportion of internalizing mental health disorders than males (12%). Males (31%) had a higher proportion of externalizing mental health disorders than females (19%). There was also an association between race and mental health [χ^2 (4) = 9.63, $p \leq .05$]. Black youth had a higher proportion of externalizing mental health disorders (34%) and internalizing mental health disorders (18%) compared to White youth (27%, 14%, respectively).

AIM 1

The objective for AIM 1 was to determine the levels of care utilized and the distribution of treatment episodes among the youth within the juvenile justice departments. Review of program-level data indicated five levels of care utilized: Early intervention, outpatient, intensive outpatient, residential, and recovery services. For the juvenile justice departments within the study sample, frequencies and percentages were used to examine the starting levels of care that each department was using (see Table 2). For County A (n = 59), County B (n = 39), County C (n = 164), and County D (n = 59) the majority of youth started treatment at outpatient. For County E (n = 33) and County F (n = 25) the majority of youth started treatment at early intervention.

Specific to youth, the majority started treatment at the outpatient level of care (n = 320, 47%), followed by early intervention (n = 193, 29%), intensive outpatient (n = 75, 11%), residential (n = 73, 11%), and recovery services (n = 3, < 1%). To delve further, cross-tabulations were conducted to determine associations between starting level of care, demographics, and offense type. First, cross-tabulations were conducted on starting level of care and a dichotomous race variable where White is equal to 1 and non-White is equal to 0. There was a significant association between starting level of care and White vs. non-White [χ^2 (4) = 17.07, p = .002]. White youth (51%) were more likely to start treatment at outpatient compared

to non-White (42%) as well as intensive outpatient (13%, 8%, respectively). White youth (25%) were less likely to start treatment at early intervention compared to non-White (39%). There were no differences for residential treatment. Second, similar analyses where Black is equal to 1 and non-Black is equal to 0, indicated Black youth (41%) were more likely to start treatment at early intervention than non-Black (24%; χ^2 (4) = 22.44, $p \leq .001$). Black youth (41%) were less likely to start treatment at outpatient compared to non-Black (51%) as well as intensive outpatient (7%, 13%, respectively). Third, cross-tabulations examining starting level of care and ethnicity indicated that Non-Hispanic youth (35%) were more likely to start treatment at early intervention than Hispanic youth (23%; χ^2 (4) = 24.01, $p \leq .0001$). Non-Hispanic youth (7%) were less likely to start treatment at intensive outpatient compared to Hispanic youth (16%) as well as residential (10%, 12%, respectively). There were no differences for outpatient treatment.

Fourth, cross-tabulations examining starting level of care and mental health diagnosis indicated that youth with an externalizing mental health disorder (33%) were more likely to start treatment at early intervention than youth with an internalizing mental health disorder (22%) or no mental health diagnosis (29%; χ^2 (8) = 94.34, $p \leq .0001$). Youth with an internalizing mental health disorder (28%) were more likely to start treatment at intensive outpatient compared to externalizing (18%) and no disorder (4%). Youth with an internalizing mental health disorder (22%) were also more likely to start treatment at residential compared to externalizing (13%) and no disorder (7%). Youth with no mental health disorder (59%) were more likely to start treatment at outpatient compared to externalizing (36%) and internalizing (27%). Fifth, cross-tabulations on starting level of care and offense type indicated that youth with a felony (37%) were more likely to start treatment at early intervention (compared to youth with a misdemeanor; 26%) and intensive outpatient (14%, 11%, respectively; χ^2 (4) = 12.15, $p = .01$). Youth with a

felony (37%) were less likely to start treatment at outpatient compared to youth with a misdemeanor (52%). There were no differences for residential treatment.

The majority of youth engaged in a single treatment episode (*n* = 551, 81%), followed by two treatment episodes (*n* = 100, 15%), three treatment episodes (*n* = 23, 3%), and four treatment episodes (*n* = 7, 1%). Knowing there are close to one-fifth of youth (19%) receiving multiple treatment episodes, the next step was to determine how these youth moved from one treatment program to another.

AIM 2

The objective for AIM 2 was to explore the continuum and continuity of care within the juvenile justice departments. For youth who have more than one treatment episode, frequencies and percentages were examined on the four dichotomous continuing care variables (single, same, step-up, step-down). Youth with a single episode comprised 81% of the sample (*n* = 551). Of the youth with more than one treatment episode, 30% had the same movement (*n* = 44), 29% had one or more step-up movements (*n* = 43), and 41% had one or more step-down movements *(n* = 61).

Of the total 551 youth who had a single episode, County A encompassed 10% of youth (*n* = 57). Of the total 44 youth who had the same movement in treatment episodes, County A comprised 5% of youth (*n* = 2). Of the total 61 youth who had a step-down movement in treatment episodes, County A comprised of 2% of youth (*n* < 10). There were zero youth who had a step-up movement in County A. Of the total 551 youth who had a single episode, County B comprised of 7% of youth (*n* = 36). Of the total 44 youth who had the same movement in treatment episodes, County B comprised 7% of youth (*n* = 3). Of the total 61 youth who had a step-down movement in treatment episodes, County B comprised of 2% of youth (*n* = 1). There

were zero youth who had a step-up movement in County B. Of the total 551 youth who had a single episode, County C included 52% of youth (*n* = 286). Of the total 44 youth who had the same movement in treatment episodes, County C comprised 55% of youth (*n* = 24). Of the total 43 youth who had a step-up movement in treatment episodes, County C comprised 80% of youth (*n* = 35). Of the total 61 youth who had a step-down movement in treatment episodes, County C comprised of 92% of youth (*n* = 56). Of the total 551 youth who had a single episode, County D included 11% of youth (*n* = 63). Of the total 44 youth who had the same movement in treatment episodes, County D comprised 23% of youth (*n* = 10). Of the total 43 youth who had a step-up movement in treatment episodes, County D comprised 16% of youth (*n* = 7). Of the total 61 youth who had a step-down movement in treatment episodes, County D comprised of 5% of youth (*n* = 3). Of the total 551 youth who had a single episode, County E included 6% of youth (*n* = 35). There were zero youth who had same, step-up, or step-down movement in treatment for County E. Of the total 551 youth who had a single episode, County F comprised 13% of youth (*n* = 74). Of the total 44 youth who had the same movement in treatment episodes, County F comprised 11% of youth (*n* = 5). Of the total 43 youth who had a step-up movement in treatment episodes, County F comprised 2% of youth (*n* = 1). There were zero youth who had a step-down movement in treatment for County F.

To determine if continuity of care exists within the juvenile justice agencies, means and standard deviations were calculated on the length of time across all treatment episodes. Specifically, for youth in treatment placement (i.e., residential treatment), the average length of time across all placement episodes was 58.86 (*SD* = 65.01) days. For youth who entered a treatment program (non-residential SU services), the average length of time across all treatment programs was 78.28 (*SD* = 47.13) days. Due to issues with the start and end dates for youth who

had multiple treatment programs, continuity of care between program episodes was difficult to identify (e.g., simultaneous program episodes, missing data on program end dates). Therefore, continuity of care specifically for treatment programs was not able to be calculated with confidence as part of this study.

AIM 3

The objective of AIM 3 was to determine which continuum of care treatment characteristics were best associated with desirable outcomes such as treatment completion and supervision completion. Hypotheses stated youth with greater availability and continuum of SU treatment will have (a) higher rates of treatment completion and (b) higher rates of successful supervision completion. All analyses were conducted using SAS 9.4.

For treatment completion, 48% (n = 327) had at least one successful completion of treatment while 52% (n = 348) had zero successful completions. To rule out the need to account for county-level variation, PROC MIXED was conducted on county and treatment completion outcome. Results showed that county-level variance was not significant [z (675) = 1.45, p = .07], therefore, further analyses did not take into account across-county variance. Correlations were conducted to determine the relationship between treatment completion and treatment characteristics, demographics, and other covariates. Treatment completion was positively correlated with single treatment episode (r (675) = .15, $p \leq .0001$), an identified need with only a negative screen (r (675) = .17, $p \leq .0001$), as well as having an identified need with a negative screen and assessment (r (675) = .20, $p \leq .0001$). Treatment completion was negatively correlated with the following variables: a step-up movement in treatment (r (675) = -.10, p = .01), a step-down movement in treatment (r (675) = -.11, p = .005), youth who are Black (r (675) = -.08, p = .05), and having a mental health diagnosis (r (675) = -.32, $p \leq .0001$).

Specifically for supervision completion, 65% (n = 442) of youth had at least one successful completion of supervision while 35% (n = 233) had zero successful completions. To rule out the need to account for county-level variation, PROC MIXED was conducted on county and treatment completion outcome. Results showed that county-level variance was not significant [z (675) = .86, p = .19], therefore, further analyses did not take into account across-county variance. Correlations were conducted to determine the relationship between supervision completion and treatment characteristics, demographics, and other covariates. Supervision completion was positively correlated with the following variables: A step-down movement in treatment (r (675) = .08, p = .05), age (r (675) = .10, p = .008), an identified need with only positive screen (r (675) = .15, p = .0001), an identified need with a negative screen and assessment (r (675) = .09, p = .03), an identified need with only a negative screen (r (675) = .17, $p \leq .0001$), and offense (r (675) = .10, p = .02). Supervision treatment was negatively correlated with the following variables: Same movement in treatment (r (675) = -.10, p= .01), youth who are Black (r (675) = -.07, p = .05), an identified need with a SU diagnosis (r (675) = -.36, $p \leq$ .0001), and a mental health diagnosis (r (675) = -.33, $p \leq .0001$).

Three logistic regression models were constructed for each dependent variable (supervision completion, treatment completion). Model 1 included only continuum of care treatment variables (starting level of care, single, same, step-up, step-down, total episodes). Starting level of care included early intervention, outpatient, intensive outpatient and residential. Youth within the recovery starting level were omitted due to an insufficient sample size (n = 3). Outpatient starting level of care was designated as the reference group to which the levels of care were compared. Single episode, same movement, step-up movement, and step-down movement are all dichotomous variables (1 = occurred, 0 = did not occur). Youth demographic variables

(age, gender, ethnicity, White, Black) were added to Model 2 to examine whether continuum of care treatment variables and treatment completion remained significant after controlling for youth demographics. Age was coded as a continuous variable (M = 15.54, SD = 1.19). Gender was coded as a dichotomous variable (1 = male, 2 = female). Ethnicity was a dichotomous variable (0 = Non-Hispanic, 1 = Hispanic). The dichotomous White variable was created to compare White to all other races (0 = not White, 1 = White). The dichotomous Black variable was created to compare Black to all other races (0 = not Black, 1 = Black). For Model 3, potential covariates were added (identification of need, drug offense, offense, mental health diagnosis) in order to examine whether continuum of care treatment variables and treatment completion remained significant after controlling for covariates. The identification of need variable included five categories: (1) SU diagnosis, (2) positive screen and assessment, (3) only positive screen, (4) negative screen and assessment, and (5) only negative screen. Anything with a SU diagnosis was designated as the reference group to which the other identification of need categories was compared. Drug offense, offense, and mental health diagnosis were all dichotomous variables (0 = no, 1 = yes). All analyses were conducted using PROC LOGISTIC in SAS 9.4.

Treatment Completion.

Model 1. A logistic regression was performed to assess whether continuum of care treatment characteristics predicted the likelihood of completing treatment. The model was significant [χ^2 (7, N = 661) = 127.15, $p \leq .0001$, R^2 = .18]. As shown in Table 5, there were three predictors significantly related to treatment completion when controlling for all other variables: Intensive outpatient starting level (b = -1.36, SE = .30, $p \leq .0001$, OR = .26), residential starting level (b = -3.49, SE = .60, $p \leq .0001$, OR = .03), and single treatment episode (b = 1.05, SE = .55,

p = .05, OR = 2.86). All other predictors were nonsignificant. Youth who started in intensive outpatient were .26 less likely to complete treatment compared to youth who started at outpatient. Youth who started residential treatment were .03 times less likely to complete treatment compared to youth who started in outpatient. Youth with a single episode were nearly 3 times more likely to complete treatment compared to youth with multiple treatment episodes. Results suggest that youth starting at intensive outpatient or residential treatment as well as having multiple treatment episodes are less likely to successfully complete treatment.

Model 2. A second logistic regression model was tested to assess whether associations between continuum of care treatment characteristics and treatment completion remained significant after controlling for youth demographics (age, gender, ethnicity, White, Black). The model remained significant after the addition of the demographic variables [χ^2 (12, N = 655) = 132.02, $p \leq .0001$, R^2 = .18]. There was no additional explanatory power in Model 2 (R^2 = .18) compared to Model 1 (R^2 = .18). The same three predictors identified in Model 1 were significantly related to treatment completion when controlling for all other variables: starting level of care at intensive outpatient (b = -1.38, SE = .30, $p \leq .0001$, OR = .25), starting level of care at residential (b = -3.43, SE = .60, $p \leq .0001$, OR = .03), and single treatment episode (b = 1.09, SE = .55, p = .05, OR = 2.98). Intensive outpatient, residential starting level of care and single episode remained significant predictors of treatment completion after the addition of the demographic variables. All other predictors were nonsignificant.

Model 3. A third logistic regression model assessed whether associations between continuum of care treatment characteristics and treatment completion remained significant after controlling for youth demographics and other covariates (identification of need, drug offense, offense, mental health diagnosis). The full model containing all predictors was significant [χ^2

(19, N = 655) = 198.88, $p \leq .0001$, R^2 = .26]. Compared to Model 1 (R^2 = .18) and Model 2 (R^2 = .18), there was additional variance explained in Model 3 (R^2 = .26). As shown in Table 5, there were eight predictors that were significantly related to treatment completion while controlling for all other variables: Starting level of care at early intervention (b = .44, SE = .22, p = .05, OR = 1.55), intensive outpatient (b = -.67, SE = .33, p = .04, OR = .51), or residential (b = -3.22, SE = .62, $p \leq .0001$, OR = .04), single treatment episode (b = 1.28, SE = .57, p = .02, OR = 3.61), identification of need, and mental health diagnosis (b = -.78, SE = .24, p = .001, OR = .46). Youth who started at early intervention were nearly 2 times more likely to complete treatment compared to youth who started at outpatient. Youth who started in intensive outpatient were .51 less likely to complete treatment compared to youth who started at outpatient. Youth who started in residential treatment were .04 times less likely to complete treatment compared to youth who started in outpatient. Youth having a single treatment episode were nearly 4 times more likely to complete treatment compared to youth with multiple treatment episodes. Youth whose in need category included: (1) only negative screen (b = 1.21, SE = .32, p = .0001, OR = 3.36), (2) negative screen and assessment (b = 1.36, SE = .34, $p \leq .0001$, OR = 3.90), or (3) only positive screen (b = .72, SE = .30, p = .02, OR = 2.05) were more likely to complete treatment compared to youth who had a SU diagnoses. Youth with a mental health diagnosis were .46 times less likely to complete treatment compared to youth who did not have a mental health diagnosis. These results suggest continuum of care treatment characteristics, specifically starting level of care and single treatment episode, are associated with treatment completion even when controlling for demographics and key covariates. Continuum of care (e.g., step-up, step-down) measures were not significantly associated with treatment completion.

Table 5
Summary of Logistic Regression for Variables Predicting Successful Treatment Completion

	Model 1				Model 2				Model 3			
	b	*SE*	*Wald*	*odds ratio*	*b*	*SE*	*Wald*	*odds ratio*	*b*	*SE*	*Wald*	*odds ratio*
Treatment Characteristics												
Starting Level of Care												
Early Intervention	.20	.19	1.06	1.22	.30	.20	2.24	1.35	.44	.22	3.91*	1.55
Outpatient (Reference)												
Intensive Outpatient	-1.36	.30	21.07****	.26	-1.38	.30	20.80****	.25	-.67	.33	4.07*	.51
Residential	-3.49	.60	33.56****	.03	-3.43	.60	32.38****	.03	-3.22	.62	27.21****	.04
Single Treatment Episode	1.05	.55	3.69*	2.86	1.09	.55	3.96*	2.98	1.28	.57	5.05*	3.61
Same Treatment												
Movement	.60	.53	1.28	1.83	.60	.54	1.26	1.83	1.00	.57	3.14	2.72
Step-Up Treatment												
Movement	-.48	.48	.99	.62	-.45	.48	.89	.64	-.14	.49	.08	.87
Step-Down Treatment												
Movement	.41	.53	.61	1.51	.44	.53	.69	1.55	.68	.55	1.51	1.98
Demographics												
Age					.06	.07	.71	1.06	.11	.08	2.04	1.12
Gender					.13	.24	.27	1.13	.09	.26	.12	1.10
Ethnicity					-.16	.23	.50	.85	.06	.25	.05	1.06
White					-.49	.74	.44	.61	-.61	.77	.62	.54
Black					-1.10	.74	2.21	.33	-.98	.77	1.61	.37
Other Variables												
Identification of Need												
Only Negative Screen									1.21	.32	14.54****	3.36
Negative Screen & Assessment									1.36	.34	15.79****	3.90
Only Positive Screen									.72	.30	5.87*	2.05
Positive Screen & Assessment									.30	.36	.69	1.35
SU Diagnosis (Reference)												
Drug Offense									.41	.42	.96	1.51
Offense									-.41	.23	3.35	.66
Mental Health Diagnosis									-.78	.24	10.78***	.46

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$; **** $p \leq .0001$;

Supervision Completion.

Model 1. A logistic regression was performed to assess whether continuum of care treatment characteristics predicted the likelihood of completing supervision. The model was significant [χ^2 (7, N = 661) = 48.51, $p \leq .0001$, R^2 = .07]. As shown in Table 6, there were five predictors significantly related to supervision completion when controlling for all other variables: Intensive outpatient starting level (b = -1.47, SE = .28, $p \leq .0001$, OR = .23), residential starting level (b = -.78, SE = .27, p = .005, OR = .46), single treatment episode (b = -1.20, SE = .58, p = .04, OR = .30), same treatment movement (b = -1.65, SE = .57, p = .004, OR = .19), and step-up treatment movement (b = -1.36, SE = .52, p = .01, OR = .26). All other predictors were nonsignificant. Youth who started in intensive outpatient were .23 times less likely and youth who started in residential were .46 times less likely to complete supervision compared to youth who started at outpatient. Youth who had a single treatment episode were .30 times less likely to complete supervision. Youth with same treatment movement were .19 times less likely to complete supervision. Youth with step-up treatment movement were .26 times less likely to complete supervision. Results suggest that youth starting at intensive outpatient or residential treatment, a single treatment episode, same/step-up treatment movement are less likely to successfully complete supervision.

Model 2. A second logistic regression model tested whether associations between continuum of care treatment characteristics and supervision completion remained significant after controlling for youth demographics (age, gender, ethnicity, White, Black). The model remained significant after the addition of the demographic variables [χ^2 (12, N = 655) = 58.14, $p \leq .0001$, R^2 = .08]. Little additional explanatory power was accounted for in Model 2 (R^2 = .08) compared to Model 1 (R^2 = .07). As shown in Table 6, there were six predictors that were significantly related to treatment completion when controlling for all other variables: Starting

level of care at intensive outpatient (b = -1.50, SE = .29, $p \leq .0001$, OR = .22), starting level of care at residential (b = -.75, SE = .28, p = .01, OR = .47), single treatment episode (b = -1.20, SE = .59, p = .04, OR = .30), same treatment movement (b = -1.64, SE = .58, p = .004, OR = .19), step-up treatment movement (b = -1.41, SE = .53, p = .01, OR = .24), and age (b = .16, SE = .07, p = .04, OR = 1.17). Intensive outpatient, residential starting level of care, single treatment episode, same treatment movement and step-up treatment movement remained significant predictors of supervision completion after the addition of the demographic variables. For every one year increase in age, youth were 17% more likely to complete supervision. All other predictors were nonsignificant. Thus, continuum of care treatment characteristics, specifically starting level of care, single treatment episode, and same/step-up treatment movement are associated with supervision completion even when controlling for all other variables.

Model 3. A third logistic regression model tested whether associations between continuum of care treatment characteristics and supervision completion remained significant after controlling for youth demographics and other covariates (identification of need, drug offense, offense, mental health diagnosis). The full model containing all predictors was significant [χ^2 (19, N = 655) = 136.05, $p \leq .0001$, R^2 = .19]. Compared to Model 1 (R^2 = .07) and Model 2 (R^2 = .08), there was additional variance explained in Model 3 (R^2 = .19). As shown in Table 6, there were eight predictors that were significantly related to supervision completion while controlling for all other variables: Starting level of care at intensive outpatient (b = -.74, SE = .32, p = .02, OR = .48), same treatment movement (b = -1.42, SE = .61, p = .02, OR = .24), step-up treatment movement (b = -1.18, SE = .55, p = .03, OR = .31), age (b = .16, SE = .08, p = .04, OR = 1.18), identification of need, and mental health diagnosis (b = -.79, SE = .24, p = .001, OR = .45). Youth who started in intensive outpatient were .48 times less likely to complete

supervision compared to youth who started at outpatient. Youth with same treatment movement were .24 times less likely to complete supervision. Youth with step-up treatment movement were .31 times less likely to complete supervision. For every one year increase in age, youth were 18% more likely to complete supervision. Youth in need category included: (1) only negative screen (b = 1.16, SE = .31, p = .0002, OR = 3.18), (2) negative screen and assessment (b = .91, SE = .34, p = .01, OR = 2.47), or (3) only positive screen (b = 1.13, SE = .30, p = .0001, OR = 3.10) were more likely to complete supervision compared to youth who had a SU diagnoses. Youth with a mental health diagnosis were .45 times less likely to complete supervision compared to youth who did not have a mental health diagnosis. These results suggest continuum of care treatment characteristics, specifically starting level of care at intensive outpatient and same/step-up treatment movement are associated with supervision completion even when controlling for demographics and key covariates. Results suggest that other demographic and key covariates (age, identification of need and mental health) also play a role in supervision completion outcomes when controlling for all other variables.

Table 6
Summary of Logistic Regression for Variables Predicting Successful Supervision Completion

	Model 1				Model 2				Model 3			
	b	*SE*	*Wald*	*odds ratio*	*b*	*SE*	*Wald*	*odds ratio*	*b*	*SE*	*Wald*	*odds ratio*
Treatment Characteristics												
Starting Level of Care												
Early Intervention	-.30	.20	2.20	.74	-.24	.21	1.30	.79	-.06	.23	.08	.94
Outpatient (Reference)												
Intensive Outpatient	-1.47	.28	27.28****	.23	-1.50	.29	27.10****	.22	-.74	.32	5.30*	.48
Residential	-.78	.27	8.08**	.46	-.75	.28	7.28**	.47	-.31	.31	1.02	.73
Single Treatment Episode	-1.20	.58	4.25*	.30	-1.20	.59	4.22*	.30	-1.19	.62	3.68	.30
Same Treatment	-1.65	.57	8.39**	.19	-1.64	.58	8.10**	.19	-1.42	.61	5.39*	.24
Step-Up Treatment												
Movement	-1.36	.52	6.72**	.26	-1.41	.53	7.14**	.24	-1.18	.55	4.53*	.31
Step-Down Treatment												
Movement	.22	.53	.18	1.25	.19	.53	.13	1.21	.34	.56	.36	1.40
Demographics												
Age					.16	.07	4.44*	1.17	.16	.08	4.04*	1.18
Gender					-.14	.24	.33	.87	-.30	.26	1.35	.74
Ethnicity					-.04	.24	.02	.97	.18	.26	.51	1.20
White					-.75	.85	.78	.47	-.78	.91	.73	.46
Black					-1.20	.84	2.03	.30	-.97	.91	1.14	.38
Other Variables												
Identification of Need												
Only Negative Screen									1.16	.31	13.72***	3.18
Negative Screen &												
Assessment									.91	.34	7.13**	2.47
Only Positive Screen									1.13	.30	14.51****	3.10
Positive Screen &												
Assessment									.26	.35	.54	1.29
SU Diagnosis (Reference)												
Drug Offense									.75	.45	2.70	2.11
Offense									.29	.22	1.84	1.34
Mental Health Diagnosis									-.79	.24	11.39***	.45

*$p \leq .05$; **$p \leq .01$; *** $p \leq .001$; **** $p \leq .0001$;

Discussion

Research has shown a strong association between substance use and delinquent behaviors among adolescents (Barnes, Welte, & Hoffman, 2002; Dembo & Sullivan, 2009; Mason, Hitchings, McMahon, & Spoth, 2007). These links suggest a self-perpetuating cycle for youth within the juvenile justice system that may hinder recovery (D'Amico, Edelen, Miles, & Morral, 2008). Even though treatment and prevention programs are known to be effective for adolescents (Chassin, Knight, Vargas-Chanes, Losoya, & Naranjo, 2009; Tripodi & Bender, 2011), research has yet to examine specific treatment availability, best practices for adolescent treatment, availability of continuing or after care, and the extent to which these services are being accessed and utilized within the juvenile justice system. This study was novel in that it examined treatment availability within six counties in a Southwestern state and the degree to which elements of continuing care were associated with supervision and treatment completion.

Overall, the current research established that juvenile justice agencies were screening, assessing, and entering youth into substance use treatment services. Agencies were providing comprehensive services for their youth (or referring them to external providers). The juvenile justice agencies linked youth to a variety of different levels of care (ranging from early intervention to residential), and close to one-fifth of youth in treatment for substance use received multiple treatment episodes. Of youth who received multiple episodes, most engaged in a continuum of care (e.g., step-up, step-down movement).

Substance Use Treatment Availability

For AIM 1, there was evidence of substance use treatment availability for youth within each of the counties. Of the six agencies included within the study, all linked youth to substance use treatment. Specifically, some agencies provided substance use services directly within their

agency, while other agencies used external behavioral health agencies. Generally, there was a variety of different levels of care available within the county or geographic region. Among youth in SU treatment, most were likely to be in only one treatment episode rather than multiple treatment episodes. Although the range of options varied by county, a continuum of care was generally available for youth from all agencies. For the 19% with multiple treatment episodes, options utilized included step-up (29%), step-down (41%), or same level of care (30%) for youth as they transitioned from one treatment episode to another.

It was interesting to note that the majority of youth had a single treatment episode. Youth who only received one substance use treatment episode could possibly be receiving or had received other services prior to or after substance use treatment. Therefore, one cannot say the youth did not receive some other type of treatment, but only that they received at least one pertaining specifically to substance use while under supervision. Only about one fifth of the sample received multiple treatment episodes. While juvenile justice agencies often try to improve the overall well-being of the youth, their primary purpose is to monitor the youth's delinquent behaviors (Lispey, Howell, Kelly, Chapman, & Carver, 2010). One substance use treatment episode may be considered sufficient to produce reduced substance use and risk for future problems. Juvenile justice agencies could be focusing on helping the youth with many different noticeable problems, therefore, only providing substance use treatment once for the youth while on community supervision.

Specific to starting level of care, the majority of youth received outpatient treatment as their initial level of care. There were some interesting findings with regards to starting level of care and race, mental health diagnosis and offense type. First, youth who were White, were more likely to start treatment episodes at outpatient and intensive outpatient compared to Black

youth, who were more likely to start at early intervention. Second, youth with internalizing disorders were more likely to start at either intensive outpatient or residential compared to youth with externalizing disorders or no mental health diagnosis. Because internalizing disorders include major depression, obsessive compulsive disorder and generalized anxiety, these youth may have a greater need for more intensive treatment compared to youth with externalizing disorders (e.g., attention deficit hyperactivity disorder, conduct disorder). Third, youth with a felony offense were more likely to start early intervention compared to youth with a misdemeanor offense. This is an interesting finding. Felony offenses are more serious crimes (burglary, grand theft) while misdemeanors are less serious crimes, such as possession of marijuana or disorderly conduct. Being referred to early intervention rather than a higher level of care could be due to the fact that substance use may not be the main behavioral intervention needed for this youth. Future studies should examine how high criminogenic needs (e.g., mental health, substance use) factor in to substance use treatment referral and timing of services.

Continuum of Care.

The main goal for AIM 2 was to discover and understand the continuum of care within the juvenile justice agencies. Findings indicated that all agencies had the ability to provide (or link youth to) a continuum of care for their youth, although the range of local options varied. Different treatment movements were available from one treatment episode to another (same, step-up, step-down). The majority of youth who received multiple treatment episodes had a step-down movement (e.g., residential to outpatient).

To gain a greater understanding how youth can move through the juvenile justice system and substance use treatment (continuum of care), the following examples are provided. Youth A was a Black, Non-Hispanic adolescent male on court ordered probation for a misdemeanor

offense. He had a documented externalizing mental health disorder. He received a screener (negative result), a positive UA, did not receive an assessment, and had no SU diagnosis. He received a single substance use treatment episode in an outpatient treatment setting. This outpatient treatment program provided individual and group counseling focused on developing positive coping strategies instead of the use of illegal substances. He was unsuccessful in treatment but successfully completed supervision.

Youth B was a White, Hispanic adolescent male on court ordered probation for a felony offense. Like Youth A, he had a documented externalizing mental health disorder, received a screener (negative result), a positive UA result, received no assessment, and had a SU diagnosis. But Youth B received three substance use treatment episodes. He began treatment at an intensive outpatient level of care, then moved to the same treatment (intensive outpatient) for the following two treatment episodes. For this specific level of care, intensive outpatient included at least 15 hours of therapeutic services including individual, group, and multi-family counseling. The treatment also provided education services, such as GED preparation. He successfully completed all three treatment episodes, but was unsuccessful in completing supervision.

Youth C was a White, Hispanic adolescent female on court ordered probation for a felony offense. She had a documented internalizing mental health disorder. She received a screener (negative result), no UA, received an assessment, and had a SU diagnosis. She received a total of two substance use treatment episodes. First, she began treatment at a residential placement facility which provided behavioral support, trauma resolution, addiction recovery, and clinical and educational services. Her second treatment episode was intensive outpatient, illustrating departmental use of continuum of care approach. For this specific level of care, intensive outpatient included at least 15 hours of therapeutic services including individual, group, and

multi-family counseling. The treatment also provided education services, such as GED preparation. She had successfully completed both treatment episodes as well as successfully completed supervision.

These case examples provide illustrations of the types of services youth receive while in the juvenile justice system. Not only were youth provided with substance use treatment, but they were also screened and could possibly have received a urinalysis test, an assessment, and/or substance use psychological diagnosis. These findings support research emphasizing the need of using a validated screening instrument, receiving a validated assessment (if necessary), and coordinating with other behavioral agencies to have youth start and engage in treatment (Binard & Prochard, 2008; Brannigan, Schackman, Falco, & Millman, 2004; Drug Strategies, 2003).

Treatment and Supervision Outcomes.

AIM 3 analyzed the elements of continuing care, youth demographics, and other covariates to determine which played a role in successful completion of treatment and supervision. Specific to treatment completion, there were a few predictors of interest: Starting level of care for substance use treatment, having a single treatment episode, identification of need, and mental health diagnosis. Youth who started early intervention were more likely to complete treatment compared to youth who started in outpatient. Youth who started in intensive outpatient or residential treatment were less likely to complete treatment than youth who started in outpatient treatment. Youth with a single treatment episode were more likely to complete treatment than youth with multiple treatment episodes. With regards to identification of need, youth who had a SU diagnosis were less likely to complete treatment compared to youth who had (1) only negative screen (2) negative screen and assessment as well as (3) only positive screen. Youth with other mental health diagnoses (externalizing or internalizing) were less likely

to complete treatment compared to youth who did not have other mental health issues. The findings are consistent with research documenting lower success among individuals with higher substance use severity (Simpson, Joe, Fletcher, Hubbard, & Anglin, 1999) and corroborate the importance of using diagnostic clinical assessments to appropriately identify SU needs (Brannigan, Schackman, Falco, & Millman, 2004; Drug Strategies, 2003).

Specific to supervision completion, there were a few predictors of interest: Starting level of care for substance use treatment, same/step-up treatment movement, age, identification of need, and mental health diagnosis. Youth who started at intensive outpatient treatment were less likely to complete supervision compared to youth who started at outpatient treatment. Future research should examine the complex needs of youth entering different levels of care (e.g., intensive outpatient) and the degree to which services are available in these settings to adequately meet their needs. Youth with same or step-up treatment movement were less likely to complete supervision. Youth who were older were more likely to complete supervision compared to younger youth. With regards to identification of need, youth who had a SU diagnosis were less likely to complete supervision compared to youth with no SU diagnosis, again emphasizing the role of clinical assessments in promoting successful outcomes. Youth with a mental health diagnosis (externalizing or internalizing) were less likely to complete supervision compared to youth who did not.

Research has emphasized the importance and need for a continuum of care within the juvenile justice system (Chassin, 2008). Specific to treatment completion, youth with a single treatment episode were more likely to complete treatment compared to youth who had multiple episodes. This finding appears to contradict previous research emphasizing need for continuing care for substance use treatment (McKay et al., 2002). However, it should be noted that in some

programs, recovery or aftercare components are considered part of discharge planning and may be documented as a single episode in juvenile justice records. While single episode was not a significant predictor in the final model of supervision completion, same or step-up treatment movements were significant. Juvenile probation officers could be requiring additional treatment episodes as a consequence of non-compliance. Youth who do not successfully complete one treatment program may be penalized and entered into an additional treatment episode (Lipsey et al, 2010).

Even though youth with same or step-up movements were less likely to complete supervision, having a continuum of care while in the juvenile justice setting can still provide skills needed to create behavioral, cognitive, and social changes that the youth can continue to use once supervision has ended. While these six agencies appear to be utilizing a continuum of care model at some level, future research should emphasize education for juvenile justice probation officers on the importance of substance use treatment and appropriate use of a continuum of care model. Furthermore, understanding the rationale behind why juvenile probations officers are entering youth into multiple treatment episodes would allow researchers to ascertain whether multiple treatment episodes are seen as a supervision approach (corrective action) or counseling-oriented approach (positive behavioral change; Lipsey et al, 2010).

Identification of need impacted the likelihood of completing treatment and supervision. Youth who had a SU diagnosis of a substance use disorder were less likely to complete treatment and supervision compared to youth who had no SU diagnosis. These findings suggest that a psychological diagnosis of a substance use disorder is an important factor. Mental health diagnosis also influenced the likelihood of completing treatment and supervision. Youth who had a mental health diagnosis were less likely to complete both treatment and supervision

successfully. Less successful completion when a youth has a SU diagnosis and/or mental health diagnosis may emphasize the need of more support and attention from the juvenile probation officer and family for these youth. Probation officers may need to be more willing to provide guidance and resources for the youth to complete treatment and supervision.

While the full models for both treatment and supervision outcomes account for roughly 19-26% of the variance attributed to successful completion of treatment and supervision, there are many other factors that could affect successful outcomes. Family and living circumstances could influence whether the youth completes treatment and supervision (Chassin, 2008; Lipsey et al., 2010). Family involvement in substance use or history of parental criminal involvement could play a role (Chen et al., 2004). Furthermore, peer relationships could also impact completion rates (Chassin, 2008; Chen et al., 2004; Lipsey et al., 2010). If a youth is surrounding him/herself with peers that are also using substances, the likelihood of successfully completing substance use treatment or supervision may be impacted. Youth's cognitive functioning (criminal thinking, problem solving, planning) could influence completion rates (Chassin, 2008; Lipsey et al., 2010; NIDA, 2006). Future studies should focus on the influence of family functioning, peer relationships, and youth's cognitive functioning to determine other factors that may impact treatment and supervision completion.

Limitations.

There are several limitations to note. First, information regarding treatment programs (specifically regarding the program descriptions) was not always available for some programs, which could have resulted in inaccurate level of care designations. Information regarding level of care was missing or not complete in some instances. Based on all of the information given through the program registry, program websites, agency websites, and comparing the

information to the ASAM criteria (Mee-Lee, 2001), the most objective decision was made to define level of care. Furthermore, program information available within the youth records may not have been inclusive of all programs available within the agencies and county area. Juvenile justice agencies have contracts with specific behavioral health agencies throughout their geographical area. Furthermore, other available programs (e.g., cognitive behavioral, anger management) may include a substance use component but not labeled as a substance use treatment program within the youth records. On the other hand, substance use treatment programs may also be providing mental health treatment and not documenting this component within the youth records. It is also highly likely that step-down movement, specifically to an aftercare/recovery program, (e.g., from residential to an aftercare program, or intensive outpatient to recovery program) may not always be recorded within the youth records. Because one behavioral health agency may offer multiple levels of care and may transition youth between them without needing a documented juvenile justice referral, this step-down could be viewed by juvenile justice staff as one comprehensive treatment episode rather than separate programs/levels of care. Therefore, recovery services described here may not fully encompass or portray the full range of services available and/or utilized.

Second, information regarding assessments is not routinely entered into JCMS. Assessment results are mainly entered into chronological notes by the probation officer or are housed at a behavioral health agency where the youth was assessed. Therefore, only assessment dates and completion outcomes were available when determining whether or not the youth was assessed. Future research should include assessment results to gain a greater understanding of the youth's specific needs. In regards to clinical interviews, information is only entered if a youth receives a diagnosis. Other information (e.g., dates) are documented at the specific

behavioral health agency at which the youth was interviewed. Without such information, the identification of need variable may be incomplete for some youth in this sample. There are other factors that could impact a youth entering substance use treatment besides screeners, assessments, and SU diagnosis. For example, probation officer observations may impact the decision to send the youth to treatment, as well as information gathered from the school, parents, and family. These are not captured in the identification of need variable used here.

Third, a common theme between all of these caveats is the accuracy and completeness of data. The data available is based off of what is entered by probation officers within the JCMS system. While ideally all information would be entered, missing and inaccurate information often occurs when data is entered by large numbers of individuals with multiple roles. With the amount of time probation officers are working with the youth and families, data entry could be lower on the list of tasks to be completed. Agencies, to the best of their ability, emphasize and appreciate the importance of data entry. However, juvenile justice agencies would benefit from policy and procedural changes to provide more comprehensive data recording program specific treatment information.

While an examination of recidivism as an outcome would have strengthened this study's generalizability, recidivism data specifying whether the youth had committed another offense after their referral, was not up to date; therefore, this information was not included as an outcome variable within the analyses. Future research should include recidivism data to determine if treatment characteristics predict successful longer-term outcomes. Finally, it should be noted that generalizability of findings are limited due to a small sample of counties within a single Southwestern state. Future research should examine a larger sample of juvenile justice agencies, not only within the Southwest region of the United States, but also across the United States.

Implications for Future Research.

The findings from the current study provide evidence of the availability and continuum of care of substance use treatment for youth in the juvenile justice setting. Whereas the current study focused specifically on youth on community supervision, future studies should examine all youth entering the juvenile justice system, not just specific to youth under community supervision. Such research would provide insight on delivery of SU services among youth on different supervision types. Future studies should examine how other issues (e.g., criminal thinking, family and living circumstances, peer relations) factor into substance use treatment referral and timing of services. While the current study did not focus on the specific types of interventions (Cognitive Behavioral Therapy, Motivational Enhancement Therapy) provided within the levels of care, future research would benefit examining exactly what treatment interventions were provided by the behavioral health providers. With this in-depth examination of actual treatment interventions, the juvenile justice field may be able to determine how different types of interventions impact treatment and supervision completion.

Implications for the Treatment of Substance Use Problems among JJ Youth.

While the current study findings were informative and provided evidence that youth are receiving comprehensive services (screening to treatment initiation), there are still some possible gaps in services that could be addressed by the juvenile justice agencies and the juvenile justice system as a whole. First, procedures for identifying SU needs may need to be revised, as existing procedures may not be capturing all the youth who are in need of services. Youth with a clear substance use need (e.g., SU diagnosis) are being identified, but youth whose needs are on the lower end of the spectrum (e.g., only a positive SU screen) might not receive services. Juvenile justice agencies should begin to establish simple red flags, based on evidence-based

screening and assessment tools, earlier on in the juvenile justice referral process to capture more youth in need. Second, juvenile justice agencies need to consider whether youths' needs match the treatment level of care to which they are referred. This can be difficult especially if the agency only provides a couple of different levels of care or if the number and range of services available in the county are limited. Communication between juvenile justice agencies and behavioral health agencies in the local area may provide an avenue to expand services to other levels of care. Third, of the current study sample, only about half of the youth successfully completed substance use treatment. Juvenile justice agencies need to establish an understanding of other factors that could be contributing to this. One possible factor could be family and youth engagement in the treatment process. Juvenile justice agencies need to foster understanding of how SU contributes to delinquency and buy-in from the youth and family to improve treatment outcomes. Juvenile justice agencies should emphasize education for juvenile probation officers on the importance of substance use treatment, appropriate use of a continuum of care model, and the importance of appropriately placing youth in treatment services that correctly meet their needs. All of these components are important for rehabilitation and future success.

Based on the current findings and possible gaps in services, juvenile justice agencies need to provide evidence-based substance use screeners and assessments to identify youth in need for substance use treatment. Agencies should establish ways to streamline identifying youth's substance use needs to capture youth earlier in the juvenile justice process. Juvenile justice agencies should create dialogue with state legislatures to stress the importance of state and government funding for substance use treatment. Funds could be used for creating new levels of care within the agencies or within local behavioral health agencies allowing them to provide

more treatment options, establishing a greater continuum of care, which in the end will benefit the youth overall.

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VITA

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ABSTRACT

AN EXAMINATION OF SUBSTANCE USE TREATMENT AVAILABILITY AND CONTINUUM OF CARE WITHIN JUVENILE JUSTICE AGENCIES

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Research has shown a strong association between substance use and delinquent behaviors among adolescents (Barnes, Welte, & Hoffman, 2002; Dembo & Sullivan, 2009; Mason, Hitchings, McMahon, & Spoth, 2007). These links suggest a self-perpetuating cycle for youth within the juvenile justice system that may hinder recovery (D'Amico, Edelen, Miles, & Morral, 2008). Treatment and prevention programs are known to be effective for adolescents (Chassin, Knight, Vargas-Chanes, Losoya, & Naranjo, 2009; Tripodi & Bender, 2011). The current study examined treatment availability and continuation of care within the justice system for youth in need of substance use treatment. Results provide evidence that juvenile justice agencies were linking youth to services and that a variety of substance use treatment programs are available in the local communities. A sizeable number of youth received at least one substance use treatment episode and one-fifth of those engaged in a continuum of care (multiple episodes with increasing or decreasing level of care). Logistic regressions on a sample of 675 youth indicated there were a number of factors that impacted successful treatment completion: Starting level of care, a single episode, SU diagnosis, and mental health diagnosis. Factors that impacted successful supervision completion include: Starting level of care, same or step-up movement, SU diagnosis, age and mental health diagnosis. Agencies should emphasize the need for comprehensive services (screening to treatment initiation) as well as the importance of engaging youth in SU treatment.