Youth Receiving Treatment Service in the Juvenile Justice System:

An Examination of Funding Sources and Recidivism

by

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ABSTRACT

The dissertation examines treatment services received by youth on probation in the Maricopa County, Arizona. The project focuses on three primary issues: 1) the factors associated with receiving treatment services while on probation, 2) the factors associated with receiving treatment services through different funding streams, and 3) whether treatment services and specific characteristics of treatment services, particularly the funding source, influence recidivism outcomes of youth. To answer these questions the research used data obtained from the Maricopa County Juvenile Probation Department from July 2012 thru August 2014. Multivariate regression, along with statistical techniques to control for selection bias, were used to identify the factors associated with receiving treatment services, the factors associated with the funding source of treatment services, and the effect of treatment services on recidivism. The findings from the current dissertation suggest that the receipt of treatment services is not equal across groups, and particularly that minorities are less likely to receive treatment services compared to their White counterparts. Additionally, the findings reveal that certain characteristics of youth and the type of treatment service received influence the funding source, but the source of funding does not influence the effectiveness of the treatment services. Finally, using propensity score matching, the current dissertation found that treatment services were effective in reducing recidivism while under probation supervision and 6 months after probation supervision has ended. Implications for policy and research are discussed in light of these findings.

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CHAPTER 1

STATEMENT OF THE PROBLEM

Responding to juvenile delinquency is primary among the multiple responsibilities and obligations of the juvenile justice system in the United States. Established in the late 1800s, the juvenile justice system was created to separate juvenile delinquents from adult offenders with the primary goal of rehabilitation. Throughout its history, the system has tried to balance caregiver role with that of social control (Feld, 1999). Consistent with the larger political and social environment, the system now focuses on social control. As a punitive institution, it emphasizes harsh punishment rather than rehabilitation. However, despite widespread punitive policies, the juvenile justice system has never abandoned the traditional rehabilitative goal that was the foundation of the juvenile justice system (Bishop, 2006; Lipsey, Howell, Kelly, Chapman, & Carver, 2010). As youth come into the juvenile justice system with more complex problems and greater needs for emotional and behavioral services, there has been more attention on efforts to rehabilitate and address youth's emotional and behavioral service needs (Myers & Farrell, 2008).

The juvenile justice system faces many challenges in responding to the delinquency of youth. Children and adolescents are a vulnerable population, going through developmental changes and in need of safe and stable environments to grow. When youth enter the juvenile justice system, the system must not only address the current delinquent behavior, but also, in many cases, consider the health and well-being of the youth. Youth who commit delinquent acts and come into contact with the juvenile justice system often experience multiple adversities or risk factors, such as economic

disadvantage, experiences of abuse and neglect, unstable family environments, exposure to drugs and alcohol, and mental illness (Barnum, Famularo, Bunshaft, Fenton, & Bolduc, 1989; Esbensen, Peterson, & Taylor, 2010; Huizinga, Loeber, Thornberry, & Cothern, 2000; Loeber, 1990; Loeber & Farrington,1998). Solutions to these problems may involve multiple components such as assessment of service needs, determining who is responsible for providing and funding services, and ensuring services are beneficial and effective in reducing recidivism.

Ideally, the juvenile justice system should be used as a last resort to address these adversities, but that is not typically the case. Instead, youth enter the juvenile justice system often due to the absence of viable, community-based alternatives to address the hardships in their lives (Myers & Farrell, 2008). The overlap in responsibilities for seriously delinquent youth and seriously mentally ill youth is often labeled as "not ours" (Grisso, 2004), demonstrating the difficultly of serving youth and the failure of different systems and agencies to take responsibility. The result can be a lifetime of involvement in the criminal justice system (Cocozza & Skowyra, 2000; Davis, Banks, Fisher, & Grudzinskas, 2004; Elliott, Huizinga, & Bernard, 1989; Graves, Frabutt, & Shelton, 2007; Moffitt, 1990; Pullmann, 2010; Rosenblatt, Rosenblatt, & Biggs, 2000), which has been an ongoing struggle for the juvenile justice system and other systems of care (Cocozza, 1992; Grisso, 2004, 2008; Skowyra & Cocozza, 2007).

One of the means to address delinquent behavior and ensure the well-being of youth is to provide treatment services to those with emotional and behavioral service needs. There is much debate over the extent to which the juvenile justice system should be responsible for the care and treatment of youth involved in the juvenile justice system.

One side argues that the system should take responsibility for the care of delinquent youth. Youth living in adverse environments tend to have emotional and behavioral service needs that are not met in the community and in turn their risk of recidivism tends to increase. In these cases, it is in the best interest of the youth and the community to remove the youth from negative environments and place them in the care of the system. Doing so allows the needs of children to be met while also reducing the risk of recidivism and increasing public safety (Colins, Vermeiren, Vahl, Markus, Broekaert, & Doreleijers, 2011; Cuellar, McReynolds, & Wasserman, 2006; Hoeve, Larkin, & Wasserman, 2014).

The other side argues that the juvenile justice system is not responsible for providing care to delinquent youth except as a last resort, and that families should ensure the needs of children are met. Youth are citizens protected by due process rights and the state must ensure that their rights are not violated by assessing the competence and culpability of youth (Cauffman, Woolard, & Reppucci, 1998; Feld, 1999; Grisso, 2004). This perspective emphasizes that youth are dependents of their parents, and it is ultimately the responsibility of parents and family to discipline and provide care for their children. The state should not force individuals to participate in interventions that threaten rights of liberty and the state must provide protection from unnecessary or cruel punishment (Grisso, 2004; National Research Council, 2013). Between the two sides, the "systems of care" model emphasizes a partnership among agencies, service providers, family and youth sharing this responsibility and using multiple resources to best meet the needs of youth (Stroul, 2002; Stroul & Friedman, 1986; Stroul, Blau, & Sondheimer, 2008).

Adding to the debate, the juvenile justice system has a legal obligation to provide health services to youth in the system's custody, including rehabilitative programs and treatment for serious substance use and mental health disorders (American Association of Correctional Psychology, 2000; Soler, 2002; Teplin, Abram, McClelland, Washburn, & Pikus, 2005). In the 1980s there was a clear call for action by the Office of Juvenile Justice and Delinquency Prevention (OJJDP) to address the emotional and behavioral service needs of youth in the United States (Knitzer, 1982). The office argued that the high rate of mental health disorders and level of service needs among youth in the juvenile justice system was the result of public service systems failing to provide adequate mental health care and social services to the youth population (Cocozza, 1992; Knitzer, 1982; Soler, 2002).

Research has examined a variety of factors related to emotional and behavioral service needs and use of treatment services among children and adolescents, particularly related to mental health and substance abuse services. First, a body of work has assessed the prevalence of mental health disorders and the extent to which service needs are being addressed in the general public and within the juvenile justice system. This research has found that a substantial proportion of the youth population suffers from emotional and behavioral problems and is in need of services (Burns, Costello, Angold, Tweed, Stangl, Farmer, & Erkanli, 1995; Dembo, Schmeidler, Pacheco, Cooper, & Williams, 1997; Flisher et al., 1997; Jensen et al., 2011; Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002). Furthermore, many of these emotional and behavioral service needs are not being met in the community (Burns, 1999; Burns et al., 1995; Flisher et al., 1997;

Jensen et al., 2011; WHO World Mental Health Survey Consortium, 2004; Kataoka, Zhang, & Wells, 2002; Ringel & Sturm, 2001).

Research has also examined factors related to unmet service needs and the avenues through which youths' mental health needs are met through various service sectors, such as the mental health system and juvenile justice system (Angold, Erkanli, Farmer, Fairbank, Burns, Keeler, & Costello, 2002; Burns et al., 2004; Garland, Lau, Yeh, McCabe, Hough, & Landsverk, 2005; Stahmer, Leslie, Hulburt, Barth, Webb, & Landsverk, 2005; Thompson, 2005; Kataoka et al., 2002; Yeh, McCabe, Hough, Dupuis, & Hazen, 2003; Hough, Hazen, Soriano, Wood, McCabe, & Yeh, 2002). Specifically, certain youth, such as minorities and females, are more likely to have emotional and behavioral service needs and have those service needs go unmet (Alegria, Carson, Goncalves, & Keefe, 2011; Alegria, Vallas,& Pumariega, 2010; Chow, Jaffee, & Snowden, 2003; Parmelee, Irwin, Weisz, Howard, Purcell, & Best et al., 1990; Garland et al., 2005; Kataoka et al.,2002; Lyons, Baerger, Quigley, Joel, & Griffin, 2001; Stahmer et al., 2005). Furthermore, research has found that within the juvenile justice system, minorities continue to have greater unmet service needs compared to Whites despite having greater emotional and behavioral service needs (Rawal, Romansky, Jenuwine, & Lyons, 2004).

Once youth enter the juvenile justice system, the system is responsible for deciding the best course of action for sanctioning delinquent behavior, as well as addressing service needs. The system can require youth to receive treatment services as a condition of probation supervision with the goal of meeting emotional and behavioral service needs and reducing recidivism. However, with limited resources, the juvenile

justice system is unable to provide necessary services to all youth in need. Little research has been done in the way of understanding how individual recipients are identified for treatment services, how treatment services are provided through different funding sources, and whether those services are effective in reducing recidivism. Furthermore, research is limited on the extent to which youth receive a range of court-ordered treatment services available exclusively to youth on probation, and whether the sources of funding influence the effectiveness of treatment services in reducing recidivism remains unexamined.

While the juvenile justice system has a legal mandate to provide treatment services, it does not have to be the one to administer that care (Grisso, 2004). Treatment services provided by the juvenile justice system are typically contracted out to private providers or are given by other government agencies such as public mental health services. Similarly, the treatment services can be funded through different sources such as private insurance or public health care, but if those avenues are not available, the juvenile justice system is responsible to funding the treatment services. In light of recent healthcare reform, the current research also speaks to the issue of funding and resources for mental health care and substance use disorder services that until now have not been viewed as an integral part of primary health. The emphasis on coverage for emotional and behavioral health services, in addition to the expansion of healthcare coverage to the general public through the Affordable Care Act, will likely have implications for the juvenile justice system and the extent to which treatment services are court-funded. While the current research does not empirically evaluate the effect of healthcare reform

on funding treatment services in the juvenile justice system, findings should be considered in the context of these broader changes.

Ultimately, reducing recidivism is the primary goal of treatment services and interventions provided by the juvenile justice system. Most youth do not go on to be serious offenders, but rather age out of crime without intervention as they enter young adulthood. But those who have apparent emotional and behavioral service needs or continue to return to the juvenile justice system are given more attention (Mulvey et al., 2004). An extensive body of work identifies factors related to recidivism, but developing effective programs and interventions to prevent recidivism continues to be a struggle for researchers and practitioners. A growing body of research finds evidence of effective psychological and clinical interventions to treat mental health disorders (Casey & Berman, 1985; Kazdin, Bass, Ayers, & Rodgers, 1990; Kazdin & Weisz, 2003; Weisz, 2004; Weisz, Weiss, Han, Granger, & Morton, 1995) and substance use disorders (Vaughn & Howard, 2004; Waldron & Turner, 2008; Williams & Chang, 2000; Winters, 1999), as well as evidence-based programs to reduce recidvism (Greenwood, 2008; Lipsey, 1995; Office of the Surgeon General, 2001). The extent to which the effectiveness of these treatment services translates into community and juvenile justice, however, still remains unknown (Grisso, 2004).

Building on previous research on service needs and use among youth with emotional and behavioral problems, this dissertation will examine treatment services received by youth involved in the Maricopa County Juvenile Probation Department (MCJPD). The court is already serving youth by requiring treatment services for emotional and behavioral problems, but providing resources to pay for treatment services

adds an additional level of intervention and investment in these youth's lives. The current research will examine who receives treatment services, as well as funding sources. Additionally, this research will also examine whether the funding sources of treatment services have implications for the quality of services and effectiveness in reducing recidivism. Given the need to address gaps in the literature, the current dissertation examines three primary questions:

1. *What are the predictors (e.g., gender, race, delinquent background, etc.) associated with receiving treatment services under probation supervision?*

2. *Among youth receiving treatment services, what are the predictors associated with the source of funding for treatment services; specifically, what are the predictors of receiving treatment services via external funding sources relative to court-based funding?*

3a. *Are youth who receive treatment services less likely to recidivate (i.e., referral while under probation supervision and referral at 6 months post probation supervision) compared to youth who do not receive treatment services, after controlling for other covariates?*

3b. *Among youth receiving treatment services, do characteristics of the treatment service, particularly, the source of funding, type of service, and duration of the service, have a significant effect on the likelihood of recidivating?*

Answers to these questions will help provide a greater understanding of who receives treatment services and how youth receiving treatment services differ from the rest of youth population on probation in Maricopa County, as well as the extent to which those services reduce recidivism. Research on emotional and behavioral service needs and use of services has generally focused on treatment for mental health and substance use disorders, but youth can have other emotional and behavioral service needs. The current research is not restricted to mental health and substance use treatment services,

and is more inclusive of other treatment services provided by the juvenile justice system, such as behavior specific education, mentoring programs, and evidence-based programs. This dissertation will shed light on which types of services are typically funded by the court and whether certain types of services are more or less effective on probation and recidivism outcomes.

Furthermore, the ever-changing financial climate and recent healthcare reform provide a broader context that can help inform the importance of understanding the sources of funding for treatment services. There is growing concern for addressing service needs, particularly for mental health and substance use disorders, but with limited resources, the funding sources of treatment services and the effectiveness of services across funding sources deserve empirical attention. The implications of this research will also help to inform broader issues of the juvenile justice system's obligation to provide treatment while also balancing the obligation to public safety through providing effective treatment services that will reduce recidivism.

CHAPTER 2

LITERATURE REVIEW

The chapter begins by outlining the development of the juvenile justice system in the United States in order to place the modern juvenile justice system in the broader social and political context and show the role of the system in responding to delinquent youth. Next, the chapter looks at the goals of the system with emphasis on its obligation to provide treatment services to delinquent youth. The juvenile justice system has multiple, often conflicting, goals when responding to delinquency, making it difficult to appreciate its larger societal role. The historical context and conflicting goals of the juvenile justice system provide the framework to explore the questions proposed in this dissertation.

The chapter then shifts to a discussion of the number and characteristics of youth involved in the modern day juvenile justice system. The juvenile justice system deals with a larger number of youth, many of whom come into the juvenile justice system with a host of disadvantages and risk factors for future delinquency. Youth offenders consume a great deal of resources due to their adverse backgrounds and complex needs. This section will provide a depiction of a number of issues the juvenile justice system faces in processing youth. Given the focus of the current research, particular attention will be paid to the emotional and behavioral service needs of youth in the juvenile justice system.

The third section of the chapter discusses the level of unmet service needs among youth, treatment service use and common factors in these areas. Youth can receive services from several sectors, such as the mental health system, educational system, child welfare system, and juvenile justice system. Research has examined differences among

youth and their service needs depending on the service sector they are referred to or receiving services from, primarily comparing youth involved in the mental health system to those involved in the juvenile justice system. Little research has examined the use of treatment services within the juvenile justice system, but studies have examined characteristics of youth who are referred to treatment or who are placed in residential treatment versus community or correctional confinement. One finding that is consistent across this body of work is that youth have a high level of unmet service needs both in the general public and in the juvenile justice system (Angold, Messer, Stangl, Farmer, Costello, & Burns, 1998; Flisher et al., 1997; Horwitz, Gary, Briggs-Gowan, & Carter, 2003; Rawal, Romansky, Jenuwine, & Lyons, 2004; Rogers, Zima, Powell, & Pumariega, 2001; Shelton, 2005). More recent research has started to examine the use of services among youth in the juvenile justice system to address these unmet needs, but this work has only recently started to emerge.

The fourth section discusses issues related to funding of treatment services and healthcare coverage among youth. Healthcare in the United States has undergone many changes in the last few years due to healthcare reform, which will likely affect the accessibility of treatment services for youth both in and out of the juvenile justice system. Otherwise, when youth in the juvenile justice system have emotional and behavioral service needs for which the court requires treatment as a condition of probation, the court is financially responsible for those services if the youth does not have the means to pay. Due to their low socioeconomic status, many youth involved in the juvenile justice system are eligible for public health care (i.e., Medicaid), which relieves the juvenile justice system of having to fund treatment services.

The final section of the chapter pertains to the third research question on recidivism and the effectiveness of treatment services. While most youth desist from criminal behavior as they become adults, known as aging-out of crime (Blumstein, Cohen, Roth, & Visher, 1986; Piquero, Farrington, & Blumstein, 2003), many return to the juvenile justice system throughout their adolescence. Unlike punitive sanctions that aim to deter youth from delinquency through harsh punishment, rehabilitative programs and treatment services attempt to address the risk factors that place youth in the juvenile justice system in the first place, such as emotional and behavioral health problems (Andrews & Bonta, 2010). This section will discuss the difficulty of measuring recidivism among youth offenders for research purposes, factors related to recidivism, and current knowledge on effective programs and services to reduce recidivism.

History of the Juvenile Justice System

To understand the current debate about the role of the juvenile justice system in providing treatment services to youth and the effectiveness of those services in reducing recidivism, the larger historical context in which the juvenile justice system evolved deserves further elaboration. The United States experienced changes relating to the Progressive movement, industrialization and urbanization, as well as immigration from Europe, which helped to shape the nation. One consequence of these social changes was the establishment of the juvenile justice system, which provides the framework for the way the state responds to the behavior of juvenile delinquents.

Prior to the 1400s, the concepts of childhood and adolescence as distinct developmental stages were virtually non-existent (Aries, 1962; Bernard, 1992; Ward, 2012). Youth were viewed as no different from adults and the idea of teaching or shaping

children to be productive adults did not exist (Bernard, 1992). It was not until the 17th century that children were viewed as "potential adults" that could be molded into respectable, law-abiding, moral citizens (Bernard, 1992). Parents and religious leaders started to invest more time and resources in the development and growth of children and the government took a greater role in the welfare of children as a population (Davis, Scott, Wadlington, & Whitebread, 2008).

Progressive Era (1890s-1920s)

Leading up to the Progressive Era during the early 20th century, Western societies started to experience urbanization and industrialization, changing the dynamics of economic, family, and social aspects of life. Due to the growing complexity of society, social control that had been traditionally instilled in individuals through a communal, family environment shifted to more formal mechanisms of social control. The modern notion of juvenile delinquency started to appear during this period and the government took the initiative to correct the growing problem of crime. It was believed that delinquent youth needed to be reformed by the state because parents were deemed unable to care for their children and were ineffective in disciplining them (Rothman, 1980).

Additionally, youth lived in growing cities with high rates of poverty, high residential turnover, and ethnic and racial heterogeneity, largely due to immigration from Europe. Urban city centers were viewed as corruptive and poor environments to rear children. Juvenile courts took on a parental role, termed *parens patriae*, often removing delinquent youth from their homes and taking responsibility for correcting their behavior and ensuring their well-being. Some Progressive leaders, following the so-called "child-saving movement" (see Platt, 1969/1977), sought to save youth from "weak and criminal

parents, the manifold temptations of the streets, and the peculiar weakness of their moral natures" (Bernard, 1992, p. 84).

Emergence of the Juvenile Justice System (1900s)

Modeled after chancery courts, which helped children whose parents had died, the first juvenile justice court, established in Chicago in 1899, was assumed to be a caring court that focused on the interests of the youth rather than on punishment (Bernard, 1992; Walker, 1998). Youth, especially young children, could not be punished for their behavior because they do not understand the nature of their wrongdoing (Bernard, 1992). They could however, grow up to be criminals as adults if their behavior was not corrected, justifying the need for state intervention. The juvenile justice system did not resemble a traditional adversarial court, but was developed to address the lack of sanctions for youth and to ensure that delinquency was appropriately addressed through "diagnosis and prescription rather than adjudication and punishment" (National Research Council, 2013, p. 34; see Lindsey & O'Higgins, 1970).

Platt (1969) argued that while juvenile justice reform appeared to be an altruistic movement, based on leniency and compassion for children, the underlying values and practices of the emerging system were driven largely by middle-class norms and perceptions regarding acceptable behavior. The court used coercive means to achieve "normalization" of lower-class, often immigrant, adolescents, and parents had little say in their children's treatment (Bernard, 1992; Platt, 1969; Rothman, 1980; Walker, 1998). Treatment that was forced on children, including harsh physical labor, was used to instill a strong work ethic (Platt, 1969).

Indeterminate sentences in reformatories and refuge houses became the primary sanction used in the juvenile justice system to "cure" youth of delinquency (Davis et al., 2008). The dispositions were often not proportionate to the seriousness of the offenses (Feld, 1999) and the processing of youth in the juvenile justice system was highly individualized and discretionary, primarily consisting of a judgment call on who was "salvageable" (Bernard, 1992; Walker, 1998). If youth were considered "unsalvageable" or they failed to successfully rehabilitate, they were simply transferred and processed by the adult criminal court where they would likely end up in adult prisons. The inclusion of social workers, psychologists, and psychiatrists helped professionalize the rehabilitation efforts and provided legitimacy for the growing juvenile justice system (Rothman, 1980), but there was little legal training involved (National Research Council, 2013). Furthermore, probation and confinement continued as means of achieving formal social control.

The rehabilitative foundation of the juvenile justice system had indirect consequences for race and class. "Rehabilitation" preserved class lines because much of the work and training youths received in reformatories were geared toward low, working-class jobs that would ensure the youth did not threaten middle- and upper-class applicants. Additionally, the juvenile court was a way to Americanize youth, many of which were immigrants, according to middle-class norms and values. According to Rothman (1980), "the exercise of judicial discretion helped to affect a dual system of criminal justice: one brand for the poor, another for the middle and upper classes" (p. 71). Youth that came from more advantaged backgrounds were virtually ignored by the

juvenile justice system (Schlossman & Wallach, 1978), often receiving probation, if anything, to remain in the care of their parents.

Furthermore, perceptions of youth and amenability did not apply to African American youth. African American offenders were viewed as inherently immoral and criminal (Fernando, 1988; Owens, 1980; Thomas & Sillen, 1972), and therefore were institutionalized rather than diagnosed and treated like their White counterparts (Brenzel, 1983; Pisciotta, 1983; Rafter, 1982; Rothman, 1980; Ward, 2010; Young, 1994). Ward (2012) argued that that African American youth experienced the "Jim Crow juvenile justice system" that treated minority youth much harsher and reinforced "White democracy and second-class Black citizenship" (p. 10).

Thus, the juvenile justice system was not equally applied to all delinquents and it perpetuated inequality in the areas of both justice and access to treatment. Not only were the poor unable to care for their children according to the standards of the juvenile court, they were further disadvantaged by the removal of children from the family. As a result, the juvenile court more adversely affected minority children and families; perpetuated a cycle of inequality along class, race/ethnicity, and gender lines; and failed to address the causes of crime in an effective manner (Ward, 2012).

Following the Progressive Era, the juvenile justice system became an established institution in the United States, entrusted with serving the best interests of both children and communities. The juvenile justice system acted to instill middle- and upper-class values, provide social control of poor, irresponsible youth, and protect communities from crime and disorder (Feld, 1999). Feld (1999) argued that the goals of the juvenile justice system were contradictory in many ways. Primarily, the juvenile justice system as a

social welfare agency that provided rehabilitation and treatment was not compatible with a social control agency that corrected delinquent behavior and aimed to provide public safety (Feld, 1999). According to Feld, much of the work of the Progressive reformers in the juvenile justice system did not "appreciate the inherent contradictions of providing social welfare services in a coercive environment" (Feld, 1999, p. 76).

Rejecting Rehabilitation and Due Process Reforms (1950s-1970s)

During the 1950s and 60s the United States once again experienced dramatic social changes that altered perceptions about crime and the government's response to crime. After decades of liberal reforms, the country saw a major swing to the right as conservative politicians and the general public began to question the legitimacy of the government. Social welfare policies were viewed with skepticism as some believed that the policies allowed the poor and minority populations to depend on the state for support (Tonry, 1995). Crime rates were increasing drastically and correctional institutions were having difficulty maintaining order among prisoners (Pratt, Gau, & Franklin, 2011). Policy makers and the general public started to doubt the effectiveness of rehabilitation and the paternalistic vision of the juvenile justice system (Allen, 1964; Handler, 1965), as well as the fairness of sentencing policies (Pratt, 2009).

The rehabilitation model came under attack from both conservatives and liberals. Conservatives started to blame rehabilitation and short prison sentences for the increase in crime, arguing that sentences were too lenient and rehabilitation weakened the deterrent and incapacitative effects of corrections (Cullen & Gilbert, 1982). Child advocates and some other liberals lost faith in the medical model of correctional treatment and the legitimacy of the government to be fair and just to offenders (Cullen &

Gilbert, 1982). It became apparent that offenders were neither being rehabilitated nor being protected against abuse and injustices (Blumstein, 1982; Blumstein, Cohen, Martin, & Tonry, 1983; Clear, Cole, & Reisig, 2006; Pratt, 1998).

The rehabilitation philosophy was being challenged on empirical grounds as well. One group of scholars rejected rehabilitation as a viable criminal justice policy. Martinson's (1974) report on "what works" in rehabilitation reviewed more than 200 correctional studies and found no individual program had worked consistently and reliably. He concluded that rehabilitation "had no appreciable effect on recidivism" (p. 25). Martinson (1974) was not alone in his findings on rehabilitation and treatment programs, as other scholars had also reached similar conclusions (Bailey, 1966; Berleman & Steinburn, 1969; Cressey, 1958; Gold, 1974; Kirby, 1954; Robinson & Smith, 1971). His report provided politicians a platform for rejecting rehabilitation and returning to retribution, deterrence and incapacitation (Cullen, 2002; Cullen & Gendreau, 1989, 2000; Cullen & Gilbert, 1982).

It was also apparent that there were wide discrepancies in the treatment of youth, especially along racial lines, and some youth were receiving sentences that were greatly disproportionate to offenses committed, creating more harm than good (Allen, 1964). This justified the need for legal protections and formal court proceedings for delinquent youth. In moves dubbed the "adultification" of the juvenile court, the juvenile justice system started to emphasize public safety, offender accountability, and punitive sanctions over individualized intervention (Butts & Mears, 2001; Steinberg & Schwartz, 2000). It was believed that youth, like adults, needed to be held responsible for their actions, which also meant they needed legal protections (Steinberg & Schwartz, 2000). Several legal

decisions were made throughout the 1960s and 70s that would change the procedures and goals of the juvenile court to its modern structure. *Kent v. United States* (383 U.S. 541 [1966]) and *In re Gault* (387 U.S. 1 [1967]), in particular, provided constitutional protections and due-process rights for youth such as the right to counsel, the right to a fair and impartial hearing, the right to confront and cross-examine witnesses, protection against self-incrimination, and an increased level of evidence for proof of guilt (see Bernard, 1992 for review).

While juveniles were receiving more rights and protections, they were also getting less sympathy. The idea that youth were different from adult offenders and needed sympathetic handling by the government was starting to diminish (Regnery, 1985). As with the larger criminal justice system, the juvenile justice system was undergoing a movement that favored control and punishment over treatment (Ashford, Sales, & Reid, 2001). The politicization of crime, rejection of rehabilitation, and the growing conservative movement provided the social climate for the "get tough" movement (Mauer, 2001).

The Punitive State (1980-1990s)

In the 1980s juvenile crime increased steadily, and by the late 1980s violent crime rates soared, with the peak of crack-cocaine markets and the increase in availability of guns (Sickmund, Snyder, & Poe-Yamagata, 1997). Despite adults being responsible for 74% of the increase in violent crime rates (Snyder et al., 1997), most of the attention by the media and politicians focused on youth and the "epidemic" of violence by young people (Torbet, Gable, Hurst, Montgomer, Szymanski, & Thomas; 1996). Called "super predators," the most menacing of these juvenile offenders were thought to have no sense

of morality and have no regard for rules placed upon them by the juvenile justice system (DiIulio, 1995). The public became increasingly wary of youths and pressured the government to address the violence (Scott & Steinberg, 2010).

As noted earlier, there was growing evidence that rehabilitation was ineffective and should no longer be the "guiding purpose of corrections" (Cullen et al., 2009, p. 105). In response, a number of policies guided by retribution, incapacitation, and deterrence were implemented to respond to increasing crime rates and the public's demand for harsher punishments paving the way for the get-tough movement. In the adult criminal justice system, the implementation of sentencing guidelines and legislation such as truth-in-sentencing and "three-strikes, you're out" laws (Holt, 1998; Turner, Greenwood, Chen, & Fain, 1999) were meant to reduce discretion and inequality and increase punitiveness. For youth offenders, the use of boot camps, electronic monitoring, and "Scared Straight" became common sanctions (see Andrews & Bonta, 2010). Furthermore, laws were established to formalize the judicial waiver process and expand the criteria that could make youth eligible to be tried in court as adults (Torbet et al., 1996). The notion that youth deserved different treatment from adult offenders due to developmental differences was replaced by the belief that youth offenders were dangerous and needed to be held accountable for their actions (Wagman, 2000). Eventually, increased research on evidence-based programs and on the developmental processes of youth would revitalize the juvenile justice system's role in rehabilitating youth offenders (National Research Council, 2013).

Modern Juvenile Justice System and Return to Rehabilitation (2000s)

Despite procedural changes and the get-tough movement, juvenile courts still faced conflicting goals as they sought to serve as both a social welfare and as crime control agencies (Feld, 1999). As the juvenile justice system moved toward a more punitive system, focusing on crime control, the treatment aspect of juvenile justice was diverted to other agencies. But, there was also a push to use alternatives to incarceration made possible through the Office of Juvenile Justice and Delinquency Prevention (OJJDP) Act of 1974. The act provided funding to communities and local governments to encourage the use of diversion programs and community-based sanctions (Yazzie, 2011). As a result, private and non-profit organizations started to take a more active role in the treatment of youth.

Behavioral and developmental research in recent years, particularly research on brain development, has uncovered new information about the ability of youth offenders to make "rational" choices (National Research Council, 2013). Due to biological immaturity, adolescent brains have limited ability to regulate self-control (Somerville, Fani, & McClure-Tone, 2011) and consider the long-term consequences of actions (Steinberg, 2009). Furthermore, youth are more susceptible to peer influence and risk-seeking behaviors (Figner, Mackinlay, Wilkening, & Weber, 2009; Gardner & Steinberg, 2005), such as drug and alcohol use and unsafe sex, that help form identities and develop adult skills (Spear, 2010). These behaviors often translate into delinquent behavior that has only recently been viewed as a normal part of adolescent development. This growing body of research provides justification for a juvenile justice system that recognizes the unique developmental period of adolescence and the ability of juveniles to understand

formal court proceedings. Research finds that youth should not be held to the same level of accountability as adult offenders, and sanctions may actually disrupt the normal transition from adolescence to adulthood, when many "age out" or desist from crime on their own (National Research Council, 2013).

Currently the emphasis is on scientific knowledge, particularly about youth's development, and evidence-based practices to inform policies in the United States. The OJJDP is continuing efforts to reduce the number of youth placed in confinement and provide block grants for rehabilitative projects such as evidence-based programs and mentoring. The office also supports specialized courts like drug courts and mental health courts. Furthermore, in 2001 the National Center for Mental Health and Juvenile Justice (NCMHJJ) was established to improve programs and policies to address emotional and behavioral health disorders among youth involved in the juvenile justice system. The system as a community has increasingly recognized the level of emotional and behavioral service needs among youth the system serves.

Goals of the Juvenile Justice System

Although the primary goal of the juvenile justice system has shifted over the past 100 years, the modern juvenile justice system has three primary goals: 1) to ensure public safety, 2) to provide treatment and rehabilitation, and 3) to guarantee due process rights are protected while holding youth accountable for their behavior (Bartollas & Miller, 2005; Grisso, 2004; Snyder & Sickmund, 2006). Just as the system's goals conflicted in the past, these goals and the means to achieve them often conflict. For example, when aiming to provide effective treatment, institutional facilities may not provide ideal environments compared to community-based programs, but keeping certain youth in the

community may be a threat to public safety. The presence of emotional and behavioral service needs in youth further complicates these goals in unique ways because, on one hand, youth need treatment, but on the other they may be a risk to themselves and others. The next section will focus on the goal of addressing emotional and behavioral service needs through rehabilitative and treatment services.

Defining Obligation to Provide Treatment Services

When youth have been identified as suffering from emotional and behavioral problems and are in need of treatment services, the juvenile justice system has a degree of obligation to provide treatment to youth in their facilities (American Association of Correctional Psychology, 2000; Soler, 2002). There are a number of challenges to providing treatment services to youth who have emotional and behavioral service needs and it is not necessarily clear when and how the juvenile justice system should respond.

The first major challenge in defining the obligation of the system to provide treatment is identifying which youth need treatment. Psychological assessments vary in structure and encompass a number of techniques and instruments for identifying emotional and behavioral problems and service needs (Grisso, 2004; Hoge, 1999; Olver, Stockdale, Wormith, 2009). Due to the conflicting goals of the juvenile justice system, there is lack of consistency in the appropriate use of valid psychological instruments and risk assessment tools, whether it be to make recommendations for treatment services or identify risk of future delinquency and level of supervision needed (Borum, 2000; Hoge & Andrews, 1996; Olver et al., 2009). This leaves room for discretion in how service needs are identified and who receives treatment services. Providing services without a clear need or objective can be considered an abuse of state's power, as an individual's

autonomy, privacy, and due process protections are threatened by unnecessary treatments (Grisso, 2004).

A second major challenge for the juvenile justice system is determining whether the system should provide treatment once emotional or behavioral service needs have been identified. Simply identifying service needs does not necessarily determine who should receive treatment, or as Grisso (2004) asserts—having a mental health disorder diagnosis "does not define the obligation." The primary goal when youth first come into contact with the juvenile justice system is to divert those with emotional and behavioral problems from the system so that their needs can be addressed in the community and they can avoid the stigmatization of being involved in the system (Grisso, 2008; National Mental Health Association, 2004; National Research Council and Institute of Medicine, 2001).

Furthermore, if the juvenile justice system determines it should provide treatment services, it must determine the level and type of intervention that will be provided. Interventions may include crisis-related, stabilization, and maintenance treatments (Grisso, 2004). At the first level, crisis-related treatment addresses emotional and behavioral problems that are an "imminent threat of serious physical or psychological harm to youths" (Grisso, 2004, p. 132), and usually occurs at the referral and detention stage. Simply identifying and providing treatment for crisis-related conditions, however, should not be the basis for determining long-term emotional and behavioral service needs.

The second level of intervention is stabilization treatment. This includes identifying youth with serious emotional and behavioral problems that impair functioning, calling for more comprehensive treatment services.

The final objective is maintenance treatment, which addresses long-term needs, focusing on continual care of youth while they are involved in the juvenile justice system and during integration back into the community. An important aspect of maintenance treatment is transitioning care from the juvenile justice system to other service sectors and agencies, which requires collaboration among agencies and service providers to plan for care after juvenile justice system involvement.

Determining the best type of intervention for youth presents its own challenges. It is not always clear which type of service will best meet the emotional and behavioral service needs of youth. Rehabilitation is a broad term used to encompass a variety of programs, including behavioral education classes, such as anger management and educational tutoring, cognitive therapy, evidence-based programs such as Multi-Systemic Treatment (MST) and Functional Family Therapy (FFT), and individual or family counseling. The term “mental health services” in the juvenile justice system is not clearly defined and can also be used to describe a variety of interventions for mental health problems (Grisso, 2004), while substance abuse services are more specific to the population of youth with abuse and dependency issues. Lastly, courts must determine whether youth should remain in their communities to receive out-patient treatment services, or if service needs are serious enough to justify residential treatment. This may be largely determined by the risk youth poses to themselves and others to avoid “potential dangers to liberty and self-determination” (Grisso, 2004, p. 17).

Despite the lack of consistent definitions for types of treatment services, the primary purpose of providing treatment services in the juvenile justice system is to reduce recidivism. Starting in the 1980s, both the mental health and juvenile justice systems experienced a push to develop treatments and programs that evidence-based research found to be effective in achieving various outcomes. Government organizations emphasized the importance of scientifically-proven, evidence-based programs in treating mental health disorders in youth (National Advisory Mental Health Council, Workgroup on Child and Adolescent Mental Health Intervention and Deployment, 2001; President's New Freedom Commission on Mental Health, 2003; US Public Health Service, 2000) and prevent delinquency (Nunez-Neto, 2007). In accordance with the Juvenile Justice and Delinquency Prevention Act (JJDPA) of 1974 and the most recent reauthorization in 2002, states must clearly identify goals and implementation plans for providing mental health services. States that use evidence-based strategies receive priority for government funding.

While the emphasis on rehabilitation has been growing and the increase of evidence-based programs has improved juvenile justice programs, the primary goal of the juvenile justice system is still to ensure public safety. Risk/needs assessment instruments were primarily designed to identify risk of future delinquent behavior, so that a judge could determine the level of supervision and intensity of services needed for the youth. Identifying service needs has been a secondary goal for these instruments because service needs have "little relevance in the juvenile justice system based on crime control or just deserts concepts" (Hoge, 2002, p. 385). The juvenile justice system remains ill-equipped to identify emotional and behavioral service needs and does not have the necessary

resources to provide services and treatment to all youth suffering from emotional and behavioral problems. On the other hand, the mental health system and child welfare agencies do not have the security and supervision to house and treat violent and dangerous youth (Herz, 2001). As a result, youth often end up with unmet treatment needs, caught up in the revolving door of the criminal justice system.

This section discussed the juvenile justice system's goal of providing treatment services to youth and highlighted the difficulties of meeting that goal, such as identifying emotional and behavioral service needs and determining the level and type of intervention needed to address those needs. The following section discusses the population of youth involved in the juvenile justice system, highlighting the characteristics of youth in its care and risk factors for delinquency and juvenile justice system involvement. Subsequent sections of the literature review will discuss research on the use of treatment services in the juvenile justice system and on the relationship between treatment services and recidivism.

Youth in the Juvenile Justice System

Numbers of Youth Involved in the Juvenile Justice System

While delinquency levels have been declining over the past decade, those youth who commit offenses and become involved in the juvenile justice system continue to pose problems for families and communities. In addition, involvement in the juvenile justice system has long-term implications for the success of youth as they enter adulthood. In 2011, law enforcement made 1.5 million arrests of youth offenders, accounting for nearly 12% of all arrests in the United States for that year (Puzzanchera & Kang, 2014). Additionally, youth arrests accounted for 12.7% of violent crime arrests and

20.4% of property crime arrests (Puzzanchera & Kang, 2014). Of the 1.5 million arrests in 2011, 68% were referred to juvenile court (Puzzanchera, 2013) and the court processed a total of 1.2 million delinquent cases (Hockenberry & Puzzanchera, 2013). The court aims to prevent youth from formal processing through diversion programs, so just over half (54%) of juvenile court cases were petitioned and handled formally by the court (Hockenberry & Puzzanchera, 2014). After a delinquent case is petitioned, the youth attends an adjudication hearing to establish guilt of the alleged delinquent act. In roughly 60% (390,000) of the petitioned cases, the youth were adjudicated delinquent.

After determining the status of the youth in the juvenile justice system (i.e., diverted, petitioned, or adjudicated), a number of sanctions can be imposed. Probation is the most common sanction in the juvenile justice system, used for youth both informally and formally processed. In 2011, 64% of the adjudicated youth were placed on court-ordered (involuntary) probation as their most serious disposition, and 24% were placed in some type of residential confinement. Additionally, 22% of youth who were not petitioned were placed on voluntary probation, and 25% of youth who were petitioned, but not adjudicated, were also placed on probation (Hockenberry & Puzzanchera, 2014). These numbers total nearly 450,000 youth who were on some type of probation supervision in 2011 (Sickmund, Sladky, & Kang, 2014).

Characteristics of Youth and Risk Factors for Delinquency

Youth in the juvenile justice system consume a great deal of resources because they come from adverse backgrounds with exposure to a number of factors that increase their risk of delinquency that need to be addressed to prevent continual involvement in the juvenile justice system. These factors are also related to how youth are processed in

the juvenile justice system at various decision-making stages, such as detention, petition, adjudication, and disposition (Dembo, 1996; Grisso, 1999; Wasserman, Larkin, & McReynolds, 2004). Drawing from literature on the causes of delinquency as well as juvenile justice processing, this next section briefly discusses characteristics of youth and their background that place them at an increased risk for delinquency and system involvement.

It is well established that certain demographic characteristics are associated with delinquency and involvement in the juvenile justice system. Specifically males, older adolescents, and minorities are more likely to be represented in the system. Gender is one of the strongest known correlates of delinquency with males being more likely to commit delinquent acts (Canter, 1982; Daly & Chesney-Lind, 1988; Elliott, 1994; Fagan, 2014; Moffitt, Caspi, Rutter, & Silva, 2001). In 2011, roughly 70% of juvenile arrests and court cases involved males (Puzzanchera, 2013; Hockenberry & Puzzanchera, 2014). Age is also associated with delinquency rates. As adolescents get older, their risks of delinquency and of getting caught up in the juvenile justice system increase (Hockenberry & Puzzanchera, 2014). However, slightly more than half of delinquency cases in the juvenile justice system in 2011 involved youth who were younger than 16, so younger adolescents are still greatly represented in the juvenile justice system (Hockenberry & Puzzanchera, 2014).

The relationship among race and ethnicity, delinquency, and juvenile justice system involvement is complex due to the various adversities many minorities experience. Nonetheless, it is well known that minorities are disproportionately represented in the juvenile justice system (Bishop & Frazier, 1996; Bridges, Conley,

Beretta, Engen et al., 1993; Pope and Feyerherm, 1990; Secret & Johnson, 1997). In 2011, African Americans made up 54% of arrests and 33% of delinquency cases in the juvenile justice system, but accounted for only 17% of the youth population (Hockenberry & Puzzanchera, 2014). In comparison, Whites make up 76% of the youth population, but accounted for 64% of delinquency cases (Hockenberry & Puzzanchera, 2014). Within the juvenile justice system, race has been found to both directly and indirectly affect court outcomes (Bortner & Reed, 1985; Engen, Steen, & Bridges, 2002; Leiber & Fox, 2005; Leiber & Johnson, 2008; Rodriguez, 2010). Whether minorities are actually involved in more delinquency versus being at a greater risk of juvenile justice system involvement has been a source of debate and research has attempted to illuminate the intricate relationship between race and crime (National Research Council, 2001).

Characteristics associated with school involvement and achievement, socioeconomic status, family and home environment, communities and neighborhoods have all been found to influence delinquency. In particular, the relationship is strong between school involvement and success, on one hand, and delinquency, on the other, with delinquent youth often having a history of problems in school such as failure to bond with peers, poor academic achievement, disruptiveness in class, and disciplinary problems (Elliott et al., 1989; Hawkins, Herrenkohl, Farrington, Brewer, Catalano, & Harachi, 1998; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998; Maguin & Loeber, 1996; National Research Council, 2013).

Youth in the juvenile justice system are more likely to have low socioeconomic status and live below the poverty line (Bishop, 2000; Evans, 2004; Mashci et al., 2008; Wright, Caspi, Moffit, Miech, & Silva, 1999). Research has also found that poor youth

are treated more harshly in the juvenile justice system (Armstrong & Rodriguez, 2005). Low socioeconomic status speaks to the characteristics of the family and home environment and communities where these youth live. Families with low socioeconomic status live in neighborhoods characterized by structural disadvantages with high rates of poverty, population turnover, and racial/ethnic heterogeneity. These neighborhoods offer few opportunities for prosocial development and have limited resources to benefit youth (Elliott, Wilson, Huizinga, Sampson, Elliott, & Rankin, 1996; Farrington, 1998; Sampson & Wilson, 1995; Sampson, Morenoff, & Gannon-Rowley, 2002; Sullivan, 2004; Wikstrom & Loeber, 2000). The perceived lack of supervision in the community also leads to harsher treatment in court processing and outcomes (Armstrong & Rodriguez, 2005; Bridges et al., 1993; Britt, 2000; Feld, 1991; Rodriguez, 2011). Additionally, involvement in the child welfare system, especially at a young age, has been found to be correlated with an increased risk of delinquency and juvenile justice system involvement (Jonson-Reid & Barth, 2000; Jonson-Reid, 2004; Ryan & Testa, 2005; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001; Goodkind, Shook, Kim, Pohlig, & Herring, 2013)

While youth living with both biological parents are less likely to have problem behaviors, the representation of youth living in single-parent homes in the juvenile justice system has been increasing over the years (Snyder & Sickmund, 2006). Single-parent homes, which are most often headed by mothers, often experience disruption and instability (Anderson, 2002; Krohn, Hall & Lizotte, 2009; Loeber & Stouthamer-Loeber, 1986; Loeber, 1990; Thornberry, Smith, Rivera, Huizinga, and Stouthamer-Loeber, 1999). Specifically, delinquent youth involved in the juvenile justice system are more likely to have parents with mental health and substance abuse problems (Loeber et al.,

1998; Bailey, Hill, Oesterle, & Hawkins, 2009; Burke, Pardini, & Loeber, 2008), and experience neglect and maltreatment in the home (Crooks, Scott, Wolfe, Chiodo, & Killip, 2007; Fagan, 2005; Mersky, Topitzes, & Reynolds, 2012; Widom, 1989; Widom & Maxfield, 2001; Zingraff, Leiter, Myers, & Johnson, 1993). Problems in these areas often have a compounding effect for minorities, as they are more likely to experience adversities in these areas (Anderson, 1990; McCabe, Yeh, Hough, Landsverk, Hulburt, Culver, & Reynolds, 1999; Sampson & Wilson, 1995; Wilson, 1987), increasing their likelihood of delinquency and involvement in the juvenile justice system.

Emotional and Behavioral Service Needs

The above risk factors often correlate to emotional and behavioral problems – particularly mental health and substance abuse –that are in need of treatment services. For example, youth with parents suffering from mental health or substance abuse problems are more likely to have mental health problems as children (Costello, Farmer, Angold, Burns, & Erkanli, 1997). Youth living with economic disadvantage are also more likely to lack resources and access to healthcare to deal with emotional and behavioral problems. Mental health and substance abuse disorders experienced by youth are a strong predictor of involvement in the juvenile justice system (Davis et al., 2004; Graves et al., 2007; Mallett, Dare, & Seck, 2009; Pullmann, 2010; Rosenblatt, Rosenblatt, & Biggs, 2000; Barrett, Katsiyannis, Zhang, & Zhang, 2013). Similarly, prior receipt of mental health services corresponds to a higher likelihood of involvement in the system (Goodkind, Shook, Kim, Pohlig, & Herring, 2013; Schwalbe, Hatcher, & Maschi, 2009).

A number of studies have attempted to identify the prevalence of mental health and substance use disorders among youth in the juvenile justice system. Results have

differed among the studies, largely because of differences in measurement and assessment, among other factors such as the population examined and time frame used (Cauffman, 2004; Grisso, 2004). But, taken together, the studies have yielded some useful information.

Research has generally found that 65% to 70% of youth in juvenile justice facilities, primarily detention centers and correctional facilities, suffer from at least one mental health disorder (Atkins et al., 1999; Garland, Hough, McCabe, Yeh, Wood, & Aarons, 2001; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002), while rates among youth on probation are approximately 50% (Wasserman, McReynolds, Ko, Katz, & Carpenter, 2005). Shufelt and Cocozza (2006), with the National Center for Mental Health and Juvenile Justice (NCMHJJ), conducted a comprehensive review of studies, involving a total of 1400 youth from 29 programs and facilities in three different settings. They found that 70.4% met criteria for at least one mental health disorder, and rates tended to be higher among female youth (Shufelt & Cocozza, 2006). This compares to an estimated 20% of youth in the general public with a mental health disorder (Costello et al., 1996; Kazdin, 2000; Soler, 2002). Additionally, it is estimated that substance abuse is one of the most common diagnoses, with roughly half of youth in the juvenile justice system suffering from substance use disorder (Teplin et al., 2001).

Research has also examined treatment service needs among specific groups of youth in the juvenile justice system. Lyons, Baeger, Quigley, Joel, and Griffin (2001) compared mental health needs of youth in correctional facilities, in residential treatment facilities and under community supervision. The authors found that youth in correctional

facilities were more likely to have behavioral problems and that mental health needs were greater among youth in the institutional settings compared to youth on probation. Other factors that were associated with correctional confinement included prior mental health treatment or substance abuse treatment, poor caregiver supervision, a greater need for medical care, and posing a danger to themselves or others (Lyons et al., 2001). Rosenblatt et al., (2000) also found those in the juvenile justice system tend to suffer from more severe disorders, with higher rates of conduct disorders, greater externalizing problems, and more functional impairment, compared to youth in the mental health system. While these studies identify predictors of placement or supervision level in the juvenile justice system, they do not take into account characteristics of youth's delinquent behavior and their prior involvement in the juvenile justice system, nor do they assess service use among youth.

Despite this prevalence of emotional and behavioral problems, the juvenile justice system lacks a consistent, systematic procedure or method for identifying emotional or behavioral service needs. There is wide variability in the structure of psychological assessments and the process for administering psychological assessments, from informal interviews to lengthy diagnostic tools and schedules administered by mental health professionals (Hoge & Andrews, 1996). In general, the juvenile justice system does a poor job of assessing mental health problems and treatment needs. This is a problem that can exist within a single jurisdiction, across different stages in the juvenile justice system, or across jurisdictions (Soler, 2003). At some decision-making points, mental health and substance use diagnoses can adversely affect youth, but at other points they may ensure that treatment is provided.

In sum, the lack of systematic psychological assessment "results in a high level of inconsistency in the processing of offenders and in the operation of bias and error, both in the formation of inferences about clients and in the actual decision-making process. The results are inappropriate and invalid decisions about youth" (Hoge & Andrews, 1996, p. 29).

Multiple Problem Youth

A final note regarding characteristics of youth in the juvenile justice system and risk factors for delinquency is that juvenile offending cannot be attributed to one single factor and rarely do youth experience just one of these adversities (Loeber & Farrington, 1998; Maas, Herrenkohl, & Sousa, 2008; Preski & Shelton, 2001; Turner, Hartman, Exum, & Cullen, 2007; Widom, 1991). Risk factors for delinquency and system involvement are intricately tied to one another and youth are often exposed to multiple disadvantages, making it difficult for the juvenile justice system to respond to the needs of youth (Elliott et al., 1989; Huizinga et al., 2000).

African-American males aged 16 and 17 make up the largest proportion of juvenile court cases (Hockenberry & Puzzanchera, 2014), and they are more likely to be exposed to neglect and maltreatment and be on child welfare. Youth on child welfare are more likely to have mental health problems, and youth with mental health problems involved in child welfare are likely to end up in the juvenile justice system (Goodkind, Shook, Kim, Pohlig, & Herring, 2013; Rawal, Romansky, Jenuwine, & Lyons, 2004).

In regard to emotional and behavioral health problems, comorbidity, or the presence of more than one emotional or behavioral disorder, is especially common among children and adolescents (Grisso, 2004). Comorbidity is found among youth in the

community (Angold & Costello, 1993; Bukstein, Brent, & Kaminer, 1989; Kandel, Johnson, & Bird, 1999), but rates of comorbidity are particularly high within juvenile justice settings (Abram, Teplin, McClelland, & Dulcan, 2003; Kandel et al., 1999; Kessler et al., 1996). A general youth population study found that diagnosis of depression increased the likelihood of having another disorder by over twenty times (Angold & Costello, 1993). A Surgeon General's Report in 2000 attributed high comorbidity rates among arrested youth to the fragmented mental health system that is ill-equipped to handle these youth (U.S. Department of Health and Human Services, 2000b). Additionally, comorbidity of internalizing and externalizing disorders increases the risk for continued offending into adulthood (Copeland, Miller-Johnson, Keeler, Angold, & Costello, 2007). Shufelt and Cocozza (2006) found that roughly 79% of those who met criteria for at least one mental health disorder had two or more diagnoses. As a result, the coexistence of multiple disorders in addition to other risk factors makes prioritizing emotional and behavioral service needs more challenging for the juvenile justice system (Grisso, 2004).

Treatment Services in the Juvenile Justice System

Unmet Service Needs

A substantial body of literature has examined the use of mental health services among youth populations, factors associated with unmet service needs, and the extent to which needs are met through contact with different service sectors, particularly the mental health system and juvenile justice system. However, few studies have examined these issues among juvenile justice populations exclusively and much less among youth under probation supervision.

In general, children and adolescents with emotional and behavioral health problems are gravely undertreated with high rates of unmet service needs (Angold et al., 1998; Flisher et al., 1997; Horwitz, Gary, Briggs-Gowan, & Carter, 2003). Studies have examined characteristics of children with unmet mental health needs and their families using various samples to identify key predictors of treatment service use and unmet service needs.

Among the primary factors associated with unmet service needs are elements related to economic disadvantage such as living on public assistance, lack of health insurance, and transportation problems (Chow, Jaffee, & Snowden, 2003; Cornelius, Pringle, Jernigan, Kirisci, & Clark, 2001; Flisher et al., 1997; Haines, McMunn, Nazroo, & Kelly, 2002). Race and ethnicity are also strong predictors of unmet service needs with Whites being more likely to receive mental health services compared to minorities (Angold et al., 2002; Burns et al., 2004; Garland et al., 2005; Hough et al., 2002; Kataoka et al., 2002; Stahmer et al., 2005; Thompson, 2005; Yeh et al., 2003). Studies have also found that minorities have limited opportunities to access mental health services (Arcia, Keyes, Gallagher, & Herrick, 1993), and once they start treatment they are less likely to complete treatment (Kazdin, Stolar, & Marciano, 1995).

The research on gender is more mixed, with some research finding females more likely to receive services for mental health problems (Angold et al., 2002; Garland et al., 2005), while other research has found that males are more likely to receive services (Bussing et al., 2003; Thompson, 2005). Still other studies have found no significant gender effect (Flisher et al., 1997).

Due to lack of resources and funding, emotional and behavioral health services provided through Medicaid are often restricted to children with the most severe mental disorders (Kerker & Dore, 2006). As a result, children with less serious problems are often ineligible for services and those who do qualify receive inconsistent and fragmented care. Finally, studies have found that lack of health insurance is a major impediment to obtaining emotional and behavioral health services. (Farmer, Stangl, Burns, Costello, & Angold, 1999; Flisher et al., 1997; Kataoka et al.,2002).

But, even after youth have entered the juvenile justice system, their service needs often go unmet, especially among minorities (Rawal, Romansky, Jenuwine, & Lyons, 2004). Rogers, Zima, Powell, & Pumariega (2001) found that youth in the system continued to have unmet mental health needs even after identification of need for treatment, with only 6% being referred to mental health services. Shelton (2005) found that only 23% of youth diagnosed with mental health disorders received treatment and that having a mental disorder was not a significant predictor of receiving services. Shelton (2005) concluded that "while the total responsibility for the well-being of children does not lie solely with the juvenile justice system, the decision not to provide treatment services to youth in need and under their care implies neglect … it implies a perception that these youth will go away, be treated elsewhere, or grow out of their problems" (p. 110).

Treatment Referrals and Service Use

Given the high rates of unmet service needs among youth, research has examined the ways in which a youth's emotional and behavioral service needs become identified and services provided. Compared to the general population where children's emotional

and behavioral service needs are recognized and treated through the education system and schools (Burns et al., 1995), service needs of disadvantaged and minority youth are often not recognized until their contact with the juvenile justice system (Golzari, Hunt, & Anoshiravani, 2006; Rawal et al., 2004; Rogers et al., 2001; Rogers, Pumariega, Atkins, & Cuffe, 2006).

A number of studies have examined the overlap between the mental health system and the juvenile justice system and youth characteristics associated with referrals to each service sector. In general, this body of work has found involvement in the mental health system increases the likelihood of being referred to the juvenile justice system (Cohen et al., 1990; Stoep, Evans, & Taub, 1997; Rosenblatt, Rosenblatt, & Biggs, 2000) and that younger adolescents, females, and White youths are more likely to be referred to the mental health system, while minorities, males, and youths with more serious and disruptive mental health disorders are more likely to be referred to the juvenile justice system (Atkins et al., 1999; Cohen et al., 1990; Dembo, Turner, Borden, & Schmeidler, 1994; Evans & Stoep, 1997; Stoep et al., 1997; Thomas & Stubbe, 1996).

Additional research has examined referrals for treatment services in the juvenile justice system at various stages, such as detention or disposition. In general Whites are more likely to be referred to services compared to African American youth (Herz, 2001; Dalton, Evans, Cruise, Feinstein, & Kendrick, 2009; Lopez-Williams, Stoep, Kuro, & Stewart, 2006; Maschi, Hatcher, Schwalbe, & Rosato, 2008; Rogers et al., 2001; Rogers et al., 2006). Breda (2003) examined direct and indirect effects of race on judicial decision to refer youth to mental health treatment. While she did not find a direct effect,

she did find indirect effects, as race and ethnicity were associated with other factors, particularly the offense type and the role of the police in the complaint.

A recent study conducted by Hoeve, McReynolds, and Wasserman (2014) examined service referrals for mental health and substance use treatment made by probation officers for the disposition hearing. They found that youth with externalizing disorders and substance use disorders were more likely to receive referrals, but race and gender were not significant predictors of service referral. While these findings support the idea that apparent needs are being addressed with services, only 40% of youth with internalizing disorders were referred to services, which is problematic. Prior studies do not provide a clear set of predictors for service referrals and many studies were not able to control for offense severity and criminal history, which are likely to influence referrals for services. Regardless, there were discrepancies in service referrals in the juvenile justice system. Receipt of service referrals was not found to be dependent entirely on the need for services, but may be influenced by other factors that create disparities in the health of youth. Furthermore, these studies did not take into account access (i.e., availability, health insurance, etc.) to referred services or whether youth were actually using the services.

Little research has examined the actual receipt or use of treatment services by youth, versus referrals (Teplin et al., 2005). Teplin et al (2005) found that roughly 16% of youth who had been identified as needing mental health services during detention received services within six months from detention or by disposition. Additionally, 11% of youths received services, but did not meet the definition of need. Among those youth with mental health disorders, 15.4% received treatment while in detention, and 8.1%

received treatment in the community. Johnson et al. (2004) examined substance abuse treatment need and use among youth entering juvenile corrections. The authors found that nearly half of youth with need for substance abuse treatment received services, and that youth who started using substances at a younger age, youth with depressive symptoms, and youth with prior arrests were more likely to be given treatment. Rawal et al. (2004) examined racial differences in mental health needs and service use among incarcerated youth. The authors found that African Americans had the greatest level of mental health needs, but the lowest level of prior and current service use. Consistent with prior research, African American youth, who had dysfunctional relationships with family and peers, were less likely to reside with biological parents and more likely to experience abuse or neglect. In general, these studies emphasize how few individuals actually receive services for their emotional and behavioral service needs, as well as the "benign neglect" of the juvenile justice system in addressing emotional and behavioral service needs (Herz, 2001).

A handful of studies have examined the success of private and public correctional facilities in providing services for youth and reducing recidivism (Armstrong & MacKenzie, 2003; Bayer & Pozen, 2005; Blakely & Bumphus, 2004, Yazzie, 2011). As previously mentioned, the Office of Juvenile Justice and Delinquency Prevention Act in the 1970s increased funding for private companies to provide emotional and behavioral services to children and adolescents in an effort to divert youth from the juvenile justice system. Private correctional facilities have started to become a more prevalent source of care and treatment for troubled youth. Work comparing the success of private versus public correctional facilities has found mixed results. Blakely and Bumphus (2004) found

that youth offenders in the private sector participated in more drug and alcohol treatment than youth in the public sector, but Bayer and Pozen (2005) found that public agencies were more successful in reducing recidivism than for-profit correctional facilities.

A recent study by Yazzie (2011) examined more than 300 agencies nationwide comparing private and public companies in providing treatment services. The study found that private facilities were more likely to offer treatment services and have mental health personnel scheduled more frequently, whereas public facilities were more likely to have mental health personnel only on an on-call basis. There were also differences in the types of services provided — public facilities were more likely to offer drug and alcohol treatment specifically for violent offenders, and private facilities were more likely to have psychological treatment and family counseling. While this study focused on private versus public facilities, the facilities may have received funding to provide treatment services from a mix of sources. Given limited resources, the juvenile justice system needs to reserve its resources to youth with greater need and risk and use other sources of funding when available to provide care.

Funding Sources of Treatment Services

This section examines funding of treatment services, sources of funding for services and the status of healthcare coverage among youth in the United States. With limited resources, the juvenile justice system has to prioritize the needs of youth as well as ensure public safety. Consequently, the system has used outside agencies and external funds to reduce the burden of providing treatment services. It is in this context that the current research focuses on the funding of treatment services for youth in the system. Research has examined how treatment services in the juvenile justice system are paid for,

but whether that funding source has an impact on the effectiveness of the services remains an empirical question. As a result, it is difficult to determine whether the juvenile justice system is successful when funding services or other agencies are more equipped to respond to this vulnerable population.

Youth in the juvenile justice system suffer from a host of emotional, behavioral and physical health problems, but have limited access to healthcare. Because neither they nor their families have the knowledge and resources to navigate the healthcare system, youth often are uninsured and their emotional and behavioral conditions are not addressed. Local and state governments struggle to organize resources and funds to provide care that can reduce recidivism and impact the overall well-being of youth (Clark & Gehshan, 2006). The governments often depend on Medicaid to carry a bulk of the financial responsibility. Youth and their families lack the knowledge and resources to navigate the health care system, which has resulted in youth being uninsured and emotional and behavioral service needs going untreated.

Who pays for treatment services?

Emotional and behavioral service needs of delinquent youth often go unrecognized and unmet until they come to the attention of the juvenile justice system, where there is a legal obligation to provide services. At this junction, the challenge is determining who is responsible for providing funding for the services. When a youth is required to receive court-ordered treatment services as a condition of probation supervision, there are multiple avenues or sources of funds that can pay for these services, but determining where the funds should come from is a complex policy issue. "The question of who pays is closely tied to what is being paid for and who gets to

decide" (Models for Change, 2011, p. 1). If the youth has no means (i.e. health insurance) to pay for treatment services ordered by the court, the juvenile justice system has a financial responsibility to fund the treatment services it is requiring. When the system is responsible for funding treatment services, the amount of time and resources the court must also work with the service providers and track the youth's actual receipt of, or attendance at, services.

In the juvenile justice system, the funds for treatment services can come from two major types of federal grants—grants administered by the OJJDP that focus on delinquent youth and grants administered by the Substance Abuse and Mental Health Services Administration (SAMHSA) that focus on mental health services for youth and families (Cuellar, 2011). Funds provided by OJJDP grants, including Juvenile Accountability Block Grants and state juvenile justice formula grants, declined nearly 70% between 2000 and 2010 (Cuellar, 2012; Models for Change, 2011). There have been other efforts, such as the development and funding of drug courts, the Second Chance Act, the Mentally Ill Offender Treatment and Crime Reduction (MIOTCR) program to provide resources for services for offenders with mental health and substance abuse problems, but the funds are modest in comparison to the grants provided by OJJDP and SAMHSA (Cuellar, 2012). As a consequence, the justice system's resources to address emotional and behavioral service needs have become constrained in recent years.

The other funding sources for treatment services can include private healthcare and public healthcare insurance (i.e., Medicaid). Roughly half of all youth in the juvenile justice system are insured by private healthcare (Models for Change, 2011), but many private health insurance companies have a disclaimer that precludes them from covering

court-ordered services, unless they are medically necessary. Since medical necessity is not typically the court's motivation for requiring treatment services and it is difficult to establish within the juvenile justice system, this restriction often prevents insurance from covering treatment services. Even when such services are covered, they may be limited. Insurers, particularly private, often place limitations on behavioral health services such as caps on number of outpatient visits and inpatient days (Cuellar, 2011; Glied & Cuellar, 2006). Lastly, these youth are not likely eligible for Medicaid because they have private insurance, so the families would have to pay for the services out-of-pocket if the court did not fund the treatment services. As a result, the court is more likely to provide funding for needed treatment services for youth with private insurance than those with Medicaid.

Since both federal grants for the juvenile justice system and private insurance coverage for youth have been declining, (Berdahl, Friedman, McCormick, & Simpson, 2013), increased funding for emotional and behavioral health services must come from other sources. As discussed in previous sections, youth involved in the juvenile justice system who lack adequate health coverage from other sources are often eligible for Medicaid or the Children's Health Insurance Program (CHIP) due to their low economic status and family situation. Additionally, Medicaid and CHIP provide more comprehensive coverage of behavioral health and rehabilitative services, such as Multi-Systemic Treatment (MST) and Functional Family Therapy (FFT), compared to private insurance (Cuellar, 2011).

However, there is a drawback to Medicaid coverage — according to federal law's "inmate exclusion" (Social Security Act § 1905(a)(28)(A)), Medicaid does not pay for services for individuals in certain public institutions. These include jails and prisons, as

well as state and local juvenile facilities where youth are involuntarily detained (Cuellar, 2011). Therefore, while youth involved in the juvenile justice system are often eligible for Medicaid due to their economic status, involvement in the justice system itself can disrupt coverage and services. Specifically, if a youth gets arrested and detained or incarcerated, the youth's eligibility for Medicaid coverage is terminated and any ongoing services will not be covered. When the youth is released, he or she then has to re-apply for coverage and in the meantime is without Medicaid coverage and services (Acoca, Stephens, & Van Vleet, 2014; Council of State Governments Justice Center, 2013). This can be highly disruptive in terms of youth's physical, emotional, and behavioral service needs, "making it difficult to access continual, comprehensive care as they reenter the community" (Acoca, Stephens, & Van Vleet, 2014, p. 7). Furthermore, many of these youth are involved with child welfare and protective services, where they may be receiving care and services, but their entry into the juvenile justice system can disrupt these services.

The problem remains the lack of coordination among entities that results in fragmented and inadequate treatment services because no single entity has total responsibility for the care of these youth (Clark & Gehshan, 2006). Some states have introduced policies that suspend, rather than terminate, Medicaid eligibility while a youth is detained or incarcerated, so that coverage can be reinstated upon release (Council of State Governments Justice Center, 2013; Models for Change, 2013), but this is not widespread or required. This relieves the burden on families and youth to have to re-apply for coverage, which can take as long as 45 to 90 days, and ensures continuity of care when the youth returns to the community (Council of State Governments Justice

Center, 2013; Cuellar, 2012). Other healthcare changes under way also have implications for the juvenile justice system and youth with emotional and behavioral service needs.

Healthcare reform and the juvenile justice system

In 2010, the United States enacted the Patient Protection and Affordable Care Act (ACA) to expand healthcare coverage to millions of citizens, by expanding eligibility criteria and providing tax credits and federal cost-sharing assistance for low-income people not eligible for Medicaid (Cockburn, Heller, & Sayegh, 2013). More recently, the President's Fiscal Year 2014 Budget proposal placed a strong emphasis on care for mental health. In particular, the ACA expanded the Mental Health Parity and Addictions Equity Act of 2008 to provide better coverage for mental health and substance use disorders (Barry & Huskamp, 2011; Munoz, 2013). Included in these acts are provisions that specifically pertain to mental health, such as coverage for preventative screenings and assessments for emotional or behavioral problems. The acts also extended benefits that previously were available in connection only with medical and surgical needs to also be available in connection with mental health needs. (Barry & Huskamp, 2011). Additionally, people cannot be denied coverage for pre-existing mental health conditions and caps cannot be placed on care for mental health services. Given the high rates of mental health and substance use disorders among the offender population, in addition to the lack of health coverage among this population, the Affordable Care Act is likely to have an impact on practices in the criminal justice system and juvenile justice system. Furthermore, the emphasis on health benefits for mental health and substance use disorders represents a paradigm shift that stresses these disorders as a public health issue rather than criminal justice issue (Cockburn, Heller, & Sayegh, 2013).

The use of mental health services is linked to health coverage; therefore, as more people receive healthcare coverage, more individuals and families will be willing to seek services for emotional and behavioral health problems (Garfield, Zuvekas, Lave, and Donohue, 2011; Landerman, Burns, Swartz, & Wagner, 1994; McAlpine & Mechanic, 2000; Rabinowitz, Bromet, Lavelle, & Severance, 1998; Roy-Byrne, Joesch, Wang, & Kessler, 2009). As a result, individuals previously at risk for involvement in the justice system because of untreated mental health and substance use disorders will be able to receive services and avoid cycling in and out of the criminal justice system (Phillips, 2012).

In regard to youth and the juvenile justice system, the Affordable Care Act will have limited short-term benefits for low-income, Medicaid-eligible youth. Programs focused on getting youth enrolled in Medicaid, establishing collaborations between juvenile justice agencies and Medicaid to make information more accessible, and the suspension of Medicaid enrollment for youth in public institutions have helped increase the number of youth with health insurance in recent years (Berdahl et al., 2013; Cuellar, 2012). Expanding healthcare coverage for youth will also likely affect the funding of treatment services for youth with emotional and behavioral service needs who enter the juvenile justice system. Increasing benefits for mental health and substance use coverage, as well as prohibiting insurance companies from excluding coverage for pre-exiting conditions, improves youth's access to treatment services for emotional and behavioral health problems.

As youth will have alternative sources to pay for treatment services, the juvenile justice system will be relieved of that responsibility. In addition, since youth will be more

likely to have healthcare coverage and therefore access to mental health services, the prevalence of emotional and behavioral service needs among youth in the juvenile justice system may be reduced. It is more likely that emotional and behavioral service needs of youth will be identified at earlier ages and families will be encouraged to access services for their children, preventing involvement in delinquency and the juvenile justice system in the first place. Since some may avoid the juvenile justice system and many within the system will have more resources to provide treatment services to meet their emotional and behavioral needs, the system will be better able to address the needs of those youth who do not have alternative means to receive services through external sources.

Given this context, the funding of treatment services in the juvenile justice system has not been examined as a key variable of interest. While the source of funding for treatment services is largely dependent on the youth's healthcare coverage, the court also considers the need for services, prioritizing those with greatest need. However, as was demonstrated with literature on unmet service needs, need does not necessarily result in the expected outcomes (i.e., services). Following this line of thought, there may be other factors that could influence the court's decision to fund treatment services. Furthermore, the quality of services and degree of investment the court has when it is funding the treatment services may differ, resulting in subsequent effects on recidivism.

Recidivism- Do Treatment Services Work?

The final section of the literature discusses the topic of offender recidivism among youth. Reducing recidivism in order to prevent youth from returning to the juvenile justice system is a primary goal of the juvenile justice system and a key measure used to identify successful practices and interventions. There are two primary ways the juvenile

justice system seeks to reduce recidivism, through rehabilitation with treatment programs and through deterrence with punitive sanctions (Loughran, Mulvey, Schubert, Fagan, Piquero, and Losoya, 2009). There is general agreement that deterrence and harsh punishment have been ineffective in reducing criminal behavior, whereas rehabilitative efforts have been more successful in reducing recidivism (Andrews & Bonta, 2010). Developmental factors also come into play in the cases of juvenile offenders. Youth often age-out or desist from offending as they transition into adulthood beyond the intervention of the juvenile justice system (Mulvey et al., 2004).

A wide range of research has been conducted to examine aspects of recidivism including associated risk factors, many of which are the same as those for initial delinquency (Cottle, Lee, & Heilbrun, 2001; Dembo et al., 1998; Hoge, Andrews, & Leschied, 1996; Minor, Hartman, & Terry; 1997). Additionally, involvement in the juvenile justice system and characteristics of prior offending, particularly age at first arrest and offense severity, are strong predictors of recidivism (Benda, Corwyn, & Toombs, 2001; Calley, 2012; Loeber et al., 2008; Mulder, Brand, Bullens, & Marle, 2010). Furthermore, McReynolds, Schwalbe, & Wasserman (2010) found that the presence of depressive and substance use disorders more than doubled the risk of recidivism after controlling for demographic and offense characteristics. Before focusing on the current state of knowledge on programs and treatments used to reduce the risk of recidivism, the difficulty of measuring recidivism will first be discussed.

Measuring Recidivism

Understanding recidivism among youth offenders has been examined a number of ways in juvenile justice agencies. Criminological research on youth delinquency and

recidivism has been conducted for various purposes and using a range of methodological approaches (National Research Council, 2013; Snyder & Sickmund, 2006). Because of these differences and for other reasons, there is not a consistent way to measure recidivism and a national recidivism rate for youth offenders is difficult to estimate (Snyder & Sickmund, 2006).

One reason for a lack of consistent data is that rates of recidivism and factors associated with recidivism differ depending on the youth population studied. Youth on diversion or probation are different from youth who have been incarcerated or placed in residential facilities so recidivism rates are going to differ. (Calley, 2012; Taylor, Kemper, Loney, & Kistner, 2009). Recidivism rates for youth in residential treatment or correctional confinement have been found to range from 40% (Taylor et al., 2009) to 65.2% (Benda, Corwyn, & Toombs, 2001) and as high as 80-85% (Mulder et al., 2010; Trulson, Marquart, Mullings, & Caeti, 2005).

In addition, some research compares recidivism across different populations to identify the effect of different sanctions or being formally processed in the juvenile justice system. The use of different youth populations is largely influenced by the research question a study is trying to answer. Some research examines predictors of recidivism or the impact of particular programs or interventions within a certain population. Some youth are delinquent and continue to reoffend, but are able to avoid the juvenile justice system. Their behavior can be captured only by using community samples that include the broader adolescent population.

This relates to the next consideration for measuring recidivism, which is the use of official measures of recidivism versus self-reported offending. Delinquent behavior

that is not brought to the attention of the juvenile justice system is not accounted for in the official data (Cottle et al., 2001), thus using formal measures likely underestimates reoffending in general (National Research Council, 2013), whereas self-reported delinquency underestimates the rate of serious and violent offending (Thornberry & Krohn, 2000). When using official measures of delinquency, the sequential nature of the juvenile justice system has also resulted in different ways to measure recidivism — a new referral, petition, adjudication, and re-incarceration can all be measures of recidivism and not one is used consistently.

Finally, the length of the follow-up period to measure recidivism (six months, one year, two years, etc.) and when to "start the clock" have also differed across studies. Some research starts measuring recidivism after the first referral is petitioned, while others start measuring recidivism after probation supervision ends or the youth is released from an institution. Still other research has used the rate of rearrest, measuring the number of arrests over a certain period of time (Loughran et al., 2009). The follow-up period also creates challenges for researchers using official data from the juvenile justice system because once a youth turns 18, any criminal behavior is often handled by the criminal justice system, making it necessary to work with other agencies in the criminal justice system to obtain data tracking these youth. Alternatively, rather than attempting to estimate a recidivism rate for youth offenders, measuring a rate of re-referral based on the number of prior referrals is another way to capture the level of delinquent behavior among youth (Snyder & Sickmund, 2006). Based on data from multiple states, roughly six of 10 juveniles return to juvenile court before they turn 18 (Snyder & Sickmund, 2006).

Reducing Recidivism through Programs and Services

Research on recidivism has focused predominately on programs and interventions that address individual risk factors for delinquency and prevent youth from returning to the juvenile justice system. After Martinson's (1974) report claimed that "nothing works," researchers questioned this research and found that many of the studies Martinson included did in fact reduce recidivism (Palmer, 1975). Additionally, cognitive and behavioral therapies were not included in the review by Martinson, which have been some of the more effective programs in reducing recidivism (Cullen & Jonson, 2011). The work of Lipsey (1992; 2009), Lipsey and Cullen (2007), Cullen and Gendreau (1989; 2000), and Mackenzie (2000; 2006) have made a significant impact on the assessment of rehabilitative programs for juvenile offenders, finding that specific programs when targeted toward the right individuals can effectively reduce recidivism. The research conducted by mental health researchers, such as psychologists and criminologists, on programs and treatments has accumulated over the years, especially with the development of meta-analytic techniques.

Research has focused on the effectiveness of specific types of programs to prevent delinquency and anti-social behavior (Lipsey, 1992; Lipsey, 2009; Lipsey & Cullen, 2007), treatment designed to treat substance use disorders and addiction (Henggeler, Pickrel, & Brondino, 2000; Waldron, Brody, & Slesnick, 2001; Waldron & Turner, 2008; Winters, 1999; Winters, Stinchfield, & Opland, 2000) and identify factors impacting effective treatment such as risk, need, and responsivity (Andrews & Bonta, 2006; Andrews et al., 1990; Gendreau, Smith, & French, 2006). In general, this research has found that programs are more effective in reducing recidivism when they are targeted

toward high-risk and high-need youth, and focus on criminogenic risk factors to enhance functioning and prosocial skills (Lipsey et al., 2010). Additionally, programs that are based on therapeutic interventions rather than control and surveillance strategies are more effective in reducing recidivism (Lipsey et al, 2010).

While these evaluations and meta-analyses focus on different populations and examine different outcomes, there is some consistency in the programs that have been empirically supported as effective across disciplines. Specifically, a handful of programs have been shown to reduce recidivism and substance use (National Mental Health Association, 2004). These include cognitive behavioral therapy, multi-systemic therapy (Schaeffer & Borduin, 2005; Sawyer & Borduin, 2011; Timmons-Mitchell, Bender, Kishna, & Mitchell, 2006), and family functioning therapies (Alexander, Pugh, Parsons & Sexton, 2000; Alexander & Sexton, 2002; Sexton & Turner, 2010). These programs tend to focus on solving problems, developing skills, altering social relations with family and peers, and learning new social or cognitive responses, but do not consistently address aspects of emotional and behavioral health (Hoeve et al., 2014). A number of studies have found treatments that are successful in treating youths' mental health problems, particularly aggressive symptoms related to ADHD and bipolar disorder (Connor, 2002). Studies have also established the effectiveness of cognitive behavioral therapy in treating conduct problems, depression, and anxiety, as well as interpersonal skills, self-control, and problem-solving skills (Kazdin, 1997; Kendall, Reber, McLeer, Epps, & Ronan, 1990; Lochman & Wells, 1996). But the literature is mixed on psychological and psychiatric treatments in youth, especially these when administered in juvenile justice settings (Grisso, 2004).

One of the few studies to examine whether service referrals of youth in the juvenile justice system have an effect on recidivism was conducted by Hoeve et al. (2014). The authors found that substance use disorders had the strongest effect on recidivism, increasing the risk by more than four times compared to other disordered youth, but this effect was substantially reduced if the youth received a service referral. In other words, receiving a service referral reduced the risk of recidivating, but only for youth with substance use disorders. Specifically, youth with substance use disorders were 66% less likely to recidivate if they received a service referral, compared to other youth with substance use disorders who did not receive a referral. An earlier controlled, randomized study conducted by Cuellar et al. (2006) assigned youth to a state-run mental health diversion program and found that the diverted youths were less likely to recidivate. These studies suggest that beyond traditional "evidence-based" programs, mental health and substance abuse services may help reduce recidivism among youth with disorders.

Many of these treatments have met the standard of efficacy. That is, they have been found to be effective in well-controlled research labs, but their ability to achieve these same results when administered in the juvenile justice system is still in question (Grisso, 2004). Furthermore, countless clinical and administrative procedures go into providing treatment interventions, and adhering to the standards necessary for assuring effectiveness is extremely difficult in juvenile justice settings. Grisso (2004) argued that "treatment without attention to clinical quality is not treatment and is likely to have worse consequences than if no intervention at all were provided" (p. 97). For example, cognitive behavioral therapy has been found to be less beneficial when conducted by inexperienced clinicians (Kazdin, 2000), when youth have cognitive developmental delays (Durlak,

Fuhrman, & Lampman, 1991), and when youth live in homes with severe family dysfunction (Kazdin, 1997). Unfortunately, these characteristics are common in the juvenile justice system, which impacts the effectiveness of such treatment services. Additionally, implementing effective programs is particularly hard in juvenile justice settings, where services are conditions of probation or confinement and are often administered in a punitive environment.

Due to the limited resources available to the juvenile justice system, many youth with mental health problems will not likely receive enough benefits from treatment in juvenile justice settings to make it cost-effective and worthwhile. First, there is the issue of staff qualifications. Treatments typically need to be administered by clinicians with medical, PhD or master's level education; however, the juvenile justice system simply does not have access to qualified individuals or resources to hire enough positions to meet the needs of youth (Grisso, 2004). Counties in many parts of the country do not have a qualified psychologist or psychiatrist to provide mental health care to the public (Thomas, Ellis, Konrad, Holzer, & Morrissey, 2009; Goldman, 2001), much less to youth in the juvenile justice system. Second, there is also the challenge of obtaining parental consent for minors to receive treatments, such as psychopharmacological interventions (i.e., medication). The juvenile justice system needs parental permission for certain treatments, as well as active participation in family-focused treatments. Sometimes when treatment results in poor results due to lack of participation by the family, courts assume "that this 'failure to respond' reflects the youth's lack of amenability to rehabilitation, without examining whether there is any reason to question the efficacy of the treatment itself" (Grisso, 2004, p. 130).

Research from criminological and psychological disciplines has yielded a large body of work identifying evidence-based programs that help reduce recidivism among youth, but youth can also receive services in the juvenile justice system that are not considered "evidence-based" (Burns, Landsverk, Kelleher, Faw, Hazen, & Keeler, 2001). Comprehensive reviews and meta-analyses have helped to identify aspects of programs and treatment that are more effective so that agencies can integrate these approaches into their treatment services.

However, the effectiveness of behavioral education, mentoring, mental health services, substance use services, and sex offender services, apart from evidence-based programs, is less well-established. This is the gap in the research that the current dissertation aims to address, especially as it pertains to the juvenile justice system. On one hand, research on emotional and behavioral service needs largely pertains to unmet service needs and service use, but does not evaluate the effectiveness of services in reducing recidivism. On the other hand, research on rehabilitative and evidence-based programs focuses on effectiveness in reducing recidivism, but the extent to which youth need and use those services is still unknown. Furthermore, research has examined whether private or public programs are more effective in reducing recidivism, but no studies have examined whether the funding source of treatment services plays a significant role in the effectiveness of such programs. The current state of knowledge on the effectiveness of service and programs will be discussed in the final section.

Summary and Implications

The goal of the above literature review was to demonstrate the complex issues the juvenile justice system faces when dealing with youth who suffer from emotional and

behavioral problems and have service needs. While many studies have examined mental health and substance use disorders and service needs among youth, little research has examined which youth receive treatment services in the juvenile justice system and whether treatment services administered to youth are effective in reducing recidivism. Specifically, this dissertation provides a bridge between research on mental health and substance use needs and service use, on one hand, and research on the effectiveness of rehabilitative programs in the juvenile justice system, on the other. Furthermore, the issue of funding sources has received little empirical research attention. To restate the research questions proposed in Chapter 1, the current dissertation examines the following questions:

1. *What are the predictors (e.g., gender, race, delinquent background, etc.) associated with receiving treatment services under probation supervision?*

2. *Among youth receiving treatment services, what are the predictors associated with the source of funding for treatment services; specifically, what are the predictors of receiving treatment services via external funding sources relative to court-based funding?*

3a. *Are youth who receive treatment services less likely to recidivate (i.e., referral while under probation supervision and referral at 6 months post probation supervision) compared to youth who do not receive treatment services, after controlling for other covariates?*

3b. *Among youth receiving treatment services, do characteristics of the treatment service, particularly, the source of funding, type of service, and duration of the service, have a significant effect on the likelihood of recidivating?*

The current dissertation contributes to the literature previously discussed by examining the extent to which youth receive a wide range of treatment services in the juvenile justice system. Much of the research that focuses on treatment needs and service

use is limited to mental health and substance use services, but this dissertation is more inclusive of a wider variety of services including behavior specific education, mentoring, and evidence-based programs as well as to mental health, substance use, and sex offender treatment services. Furthermore, research has not focused on youth under probation supervision, which is the most commonly used sanction and level of supervision used for youth involved in the juvenile justice system. Most research focuses on more serious and violent offenders, such as those in correctional confinement, which are a unique population, making it difficult to understand how the juvenile justice system responds to the service needs of a more general, representative group of youth. By focusing on a larger population of youth under probation supervision, the current research encompasses a more diverse group of youth and identifies predictors of receiving services. Finally, this dissertation examines whether youth who receive treatment services have lower rates of recidivism while on probation and post release from probation supervision, and the extent to which the source of funding for treatment services influences recidivism.

It is important to understand the factors associated with receiving treatment services in the juvenile justice system because there is an opportunity for disparate treatment among youth with emotional and behavioral service needs. The research discussed has found that access to services and use of services are not equal across groups and that race/ethnicity and gender have influenced various outcomes related to treatment both in the general public and in juvenile justice populations. In the juvenile justice system, factors beyond the need for services, like race and gender, have influenced outcomes such as referrals to mental health treatment at detention facilities, level of supervision (i.e., community or out-of-home placement) at disposition, and use of

services. Minority youth are more likely to have unmet needs across agencies and within the juvenile justice system. They also have a history of being treated unfairly in the juvenile justice system compared to their White counterparts. Therefore, whether race or ethnicity also has an effect on the use of treatment services in the juvenile justice system deserves more attention. This has both short-term implications for addressing immediate health needs of youth and long-term implications for the individuals' success within the community in areas such as avoiding crime and benefitting their overall health and well-being.

In addition to addressing legal variables associated with criminal justice and sentencing outcomes, this dissertation will also consider and extralegal variables. Receiving a psychological evaluation for a mental health or substance use disorder and consideration of risk/need level would be considered legal factors in the court's decision to provide treatment services. Factors such as race/ethnicity or gender would be considered extralegal and should not play a role in the decision to provide services. It is hypothesized that African Americans and Latino/as are less likely and females are more likely to receive treatment services. These discrepancies in access to services, if they exist, can perpetuate inequality in the health and recidivism of individual youth and long-term health disparities among different populations, as well as public safety threats. Youth who do not receive services for their emotional or behavioral service needs may have a greater likelihood of recidivism and long-term involvement in the criminal justice system.

The examination of funding sources for treatment services has important implications. Treatment services in the juvenile justice system are funded by the court,

through private insurance or through public healthcare. First, the source of funding will first be examined as an outcome to identify factors associated with receiving external funds. External funding sources may mean the justice system is not responsible to fund services for these youth. While the court does not typically fund treatment services for those who have private insurance or qualify for public healthcare, in some cases it does. For instance, a youth may have private insurance, but the insurance provider may not cover the services ordered by the court, or coverage for services may not start for a period of time pending approval from the insurance provider. In cases where the need and risk are high, the court may decide to go forward with funding for the services in the meantime. Therefore, it is expected that whether the youth received a psychological evaluation and the level of need/risk identified through the evaluation would be the primary predictors of funding sources for treatment services. Whether other features contribute to the court's decision to fund a youth's treatment, beyond need and insurance coverage, is unknown. Once again, there is an opportunity for unequal treatment if factors other than insurance coverage and risk/need determine whether the court funds the treatment services, which may have implications for their receipt of treatment services and recidivism.

The source of funding for treatment services is also examined as a primary independent variable to determine whether the source of funding influences success on probation and recidivism outcomes. It is hypothesized that the source of funding will not have an effect on the recidivism outcomes because the service providers are often the same regardless of funding sources and the quality of services should be the same across funding sources. In many cases, the funding source does not dictate the type of service or

the service provider that must be used, but there are some service providers that offer only certain services funded by the court. When the services are funded through the court, there may a higher degree of investment in the youth and a certain level of control and follow-up in the provision of services that is not present when the services are funded by external sources. Specifically, service providers contracted with the juvenile justice system are not required to supply a report to the court regarding the youth's progress with treatment if the funding source is private or public insurance. It is implied that the youth is receiving services, but this is not actually captured by the court in their electronic tracking system. On the other hand, the court has more information regarding the youth attending treatment services that are funded by the court. Therefore, the source of funding may be a proxy for the level of control over the youth and their receipt of treatment services. This implies that there may be differences in the degree of services received depending on the source of funding, including type, quantity, and quality of services across funding sources. In turn, this may influence whether emotional and behavioral service needs are being met, as well as recidivism outcomes.

The research in this dissertation attempts to address these questions, which will inform the juvenile justice system and practitioners about the extent to which treatment services are provided to youth on probation and whether these services have the intended benefit of reducing recidivism. Reducing recidivism benefits individual youth by preventing them from continued involvement in the juvenile justice system and criminal justice system as they enter adulthood, which can positively influence multiple areas of life, such as education, employment, and marriage. Reducing recidivism also benefits the community by increasing public safety and helping youth become contributing members

of society. Youth in the juvenile justice system have multiple needs that may continue to go unmet if the juvenile justice system does not ensure that treatment services are provided in an equitable manner. This speaks to the broader purpose of the juvenile justice system in the lives of these youth. Specifically, dating back to the establishment of the juvenile justice system, whether treatment services should be provided when youth are under supervision of the system has been debatable, but if services are benefitting youth there is likely to be support for the rehabilitative ideal the juvenile justice system was founded upon. The next chapter will describe the methodology used to answer the research questions posed in this dissertation.

CHAPTER 3

METHODOLOGY

This chapter describes the data and method used to examine the questions regarding treatment services in the juvenile justice system. This chapter will proceed by first discussing the setting where the study takes place to help contextualize the research and describe the policies on the funding of treatment services in the juvenile justice system. Second, the data and sample will be discussed, followed by a discussion of the variables that will be included in the study. Third, the analytic strategy that was used to examine the questions pertaining to treatment services, funding and recidivism will be discussed. This chapter concludes by discussing anticipated weaknesses, challenges, and problems that may arise in the execution of the dissertation research.

Maricopa County Juvenile Probation Department

The current research takes place in Maricopa County through collaboration with the Maricopa County Juvenile Probation Department (MCJPD) and their Division of Treatment Services. Maricopa County is the fourth most populated county in the United Statas. Located in Arizona, it is home to nearly four million, which is approximately 60% of the state's population. According to the 2010 Census, roughly a quarter of the population is under the age of 18, 58.7% of the population is White, Latinos represent 29.6 % of the population, 4.6% are African American, and 3.4% are Asian.

Youth can enter the juvenile justice system through a referral, which includes citations, physical referrals from law enforcement, and paper referrals from school official, parents, and court officials. Only youth that receive physical referrals (i.e., arrests) are brought in for detention where they are administered a detention screening

tool and can be immediately detained. In the 2013 fiscal year (July 1, 2012- June 30, 2013), 15,548 youth received roughly 21,500 referrals—12,000 were paper referrals, 5,400 were citations, and 4,100 were physical referrals. Of the 4,100 physical referrals, approximately 55% of the youth were screened and detained, and the other 45% were screened and released for follow-up. When a youth receives a referral, the youth can be diverted from the juvenile justice system, a petition can be filed for formal processing, or the youth is filed as an adult and sent to adult court. Following the filing of a petition, an adjudication hearing takes place to have the youth committed as an incorrigible (i.e., youth committed of status offense such as truancy or runaway) or a delinquent (i.e., youth committed of a crime). At this point a psychological evaluation can be completed, financial pre-screening for services can occur, and a recommendation for treatment services is provided through a written court report to the judge at disposition. During the disposition hearing, a youth can receive fines or restitution, standard probation, juvenile intensive probation (JIPS), or can be committed to Arizona Department of Juvenile Corrections (ADJC). In 2012, 3,091 youth were placed on probation and another 2,900 youth were placed on probation in 2013, roughly 400 of which were placed on Intensive Supervision (JIPS) during each year. When including youth that were already under probation supervision prior to the start of the year, there were 5,688 youth on probation during 2012 and 5,604 youth on probation in 2013, of which approximately 23% received treatment services.

Youth placed under probation supervision are considered for treatment services which can include behavior specific education (or delinquency prevention/intervention education), mentoring programs, evidence-based programs, drug court services, general

mental health services, substance abuse services, and sex offender services. Also, depending on the level of care and supervision needed, services can take place through outpatient treatment in the community or in out-of-home care such as residential treatment. The evidence-based programs include Functional Family Therapy, and Multi-Systemic Therapy, and Brief Strategic Family Therapy, which are certified by the Center for Study and Prevention of Violence as a model program or designated as promising programs. The other treatment services are designed to be therapeutic in nature with the goal of reducing recidivism. Another important note is that unlike the other services offered, behavior specific education services are primarily used for youth on diversion, so very few youth on probation received these services.

In the annual data report put out by the Maricopa County Juvenile Probation Department, only the numbers of youth receiving treatment services that are funded by the court are reported and they are based on the youth that received treatment services at some point between July 1, 2012 and June 30, 2013—the 2013 fiscal year. These numbers are displayed below, but important considerations of these numbers in regard to the current study include: 1) they are based on all youth receiving services, not just those on probation; 2) they do not account for youth receiving multiple services, and 3) services funded by external sources are not included. The current study will be better able to assess the number of youth under probation supervision that received treatment services. Nonetheless, it is apparent how few youth receive treatment services despite what research has found on the prevalence of emotional and behavioral service needs among youth in the juvenile justice system.

Youth on Probation that Received Treatment Services in 2013 (N=5604)

	n	%
GMH Outpatient	357	6.3
GMH Residential	98	1.7
Substance abuse Outpatient and Residential	222	4.0
Sex Offender Outpatient and Residential	283	5.0
Mentoring	169	3.0
Behavior specific education	858	--
Evidence-based		
Multi-systemic Therapy	21	0.4
Functional Family Therapy	38	0.7
Brief Strategic Family Therapy	6	0.1
Drug Court	108	1.9
Total	*1302*	*23.2*

A Generally received by youth on diversion instead of probation so percentage of youth on probation not included

Other programs and services that are provided include evaluations and diagnostic services, acute care and hospitalizations, drug tests, as well as foster care services not included in the current research.

The services and programs ordered by the court are funded through the Treatment Services Division within the Maricopa County Juvenile Probation Department. The Administrative Office of the Courts (AOC) is a division of the Arizona Supreme Court and is responsible for distributing funds received from the legislature for treatment services to Arizona's 15 counties. According to Arizona Revised Statutes (ARS), §8-322 the Juvenile Probation Services Fund (JPSF) under the Juvenile Justice Services Division (JJSD) was established in Maricopa County to provide service providers funds to deliver services. In 2013, Maricopa County Juvenile Probation Department received $7,756,485 from the state for the JPSF Treatment Services, roughly $100,000 less than the previous year.

Based on the service provider list provided by the Treatment Services Division at Maricopa County Juvenile Probation Department there are 126 service providers in Maricopa County where the youth can receive services ordered by the court. The Administrative Office of the Courts (AOC) has contracts with 51 of these service providers, 28 of which provide the treatment services examined in the current research. The other 23 providers primarily provide assessment and evaluation services, as well as acute hospitalization, drug tests, and polygraph examinations. The AOC ensures that licensure, employee qualifications and insurance requirements are met for each program that service provider offers. The contracted service providers are required to provide annual progress reports that address their compliance with the contract such as the quality of services, the number of youth served and if they are in their target population, recidivism of youth, and the follow-up procedures with you. Additionally, the service provider must submit a new proposal every five years to renew the contract that addresses the programs it provides, the quality and components of the programs, how it ensures they are meeting the needs of the target population of youth

Treatment services provided through the contracted service providers can be funded through the court from JPSF (court-based funding), and nearly all of these providers (43) also accept external funding sources, such as Medicaid or private insurance. The remaining 75 services providers have contracts with other agencies such as RBHA or DES and only accept external funding sources. These services providers do not have the same contractual obligation to AOC and the Treatment Services Division to provide progress reports on the youth served in their programs and the quality of those programs.

The Treatment Services Division recently started the Service Authorization Form to track the treatment services ordered by the court for youth under probation supervision, which includes documenting the service provider the youth used to receive services and the source of funding for treatment services. At the financial pre-screening, youth are evaluated for eligibility for services through private or public health insurance before services can be provided from the state funding (JPSF). Due to limited resources, services are only funded through JPSF if the youth cannot obtain funds from any other source. The external funding sources available to youth include the state Medicaid fund which is Arizona Health Care Cost Containment System (AHCCCS), as well as private insurance. Funds from the federal government go through AHCCCS to each of the Regional Behavioral Health Authorities (RBHA), which was Magellan in Maricopa County. Finally, youth can receive funding from multiple sources. For example the court may fund one service or a certain amount of units of a service, and the external payer funds the remaining units or other services. This is often the result of conflicting views regarding which treatment services the youth need. For instance, the court may order that the youth receive residential treatment, but RHBA disagrees with this recommendation based on their clinical evaluation and therefore will not fund the service, thus the court is responsible for funding that service.

Data

The Maricopa County Juvenile Probation Department (MCJPD) and the Treatment Services Division were sources for data regarding youth receiving treatment services. The timeframe for the data spanned a 25-month period beginning July 1, 2012 to August 31, 2014. Starting in December 2012, MCJPD began the Service Authorization

Form (SAF) Automation Project to electronically track the treatment services ordered by the court and progress of youth receiving services as part of their probation. The extent to which treatment service use, including dates of services and funding information before the use of the electronic SAF is limited and therefore the quality of the data was suspect. For example, the termination date of the services was not updated regularly, so most of services that started before the use of the electronic SAF were given a termination date of November 30, 2012, not accurately capturing the duration of treatment services. The data used in the current research extend back to the start of the fiscal year on July 1, 2012 so any treatment service information before December 1 was extracted manually. Between July 1, 2012 and August 31, 2014, a total of 4,244 youth were placed on probation, 60 of whom had multiple probations during the timeframe.[1] The unit of analysis will be the individual youth, specifically those that are placed under probation supervision during the specified timeframe. For youth with multiple probations, the first probation is included, with subsequent probations captured in recidivism measures. Additionally, the treatment services received only pertain to the probation of interest and treatment services received in subsequent probations are not measured.

Since the number of subjects included in the current study is determined by the youth on probation and receiving treatment services, a post-hoc power analysis was conducted using the obtained population size and effect size to determine design sensitivity of the study to assess whether the number of youth in my study population is

[1] Most often the effective date of treatment services was the start date of probation (mode), but the average time between probation starting and the start of treatment services was 114 days and the median was 50 days. Therefore, by including youth that started probation towards the end of my timeframe these youth may not have had an opportunity to receive treatment services while on probation and would be not captured in my data. As a limitation, the number of youth receiving treatment services while on probation is likely underestimated to some degree.

large enough to detect a significant effect at the .05 significance level. Power is defined as the probability of rejecting a false null hypothesis, or the probability that a statistical test will detect a significant effect when a difference actually exists. For example, when power is low as a result of a small sample, it can be difficult to detect a significant effect. In order to achieve the accepted power level of .8 with a moderate effect size of .3 to .5 (see Cohen, 1988), and a model R^2 of .2 the number of subjects needed for each group in the study would need to be at least 300 youth. Therefore, based on the sample size of the data obtained, power and effect sizes were not problematic.

The data obtained through the Maricopa County Juvenile Probation Department consist of multiple databases depending on the information of interest and are cleaned as separate files and merged based on each youth's unique identifier. Specifically, there were eight different datasets used to create the variables for the analysis. For the purposes of this analysis, the individual was the unit of analysis, so the data were merged to associate each referral and court-ordered treatment services to the youth. First, the probation data file identified which youth were placed on probation between July 1, 2012 and August 31, 2014 by the start date of the youth's probation. Second, a data file containing the youth's cases status through their entire involvement in MCJPD was used to identify the type of probation the youth was placed on—standard, intensive supervision, sex offender, or summary (i.e., unsupervised probation) for the current probation. The third data file contained the demographic information of the youth, including age, race, ethnicity, gender, and school status. A fourth dataset was used to obtain information regarding the living situation of the youth (i.e., who they were living with) when they were placed on probation in order to capture youth's home environment.

Fifth, the complaint dataset contained all referrals (or complaints) the youth has received in Maricopa County. The unit of analysis in this dataset was referrals, and there were 17,784 referrals for the 4,244 youth analyzed in the current research. This dataset, in particular, took an extensive amount of cleaning and management because it was used to: 1) identify which referral was associated with the disposition that placed the youth on probation and the severity of that offense; 2) determine the number of referrals and adjudications that occurred before the current probation to measure prior offending behavior; and 3) determine the number of new referrals and adjudications that occurred while on probation and post-probation to measure reoffending. The next dataset is the detention data where the unit of analysis is detentions. This dataset was used to identify whether the youth was detained for the referral associated with the youth's probation. A dataset containing all the drug tests of youth in the population was an additional dataset, with each drug test as the unit of analysis. This dataset was used to determine whether the youth was drug tested and whether the youth tested positive for drugs. The drug tests were divided between those that occurred prior to the current probation and those that occurred while the youth was on probation. Additionally, a dataset with all of the risk assessments of the youth was used to obtain the risk assessment for the youth at the time the youth was placed on probation, and therefore used for disposition and treatment decisions.

Finally, the data on youth who receive treatment services are collected and monitored by Treatment Services Division. Each "billing cycle" or episode of treatment services is the unit of analysis, which means that a youth can have multiple episodes of a single type of treatment services or of different treatment services. The current research

will focus on youth who received treatment services in the community and residential facilities while on probation, thus services received while on diversion will not be examined, but will be captured as prior services. Services that started 90 days prior to the start of probation will also be considered prior services. Treatment services evaluated in the current study include general mental health (GMH) services, sex offender services, substance abuse services, mentoring or life skills programs, behavior specific education, evidence-based programs, and drug court services. Behavior specific education includes a variety of programs and classes targeted at specific behaviors, such as anger management, conflict resolution, or shoplifting. Mentoring services involve pairing youth with an adult role model improve prosocial development and also include life skills development and comprehensive youth programs. The evidenced-based programs include Brief Strategic Family Therapy (BSFT), Functional Family Therapy (FFT), Multi-Systemic Therapy (MST), and Multi-Systemic Therapy for Problem Sexual Behavior (MST-PSB). For GMH services, sex offender services, and substance abuse services, youth can receive out-of-home or residential treatment or outpatient care in the community. In addition, youth in the residential treatment setting can receive these services in the Level I Residential Unlocked unit, the Level I Residential Locked unit, the Level II Residential unit, and in Department of Economic Security (DES) licensed group homes. Outpatient services include individual counseling, family counseling, group counseling, home-based counseling, and multi-family group counseling, and therapeutic days. This dataset was also used to identify whether the youth received a psychological or psychosexual evaluation as requested by the court or probation officer. Treatment services that are not included in the current research include mandatory drug testing,

detention alternative programs, physical health services such as acute care or hospitalization, polygraph examinations, and assessments. These services were not included because they are not therapeutic in nature and generally not used to address emotional and behavioral service needs. Among the 4,244 youth on probation, 1,015 (23.9%) received the services of interest.

A problem faced by researchers using quantitative data in the social sciences is the issue of missing data. First of all, 46 youth were removed from the sample because the youth were only on probation for 10 days or less. For substantive reasons, MCJPD advised to exclude these youth because they did not have adequate time to receive treatment services. There were an additional 7 youth that were removed because they were transferred to another jurisdiction or there was no valid referral to link to the probation. That left 412 youth that had missing data on at least one variable, most commonly for school status and living situation. Bivariate statistics were estimated to identify whether certain youth characteristics were associated with missing data and to determine if the data were missing at random. There were covariates that were associated with missing data, including race/ethnicity, offense severity, prior referral, and psychological evaluation, demonstrating that data were not missing at random, but since the amount missing on each variable did not exceed 5% of the entire sample, and the total missing cases was less than 10% of the sample, listwise deletion was used to deal with the missing data problem in the current analysis (see Bennett, 2001; Schafer, 1999).

In order to obtain the data on youth in the juvenile justice system, an internal (MCJPD) and external (ASU IRB) review process was completed in the spring of 2014. When working with human subjects, especially youth, and the release of sensitive

information such as criminal record and psychological evaluations, there is concern for protecting human subject's privacy and autonomy. It is important to ensure that the research poses no risk of harm to the individuals through conducting the research. Since the current research is not directly working with youth and will be using secondary data collected by MCJPD, the study was eligible for expedited review through the IRB process at Arizona State University. The expedited IRB application was submitted to ASU and approval was obtained on March 24, 2014. Additionally, the request for data submitted to the legal division of the MCJPD was approved on June 10, 2014. The final Memorandum of Understanding, Record Access Agreement, was signed on November 5, 2014. An important condition to ensure the privacy of the youth is that the data obtained will be de-identified so that no identifying information is available in the data.

Dependent Variables

There are three primary dependent variables that will be examined in the current analysis: 1) whether the youth received treatment services, 2) the type of funding source for treatment services, and 3) recidivism while under probation supervision and post-release from probation supervision. First, to examine predictors of receiving treatment services, the dependent variable is a dichotomous outcome of whether the youth received court-ordered treatment services (coded as 1) or not (coded as 0). Much of the prior research examines referrals for treatment services, which can often act as a proxy for receiving services, but since this study can identify services that result in the use of treatment service, referrals for that were denied were coded as zero.

Second, to examine the next research question pertaining to the funding source for treatment sources, the source of funding is coded as a categorical variable. Given limited

resources, every youth is screened for behavioral health coverage through AHCCCS, the RBHA, and/or private insurance (Superior Court in Maricopa County, Juvenile Probation Department, 2012). If the youth does not receive benefits from the private or public insurance, the youth's treatment services will be funded by the court through the Juvenile Probation Services Fund (JPFS). Youth can also receive funding for services from the court in addition to funding from private insurance or AHCCCS, which would be considered multiple sources of funding. Only 7 youth in the sample received treatment services through private insurance, so this category was not large enough to analyze separately. Additionally, 16 youth received treatment services through tribal health coverage, 90 through RBHA, and 86 through AHCCCS. These funding sources were combined into one category of external funding source. Therefore the funding source dependent variable has three categories—court-based, external sources, and both court-based and external, with court-based funding serving as the reference category.

The final and primary dependent variable of interest includes two measures of recidivism. The first measure of recidivism was whether the youth received a new referral while he or she was under probation supervision. Additionally, to examine recidivism after the youth has completed probation supervision, whether the youth had a new referral within 6 months from release from probation was the second measure of recidivism. It is important to recognize that all of the youth were included to examine recidivism while on probation, but only a subsample of youth were included to examine recidivism at 6 months post probation. Specifically, in order to examine whether the youth had recidivated within 6 months of probation ending, only youth that completed probation January 31, 2014 or earlier (6 months prior to the end of the data collection) were

included in the analysis. For example, if the youth's probation ended in July 2014, they were not included in the analysis examining recidivism at 6 months. The recidivism variables were coded with 1 indicating a new referral and 0 indicating no new referral.

Independent Variables

There are a number of legal and extralegal factors that have been examined in relation to various outcomes in the juvenile justice system and recidivism outcomes for youth. The independent, as well as dependent variables, along with their descriptive statistics are presented Table 1 below. The independent variables that were used in all of the analyses include gender, race, ethnicity, age, living situation, school status, offense severity, pre-adjudication detention, prior referral, prior adjudications, whether the youth received a psychological evaluation, prior treatment service use, and risk assessment score. For the second research question examining type of funding source, the type of treatment service the court ordered was also included as an independent variable. Finally, in predicting probation and recidivism outcomes, drug tests and use were included to capture substance use. Three additional independent variables were included in the analysis examining recidivism of only those youth that received treatment services—1)the funding source of treatment services; 2) the type of treatment service, and 3) the duration of treatment services were also included as independent variables.

Pertaining to measurement, it is important to acknowledge that since these youth have been adjudicated and received a disposition, many have prior referrals with the juvenile justice system. The juvenile justice system makes an effort to divert youth from formal processing, especially first-time offenders; therefore, youth who are processed formally and are adjudicated likely have prior involvement in the juvenile justice system.

As such, when considering characteristics of the youth and the referral, the current study focuses on those the referral that placed the youth on the current probation and treatment services, but characteristics of prior behavior are captured.

Table 1. Descriptive Statistics of Dependent and Independent Variables

	Full Sample (N=3,779)		Treatment Service Sample (N=944)	
	%	**S.D.**	**%**	**S.D.**
Outcome Variables				
Receiving Treatment Services	25.0	0.43	100.0	0.0
Funding Source				
Court-based	--	--	65.9	0.47
External	--	--	25.3	0.44
Court-based and external	--	--	8.8	0.28
Recidivism				
Referral while on probation supervision	26.2	0.44	23.2	0.42
Referral at 6 months after probation [a]	13.6	0.34	--	--
Independent Variables				
Gender				
Female (reference)	18.8	0.39	18.0	0.38
Male	81.2	0.39	82.0	0.38
Race/Ethnicity				
White (reference)	37.4	0.48	40.1	0.49
African American	15.3	0.36	16.2	0.37
Latino	41.4	0.49	37.5	0.48
Native American	4.3	0.20	4.9	0.22
Other	1.6	0.13	1.3	0.11
Age (Mean)	16.1	1.33	15.6	1.29
Living situation				
Single parent (reference)	60.8	0.49	53.2	0.50
Two parents	19.6	0.40	15.7	0.36
Grandparents or other relatives	8.3	0.28	10.2	0.30
DCS and other	11.3	0.32	21.0	0.41
School status				
Enrolled (reference)	75.1	0.43	77.3	0.42
Not Enrolled	24.9	0.43	22.7	0.42

Table 1 Continued. Descriptive Statistics of Dependent and Independent Variables

	Full Sample (N=3,779)		Treatment Service Sample (N=944)	
	%	S.D.	%	S.D.
Offense severity				
Property felony (reference)	25.1	0.43	22.1	0.42
Personal felony	19.1	0.38	30.7	0.46
Property misdemeanor	12.6	0.33	9.0	0.29
Personal misdemeanor	8.0	0.27	22.1	0.28
Drugs	18.8	0.39	16.0	0.37
Offense severity				
Public peace	14.8	0.36	12.5	0.33
Other	1.6	0.13	11.6	0.11
Pre-adjudication detention	40.5	0.49	45.1	0.50
Prior referral	67.1	0.47	65.9	47.4
Prior adjudication	12.9	0.34	9.0	28.6
Drug use				
Not drug tested (reference)	33.3	0.47	30.1	0.46
Negative drug test	38.6	0.49	32.7	0.47
Positive drug test	28.2	0.45	36.3	0.48
Psychological evaluation	37.5	0.48	69.7	0.46
Prior treatment service	18.3	0.39	21.0	0.41
Risk Level				
Low (reference)	20.4	0.40	17.6	0.38
Moderate	24.6	0.43	22.3	0.42
High	55.0	0.50	60.1	0.49

[a] N=781; Youth aged 17 at start of probation excluded from analysis

In regard to the demographic variables, *gender* is dichotomous, males are coded as 1 and females as 0, and *race and ethnicity* are measured by several dummy variables: African American, Latino, and other race/ethnicity, with White as the reference category. *Age* is measured as the age of the youth at the time of the referral that received a disposition of treatment services and is measured continuously. The *living situation* of the youth captures who the youth lived with when they were placed on probation. The

categories include single parent, two parents, grandparents or other relative, and Department of Child Safety or other, with single parent serving as the reference category. *School status* is measured on the basis of whether or not the youth was enrolled in school during the time of the current referral. *Offense severity* captures the most severe offense associated with the referral. Consistent with sentencing research on juveniles, if the youth was charged with multiple offenses, the most serious offense was measured. There are seven categories of offense severity—property felony, personal felony, property misdemeanor, personal misdemeanor, drugs, public peace, and other offenses that include obstructions of justice and status offenses. Property felony serves as the reference category because it had the highest frequency. *Pre-adjudication detention* captures whether the youth was detained prior to adjudication for the current offense and probation. *Prior referrals* and *prior adjudications* are measured dichotomously, with "yes/no" outcomes. *Prior service use* is a binary variable, measuring whether the youth has received treatment services through the court either from diversion or prior probations.

Every youth who reaches adjudication and disposition is considered for a psychological evaluation, but these are predominately used only when there is a history of mental problems and service need, and the court would benefit from clinical assistance. Therefore, having a psychological assessment is one of the better proxies for service need in the current study. *Drug use* is measured by two dichotomous variables, 1) if the youth had any positive drug test, or 2) if the youth only had negative drug test results, with having not been drug tested while on probation as the reference category. *Private insurance* is a binary variable measuring whether the youth has private insurance

(yes/no). In addition to the psychological evaluation, every youth completes the Arizona Risk/Needs Assessment (ARNA) and receives a *risk level*—low, moderate, or high. ARNA is an empirically validated instrument predominately used to predict risk of future offending, but it also helps in identifying needs of youth (see Krysik and LeCroy, 2002; Schwalbe, 2009). It consists of a number of dimensions such as conflict with family, assaultive behavior, extensive absenteeism or truancy at school, peer delinquency, and emotional/behavioral problems.

There are also a number of variables related specifically to receiving treatment services as ordered by the court disposition. These include measures of the type of service, the duration or length of time receiving any treatment services, and the source of funding for treatment services. As previously discussed, the *types of treatment services* the youth can receive that are included in the current study are: general mental health—residential and outpatient, sex offender—residential and outpatient, and substance abuse—residential or outpatient, as well as mentoring and life skills, behavior specific education, evidence-based programs, and drug court services. Behavior specific education, evidence-based programs and drug court services were combined into one category because of their low frequency (see Table 2) and they are all funded and administered through MCJPD. Additionally, 247 youth received multiple services so these are divided into youth who received two services, and youth who received three or more services. The reference category for type of service is youth who exclusively received general mental health outpatient services. The *duration of services* is the number of days the youth received any service, measured from the SAF effective date to the SAF termination date. And finally, the *funding source* for treatment services includes court-

based, external, and both court-based and external, with court-based funding as the reference category.

Analytic Strategy

The analysis will proceed through multiple stages to examine each research questions proposed, but the statistical techniques will be similar across questions, typically starting with estimating bivariate statistics to identify differences across specific groups of interest, followed by estimating multivariate regression models to identify variables significantly related to the outcome of interest while controlling for other covariates. Prior toanalysis, various collinearity diagnostics were conducted to identify the presence of multicollinearity that could produce inaccurate estimates when multivariate models are estimated. First, bivariate correlations were estimated, and none of the correlations exceeded 0.5, which is below the 0.7 threshold traditionally used to identify collinearity (Licht, 1995). Further the variation inflation factors (VIF) of the variables included in the models were below 4 and the condition indexes were generally within acceptable limits (<15) (Tabachnick & Fridell, 2001). There was one variable, age, that increased the condition index above this 15 threshold; therefore the variance proportions were examined. Collinearity can be identified when a variance proportion is 0.50 or higher for two or more variables that also correspond to a large condition index (Hair, Anderson, Tatham & Black, 1998). There were no two variables associated with the condition index over 15 that explained more than 0.50 of the proportion of variance; therefore including all the variables in the analysis did not result in biased estimates or inefficient standard errors due to collinearity (Hair, Anderson, Tatham & Black, 1998).

The first stage of the analysis consists of univariate analysis of the sample of youth on probation and the sample of youth receiving treatment services. This is followed by bivariate statistics that examine the relationship between individual and offense characteristics and the outcome variable of interest. The bivariate statistics are presented in the order of the research questions and chi-square tests and independent sample t-tests were used to identify significant relationships between variables. Prior research has found a number of variables associated with referral to the juvenile justice system, such as race/ethnicity, gender, living situation, school status, and prior services influence whether youth end up in the mental health system versus the juvenile justice system (Cohen et al., 1990; Evens & Stoep, 1997; Lyons et al., 2001; Stoep et al., 1997; Thomas & Stubbe, 1996). Therefore, these variables were included as key independent variables for predicting whether the youth received treatment services and as control variables to isolate the effect of treatment services on recidivism.

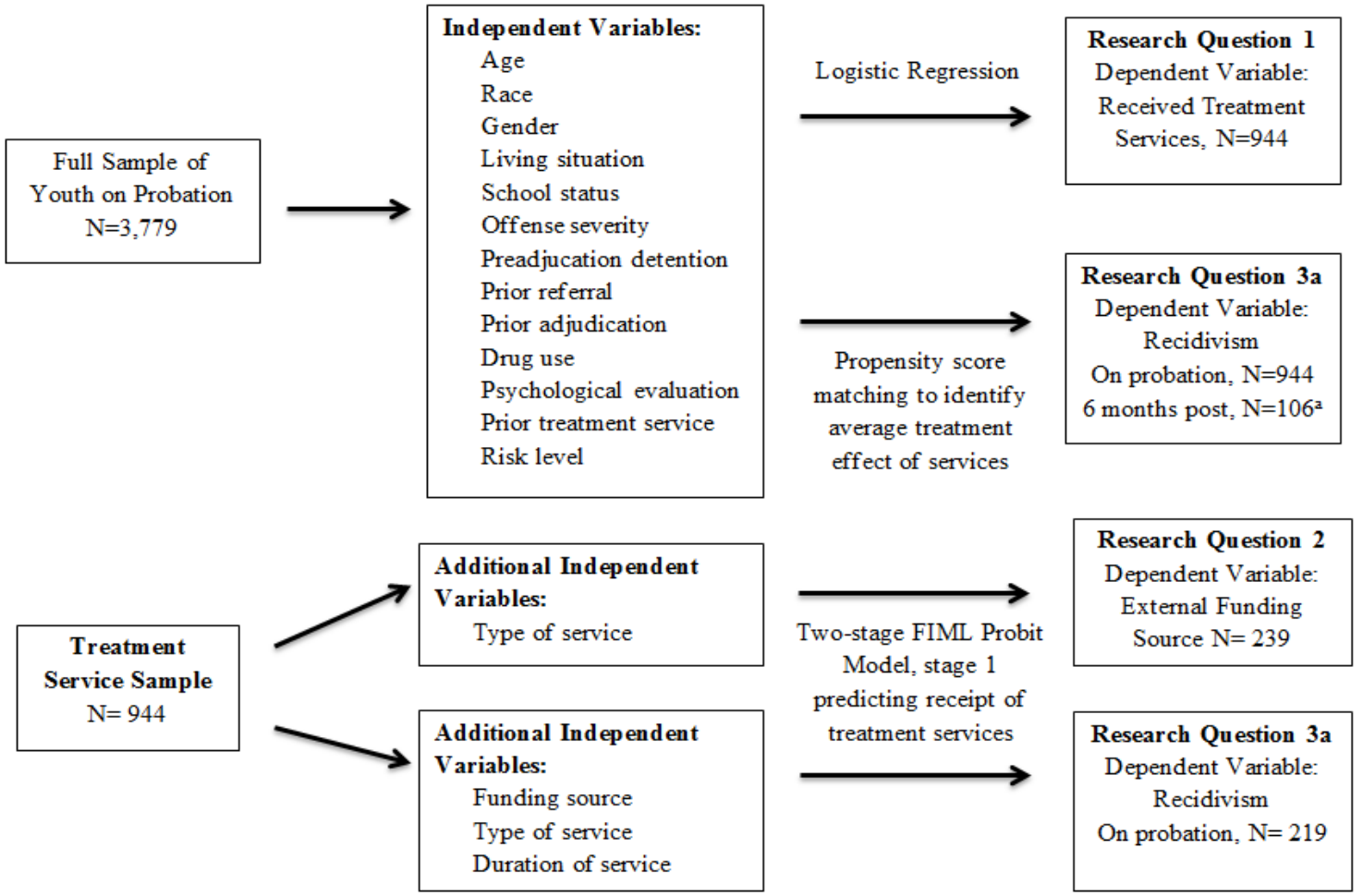
The second stage of the analysis involves multivariate regression models and propensity score matching to isolate variables that significantly predict the outcome of interest. See Figure 1 for a visual display for the analysis plan. To examine the first research question regarding whether the youth received treatment services, a logistic regression model was estimated. All the subsequent models must take into account the selection process that occurs when youth receive treatment services. More specifically, receiving treatment services is not a random process and factors that influence whether a youth receives treatment services might also influence the type of funding source for treatment services and recidivism outcomes, which constitutes selection bias. When there is selection bias, the standards errors of the selection model (receiving treatment services)

can be correlated with the standard errors of the primary dependent variable (funding source and recidivism) effecting the statistical significance of independent variables on the outcome.

The two statistical techniques were used in the current dissertation—a two-stage full information maximum likelihood (FIML) probit model that models the selection into treatment services and then the dependent variable (Berk, 1983), and propensity score matching to isolate the effect of receiving treatment services on recidivism. First, the two-stage FIML probit models were used when the sample of youth receiving services was the primary sample of interest as specified in research question #2 that examines the funding source as a dependent variable, and research question #3b that examines the effect of treatment characteristics on recidivism. Using the same explanatory variables, receiving treatment services was the selection model (stage 1) for both of these analyses followed by the binary outcome external funding source versus court-based funding or new referral while on probation (stage 2). Bivariate correlations were estimated to identify exclusion restrictions[2], and while a couple of variables including being Hispanic and having a drug offense were significantly related to receiving treatment services, but not the outcome variables, there was no theoretical foundation for using these variables as exclusion variables. The analyses were conducted with these two variables only included in the selection model, but they did not differ substantively from the results with no exclusion restrictions.

[2] Exclusion restrictions are used in the stage-one model to help reduced correlation between stage-one and stage-two error terms. An exclusion restriction is a variable that is statistically related to the selection variable, but not the outcome variable (Bushway et al., 2007; also see Turanovic & Pratt, 2013).

Figure 1. Analytic Strategy



Note: [a] Youth still on probation, released from probation less than 6 months, and age 17 at start of probation excluded from analysis (N=781)

The second statistical technique that was used to examine the effect of receiving treatment services on both recidivism outcomes was propensity score matching. The two-stage full information maximum likelihood (FIML) probit model could not be used to assess the effect of receiving treatment on recidivism because treatment was the selection variable and therefore would drop out of the stage-2 probit model predicting recidivism. The effect of other characteristics of youth and prior behavior on recidivism could be assessed, but given the primary interest on the effect of treatment services this approach would not be informative. Propensity score matching is commonly used in quasi-experimental designs to estimate treatment effects with a lack of randomization in assigning individuals to the treatment (D'Agostino, 1998; Rosenbaum & Rubin, 1983) and has been used to answer a number of criminal justice related questions (Apel & Sweeten, 2010; Baglivio, Jackowski, Greenwald, & Wolff, 2014; Jordon, 2012). The propensity scores were calculated by modeling using a logistic model predicting the probability of receiving treatment services using all the covariates discussed. Using these predicted values, a sample of youth who received services and youth who did not are matched based on the individual and behavior characteristics. This created two groups that are statistically identical, with the exception of receiving treatment services, so that the only difference in recidivism outcomes is due to receiving treatment services. Nearest-neighbor (NN) matching with replacement and 0.01 caliper was the matching algorithm used to match the youth. This technique is considered the most robust matching technique and involves a process where youth were matched based on the closest propensity score. Replacement matching allows an untreated youth to be used more than once which improves the quality of the matching. Since replacement allows youth to be

used more than once, fewer cases are lost and bias is reduced, but this is at the cost of reduction in variance (Smith & Todd, 2005). To account for this, a strict caliper level (0.01) which imposes a tolerance level on the maximum propensity score distance and therefore untreated youth are only used if the youth lies within that caliper.[3] Once the matching procedure was complete, the average treatment effects for the treated (ATT), for the untreated (ATU) and for the weighted sample (ATE) were estimated to identify the effect of receiving treatment services on recidivism while under probation supervision and 6 months post-release from probation supervision.

Challenges in Data Collection

Through the implementation of this research there were challenges along way. The first obstacle was receiving IRB approval and internal legal approval. Maricopa County Juvenile Probation Department has been receiving an increase in data requests due to their electronic data collection on youths. This has resulted in the legal department being more restrictive in the amount and type of data released, particularly for highly sensitive information such as psychological evaluations. Through the support of the Treatment Services Division and their investment in the research, I was able to receive approval for this research. The next step was acquiring the data which included multiple datasets from different divisions. The unit of analysis differed across the datasets so a substantial amount of time was spent restructuring the data and merging datasets to provide all the variables of interest. The data collected by MCJPD on youth was designed for court purposes, rather than for research purposes; therefore the data required recoding

[3] Matching for all models was performed using PSMATCH2 in Stata 11. Both replacement and nonreplacement matching was conducted. The nonreplacement matching resulted in roughly 100 lost cases, but there were little differences in the results. Furthermore, kernel matching was also used as a robustness check and there were no substantive changes to the results.

variables and working with MCJPD to ensure the recoded variables accurately measured the correct information. There were multiple iterations of obtaining and cleaning data, due to juvenile probation having to request specific variables from their case management system in a format that can be used for analysis. Despite these obstacles, the data were obtained and cleaned in a proficient manner in order to address the questions proposed in the dissertation of which the results are presented in the next chapter.

CHAPTER 4

RESULTS

The results chapter will consist of two sections to address the research questions being examined in the current dissertation. In the first section, univariate and bivariate descriptive statistics, using primarily percentages and chi-square tests, will be presented. First, univariate statistics for the full sample of youth on probation and the sample of youth receiving treatment services will be reported to provide general characteristics of the sample of youth being examined. This is followed by bivariate statistics that examine the relationship between the independent variables and the various dependent variables to identify statistical differences between groups, such as youth who received treatment and youth who did not.

In the second section of the results chapter, a series of multivariate models will be presented and discussed in the order of the research questions being analyzed. Recognizing that youth who receive treatment services are a unique group of youth, different from the entire sample of youth on probation, these models take into account the selection process of youth into treatment services by using two-stage probit models and propensity score matching. This helps to draw stronger, more valid conclusions about the effectiveness of treatment services in reducing recidivism.

Descriptive Statistics

Full Sample

The descriptive statistics of the full sample of the youth on probation and the sample of youth receiving treatment services are displayed in Table 1. The main outcome variables of interest are presented first, followed by the independent variables. For the

first dependent variable, whether the youth received treatment services, the number of youth receiving treatment services from the full sample of youth is 944 or 25%. The two recidivism measures for the full sample, referral while under probation supervision and referral 6 months post probation supervision, show that 26.6% of youth had a referral while under probation supervision, and 13.6% had a referral within 6 months after being released from probation.

In regard to the demographic characteristics of the youth, 18.8% of the youth on probation were female, 81.2% male, and the mean age was 16.1 years. Latinos was the largest racial/ethnic group with 41.4%, followed by White with 37.4%, African American with 15.3%, Native American with 4.3%, and 1.6% were other races or ethnicities. A majority of youth (60.8%) was living with a single parent and 19.6% were living with two parents at the start of probation. Roughly 8% of the youth were living with grandparents or other relatives and 11.3% were living in other arrangements, primarily DCS care. Lastly, 24.9% of the youth were not enrolled in school at the time of the referral.

There are also a number of variables that capture the youth's offense characteristics, prior behavior, and involvement in the juvenile justice system. In regard to offense severity, nearly half of the youth committed a felony that placed them on probation, 25.1% being a property felony and 19.1% being a personal felony. For misdemeanors, 12.6% committed a property misdemeanor and 8.0% committed a personal misdemeanor. Lastly, 1.8% committed a drug offense, 14.8% committed a public peace offense, and 1.6% committed a different offense, such as obstruction of justice status offense. In addition, 40.1 % of the youth were held in pre-adjudication for

the current offense. Regarding prior behavior, 67.1% of the youth had a prior referral, and 67.1% had a prior adjudication. Over 28% of the youth were tested positive for drugs while on probation, 38.6% had negative drug tests, and 33.3% were not tested for drugs while on probation. Nearly 38% of the youth received a psychological evaluation and 18.3% received treatment services prior to the current probation. Finally, the risk levels of the youth from the AZ Risk Assessment tool show that 20.4% of the youth were low risk, 24.6% were moderate risk, and 55.0% were high risk.

Treatment Service Sample

The sample of youth who received treatment services included 944 youth. Across most of the independent variables, the characteristics of youth receiving treatment services are similar to the full sample of youth, but there are some differences. One of the dependent variables that will be examined among this sample of youth is the source of funding for treatment services. A majority of the youth, 65.9%, received treatment services through court-based funding, 25.3% received treatment services through external funding, and 8.8% had funding from both court-based and external sources. And with regard to recidivism, 23.3% of the youth had a new referral while under probation supervision. The distribution of gender is similar to the full sample, with 18% of the treatment service sample of youth being female and 82% being male. Regarding race/ethnicity, 40% of the sample is White, 37.5% are Latino, 16.2% are Black, 4.9% Native American, and 1.3% are another race/ethnicity. Just over half of the samples (53.2%) of youth receiving treatment services were living with a single parent, 15.7% were living with two-parents, 10.2% were living with grandparents or other relatives, and

over 20% were living in other arrangements. For school status, 22.7% are not enrolled in school.

In regard to the current offense and prior behavior and involvement in the juvenile justice system, over 30% of the youth receiving treatment services were committed for a personal felony, 10% higher than the full sample of youth. It is important to note that many of the sex offenders are captured by offense severity, making up 58% of these personal felonies. Roughly 45% of the youth receiving treatment services were detained before adjudication, 65.9% had a prior referral, and 9% had a prior adjudication. More of the youth in the treatment service sample had a positive drug test at 36.3%, and nearly 70% of the youth had a psychological evaluation. Twenty-one percent of the youth received treatment services prior to the current probation, and finally, 17.6% of the youth are low risk level, 22.3% are moderate risk level, and 60.1% are high risk level.

In Table 2 presents the frequency of youth participating in each type of treatment service and the duration of treatment services received by youth. The frequency and percentage of youth receiving the types of treatment services is reported in two ways—1) the number of youth that participated in each service, so youth in multiple services are represented in more than one type of treatment service, and 2) the number of youth that received each type of treatment service exclusively, so there is no overlap in categories. It was necessary to measure treatment services in this way to be able to include mutually exclusive categories in multivariate regression models.

Table 2. Youth Receiving Treatment Services (N=944)

	All Youth Receiving Service		Youth Receiving Service Exclusively		Duration of Treatment Service[a] (days)			
	n	%	n	%	Mean	SD	Median	Range
Type of Treatment service								
General Mental Health outpatient	282	29.9	173	18.3	133.7	99.07	92.0	1 – 591
General Mental Health residential	188	19.9	103	10.9	156.1	108.8	130.5	1 – 668
Sex Offender outpatient	140	14.8	101	10.7	244.5	167.0	202.0	10 – 804
Sex Offender residential	97	10.3	55	5.8	253.2	167.6	206.0	4 – 718
Substance Abuse outpatient	196	20.8	95	10.1	134.8	93.1	90.0	4 – 633
Substance Abuse residential	44	4.7	23	2.4	102.8	58.5	91.5	11 – 278
Mentoring and life skills	179	19.0	95	10.1	102.6	55.1	90.0	3 – 391
Behavior Specific Education	6	0.6	4	0.4	103.3	72.8	90.0	18 – 238
Evidence Based Programs	62	6.6	31	3.3	141.9	80.4	131.0	4 – 430
Drug Court	70	7.4	16	1.7	144.7	88.8	143.0	3 – 373
Two Services	--	--	188	20.0	--	--	--	--
Three or more services	--	--	59	6.3	--	--	--	--
Total	--	--	944	100.0	186.4	141.1	147.0	1 – 850

Note: [a] Type of treatment services are not mutually exclusive
Mode duration is 90 days for all types of services

General mental health outpatient services were the most common service received by youth, with a total of 282 (29.9%) of youth who received the service and 173 (18.3%) received only general mental health services. Roughly 20% of the youth also received general mental health residential treatment, and 10.9% received only that service. The other most common services received among youth on probation was substance abuse outpatient services with 196 youth (20.8%) receiving the service and mentoring/life skills programs with 179 youth (19%) receiving such services. In regard to sex offender services, 97 (10.3%) received residential sex offender services, and 140 (14.8%) received outpatient sex offender services. Fewer youth received substance abuse residential services (4.7%), behavior specific education (0.6%), evidence-based programs (6.6%), and drug court services (7.4%), and even fewer received these services exclusively. Twenty percent of the youth received two services and 6.3% received three or more services. The most common "service packages" youth received were transitioned between residential and outpatient treatment for both general mental health and sex offenders. General mental health services were also often combined with substance abuse services and mentoring or life skills programs (see Appendix A for additional information on multiple-services).

In regard to duration of treatment services, youth who received sex offender treatment services, both residential and outpatient, spent the longest period of time in those services, at roughly 250 days on average. The mean number of days receiving general mental health outpatient was 134 days and 156 days for general mental health residential services. Youths spent an average of 135 days in substance abuse outpatient services and 103 days in substance abuse residential services. For mentoring, life skills,

and behavior specific education, the mean number of days youth spent in services was roughly 100 days, and youth spent just over 140 days in evidence-based programs and 145 days in drug court services. Finally, the mean number of days youth spent in treatment services was 186.4 days with a standard deviation of 141.1 days. The range of days spent receiving each service and median duration are also presented, but not discussed (refer to table 2).

Youth Receiving Treatment Services

The bivariate statistics describing the relationship between the independent variables and whether the youth received treatment services are presented in Table 3. As indicated by table 3, there was not a significant relationship between gender and receiving treatment services, but there was a significant difference for race/ethnicity—26.8% of White received treatment services, 26.4% of African Americans, and 28.6% of Native Americans, but only 22.6% of Latinos received services. The mean age of the youth also differed significantly across treatment services and no treatment services, with youth who received treatment services being significantly younger (15.6 years) than youth who did not receive treatment services (16.2 years). Youth living in other arrangements, such as DCS and state care, had the highest rate of youth receiving services with 46.5%. In regard to youth who live with a single parent, 21.8% received treatment services, 20.0% of youth who were living with two parents received treatment services, and 30.7% of youth who were living with grandparents or other relatives received treatment services. The school status of the youth was not significantly different between the two groups, 25.7% were enrolled compared to 22.8% not enrolled.

Table 3. Bivariate Statistics- Youth Receiving Treatment Services (N= 3,779)

	Treatment Services	No Treatment Services
	%	%
Variables		
Gender		
Female (reference)	23.9	76.1
Male	25.2	76.0
Race/Ethnicity*		
White (reference)	26.8	73.2
African American	26.4	73.6
Latino	22.6	77.4
Native American	28.6	71.4
Other	20.0	80.0
Age (Mean, SD)***	15.6, 0.04	16.2, 0.02
Living situation***		
Single parent (reference)	21.8	78.2
Two parents	20.0	80.0
Grandparent or other family	30.7	69.3
Other-DCS	46.5	53.5
School status†		
Enrolled	25.7	74.3
Not enrolled	22.8	77.2
Offense severity***		
Property felony (reference)	22.1	77.9
Personal felony	40.3	59.7
Property misdemeanor	17.8	82.8
Personal misdemeanor	26.3	73.7
Drugs	21.3	78.7
Public peace	21.1	78.9
Other	18.0	82.0
Pre-adjudication detention***		
Yes	27.8	72.2
No	23.0	77.0
Prior referral		
Yes	24.5	75.5
No	25.9	74.1
Prior adjudication***		
Yes	17.5	82.5
No	26.1	73.9

Table 3 Continued. Bivariate Statistics- Youth Receiving Treatment Services

	Treatment Services	No Treatment Services
	%	%
Psychological evaluation***		
Yes	46.5	53.5
No	12.1	87.9
Prior treatment service**		
Yes	28.5	71.5
No	24.2	75.8
Risk level***		
Low (reference)	21.6	78.4
Moderate	22.7	77.3
High	27.3	72.7
N=	*944*	*2,835*

***p ≤ .001, **p≤ .01, *p≤ .05 †p≤ 0.1; Continuous measures were examined using a t-test and categorical variables were examined using a chi-square test.

There were also differences in offense characteristics, prior behavior, psychological evaluation, prior treatment services, and risk level between youth who received treatment services and youth who did not. Over 40% of youth who committed a personal felony received treatment services and 26.3% of youth who committed misdemeanor received treatment services. For property crimes, 22.1% of youth who committed a property felony received treatment services and 17.8% of youth who committed a property misdemeanor received treatment services. Youth who were detained pre-adjudication were more likely to receive services, with 27.8% of detained youth receiving treatment services compared to 23.0% who were not detained that received services. Prior referral was not significantly different between the two groups, but youth with a prior adjudication were less likely to receive treatment services. Over 25% of youth without a prior adjudication received treatment service, compared to 17.5% of youth with a prior adjudication who received treatment services.

With respect to psychological evaluations, almost half of youth (46.5%) who had a psychological evaluation received treatment services, whereas 12.1% of youth who did not have a psychological evaluation received treatment services—a statistically significant difference. Of those youth who received prior treatment services, 28.5% received treatment services for the current probation, and 24.2% of youth who did not have prior treatment services received current treatment services. Lastly, 21.6% of low-risk youth received treatment services, 22.7% moderate-risk youth received treatment services, and 27.3% of high-risk youth received treatment services, also a statistically significant difference. These results suggest that at the bivariate level, there are a number youth characteristics that have a statistically significant relationship with whether they received treatment services or not. Furthermore, as will be seen in subsequent tables, many of these factors also influenced recidivism outcomes.

Sources of Funding for Treatment Services

The next dependent variable that was examined at the bivariate level was the source of funding for treatment services, which is reported in Table 4. Regarding statistically significant differences across the three funding sources—court-based, external, and both—gender, race/ethnicity, who the youth was living with, offense severity, pre-adjudication detention, psychological evaluation, risk level and the type of treatment service had a statistically significant relationship with the source of funding for the treatment services. In regard to gender, 67.6% of males received treatment services through court-based funding compared to 58.2% of females. Females had a greater representation in external funding and both funding sources.

The most notable differences for who the youth was living with is that 83.8% of youth who lived with two parents received treatment services via funding from the court, whereas only 28.3% of youth living in other arrangements like DCS received treatment services via court-based funding. Instead, 57.1% of these youth received treatment services that were funded by external sources.

Table 4. Bivariate Statistics- Source of Funding for Treatment Services (N=944)

	Court-Based	External	Both
	%	%	%
Variables			
Gender*			
Female	58.2	29.4	12.4
Male	67.6	24.4	8.0
Race/Ethnicity ***			
White (reference)	68.9	21.4	9.8
African American	63.4	28.8	7.8
Latino	69.5	22.9	7.6
Native American	26.1	60.9	13.0
Other	50.0	41.7	8.3
Age (Mean, SD)	15.7	15.3	15.4
Living with***			
Two parents (reference)	83.8	9.5	6.8
Single parent	74.5	17.7	7.8
Grandparent or other family	70.8	24.0	5.2
Other-DCS	28.3	57.1	14.7
School status†			
Enrolled (reference)	64.4	25.8	9.9
Not enrolled	71.0	28.3	5.1
Offense severity***			
Property felony(reference)	69.9	25.8	4.3
Personal felony	63.1	25.9	11.0
Property misdemeanor	54.1	38.8	7.1
Personal misdemeanor	55.0	38.8	6.2
Drugs	70.9	19.9	9.3
Public peace	74.6	11.9	13.6
Other	72.7	18.2	9.1

Table 4 Continued. Bivariate Statistics- Source of Funding for Treatment Services

	Court-Based	External	Both
	%	%	%
Pre-adjudication detention***			
Yes	60.3	29.6	10.1
No	70.5	21.8	7.7
Prior referral			
Yes	63.5	27.0	9.5
No	70.5	22.1	4.5
Prior adjudication			
Yes	64.7	25.9	9.4
No	66.0	25.3	8.7
Psychological evaluation***			
Yes	61.1	27.5	11.4
No	76.9	20.3	2.8
Prior treatment service			
Yes	61.4	30.0	9.6
No	67.1	24.1	8.8
Risk level***			
Low (reference)	79.5	12.7	7.8
Moderate	62.1	28.9	9.0
High	63.3	27.7	9.0
Exclusive type of treatment service***			
General Mental Health outpatient (reference)	64.7	34.7	0.6
General Mental Health residential	18.5	75.7	5.8
Sex Offender outpatient	81.2	13.9	5.0
Sex Offender residential	41.8	50.9	7.3
Substance Abuse outpatient	85.3	14.7	0.0
Substance Abuse residential	8.7	87.0	3.5
Mentoring and life skills	100.0	0.0	0.0
Other service	92.2	5.9	2.0
Two Services	66.0	10.1	23.9
Three or more services	62.7	5.1	32.2
N=	*622*	*239*	*83*

Note: ***p ≤ .001, **p≤. 01, *p≤.05 † p≤ 0.1
Continuous measures were examined using a t-test and categorical variables were examined using a chi-square test.

Regarding pre-adjudication detention, 60.3% of youth who were detained received treatment services through court-based funding and 29.6% received treatment services through external funding sources. Roughly 70% of youth who were not detained received treatment services that were funded by the court and 21.8% received services funded by external sources. Youth who had a psychological evaluation were more likely to receive treatment services via external funding, whereas youth who did not have a psychological evaluation were more likely to have their treatment services funded by the court. In regard to risk-level, almost 80% of low-risk youth received treatment services via court-based funding, compared to 62.1% and 63.3% of moderate-risk and high-risk youth, respectively.

Finally, there were differences across the type of treatment service the youth received and the funding source for those treatment services. Based on the frequencies of youth receiving different types of treatment services via court-based funding or external funding, outpatient treatment services were more likely to be funded by the court. On the other hand, residential services (general mental health, sex offender, and substance abuse) were more likely to be funded by external sources. Finally, roughly 30% of youth who receive two services, or three or more services had their services funded by both the court and external sources. These findings indicate that both characteristics of the youth and the type of treatment service required by the court are related to the source of funding used to pay for treatment services.

Recidivism Outcomes

In Tables 5 and 6 the results from the bivariate statistics for the two recidivism outcomes—recidivism while under probation supervision and recidivism at 6 months post

release from probation supervision—are presented. Receiving treatment services had a significant relationship with whether the youth recidivated while on probation, but the relationship was not statistically significant for recidivism at 6 months. Specifically, 23.2% of youth who received treatment services recidivated while on probation, compared to 27.2% of youth who did not receive treatment services.

Gender also had a significant relationship with recidivism while on probation; with 19.5% of females having a new referral and 27.7% of males had a new referral. There was no gender difference in recidivism at 6 months post probation.

Consistent with prior literature, African Americans (30.2%), Latinos (27.95), and Native Americans (25.5%) had the highest rate of recidivism while on probation, but this does not hold for recidivism at 6 months post probation supervision. Only 9.7% of African Americans recidivated within 6 months of completing probation supervision, which was the lowest rate among racial and ethnic groups. Youth who lived with a single parent had the highest rate of recidivism while on probation, at nearly 30%, compared to 22.8% of youth who lived with two parents, 24.9% who lived with grandparents or other family, and 21.8% who lived in other arrangements.

In regard to offense severity, youth who committed a personal felony had the lowest percent of youth with a new referral while on probation. Consistent with prior research, 28% of youth who were detained recidivated while on probation, compared to 24.9% of youth who were not detained. Youth who had a prior adjudication, tested positive for drugs, had a psychological evaluation, received prior treatment services, and were high-risk were more likely to have a new referral while on probation.

Table 5. Bivariate Statistics- Recidivism Under Probation Supervision (N=3,779)

	Referral	No Referral
	%	%
Variables		
Receiving treatment services*		
Yes	23.2	76.8
No	27.2	72.8
Gender***		
Female (reference)	19.5	80.5
Male	27.7	72.3
Race/Ethnicity **		
White (reference)	22.8	77.2
African American	30.2	69.8
Latino	27.9	72.1
Native American	25.5	74.5
Other	25.0	75.0
Age (Mean, SD)**	15.5, 0.04	15.6, 0.03
Living situation**		
Single parent (reference)	28.2	71.8
Two parents	22.8	77.2
Grandparent or other family	24.9	75.1
Other-CPS	21.8	78.2
School status***		
Enrolled (reference)	23.2	76.8
Not enrolled	35.1	64.9
Offense severity***		
Property felony (reference)	28.9	71.1
Personal felony	19.3	80.7
Property misdemeanor	27.9	72.1
Personal misdemeanor	22.4	77.6
Drugs	26.3	73.7
Public peace	30.1	69.9
Other	32.8	67.2
Pre-adjudication detention*		
Yes	28.0	72.0
No	24.9	75.1
Prior referral		
Yes	31.4	68.6
No	15.5	84.5

Table 5 Continued. Bivariate Statistics- Recidivism Under Probation Supervision

	Referral	No Referral
	%	%
Prior adjudication***		
Yes	32.1	67.9
No	25.3	74.7
Drug use***		
Not drug tested (reference)	9.5	90.5
Negative drug test	29.2	70.8
Positive drug test	41.7	58.3
Psychological evaluation***		
Yes	36.5	63.5
No	20.0	80.0
Prior treatment service***		
Yes	33.4	66.6
No	24.6	75.4
Risk level***		
Low (reference)	10.4	89.6
Moderate	19.3	80.7
High	35.1	64.9
N=	*989*	*2,790*

***p ≤ .001, **p≤. 01, *p≤.05, †p≤ 0.1; Continuous measures were examined using a t-test and categorical variables were examined using a chi-square test.

For second measure of recidivism, youth who had a prior referral were more likely to have a new referral within 6 months of release from probation. Nearly 20% of youth who received a psychological evaluation got a new referral within 6 months of probation ending, whereas 11.4% who did not have a psychological evaluation got a new referral within 6 months. Age, living arrangement of the youth, school status, offense severity, pre-adjudication detention, prior adjudication, drug tests and use, prior treatment service, and risk-level were not significantly related to recidivism at 6 months post probation as was found for recidivism while on probation.

Table 6. Bivariate Statistics- Recidivism at 6 Months Post Release from Probation Supervision (N=781)[a]

	Referral	No Referral
	%	%
Variables		
Receiving Treatment Services		
Yes	10.9	89.1
No	14.2	85.8
Gender		
Female (reference)	13.6	86.4
Male	13.6	86.4
Race/Ethnicity*		
White (reference)	11.8	88.2
African American	9.7	90.3
Latino	15.1	84.9
Native American	30.0	70.0
Other	11.1	88.9
Age (Mean, SD)	15.5, 0.11	15.6, 0.05
Living situation		
Single Parent (reference)	12.9	87.1
Two parents	12.7	87.3
Grandparent or other family	15.0	85.0
Other-CPS	18.3	18.7
School status		
Enrolled (reference)	12.1	87.9
Not Enrolled	19.9	80.1
Offense severity		
Property Felony (reference)	13.7	86.3
Personal Felony	7.3	92.7
Property Misdemeanor	19.1	80.1
Personal Misdemeanor	17.1	82.9
Drugs	14.9	85.1
Public Peace	13.2	86.8
Other	10.0	90.0
Pre-adjudication detention		
Yes	11.3	88.7
No	15.1	84.9
Prior Referral*		
Yes	15.7	84.3
No	10.5	89.5

Table 6 Continued. Bivariate Statistics- Referral at 6 Months Post Release from Probation Supervision

	Referral	No Referral
	%	%
Prior Adjudication		
Yes	18.3	81.7
No	13.0	87.0
Drug use		
Not drug tested (reference)	12.8	87.2
Negative drug test	12.7	87.3
Positive drug test	16.7	83.3
Psychological Evaluation**		
Yes	18.8	81.2
No	11.4	88.6
Prior Treatment Service		
Yes	16.8	83.2
No	13.0	87.0
Risk Level		
Low (reference)	9.9	90.1
Moderate	13.9	86.1
High	15.7	84.3
N=	*106*	*675*

Note: ***p ≤ .001, **p≤. 01, *p≤.05, †p≤ 0.1
[a] Youth aged 17 at start of probation excluded from analysis
Continuous measures were examined using a t-test and categorical variables were examined using a chi-square test.

As previously mentioned, factors such as gender, race/ethnicity, who the youth lived with, offense severity, psychological evaluation, and risk level influence whether the youth received treatment services, but also whether they recidivate; therefore, in multivariate analyses, it is imperative this selection is accounted for to potentially remove selection bias and isolate the effect of treatment services on recidivism.

Recidivism- Treatment Service Sample only

Table 7 presents the bivariate relationships between the independent variables and referral while under probation supervision for only the youth who received treatment

services. By only looking at the sample of youth receiving treatment services, variables specific to the funding source of treatment service, the type of treatment service, and the length in treatment services can be compared. More specifically, over 30% of youth whose services were funded by the court and by an external source had a new referral while under probation supervision, compared to 24.3% of youth that received treatment services funded through the court had a new referral and 17.6% of youth who received treatment services through external funding sources.

The type of service the youth received also had a statistically significant relationship with recidivism while on probation. Of the youth who received general mental health services, 17.3% received a new referral and 20.4% of youth receiving general mental health residential services had a new referral. Only 4% of youth receiving sex offender outpatient services, and none of the youth receiving sex offender residential services, had a new referral while on probation. Therefore, it appears that youth receiving sex offender services were least likely to have a new referral while on probation. Roughly 30% of youth receiving substance abuse outpatient services had a new referral and the same for youth receiving substance abuse residential services. Lastly, 29.5% of youth who received mentoring or life skills programs, 35.3% of youth who received another single service, and 31.9% of youth who received two services had a new referral while under probation supervision. Youth who received three or more services had the highest rate of receiving a new referral at 37.3%. In regard to time in treatment services, the mean number of days a youth was in treatment services for youth who received a new referral while on probation was 202.1 days, compared to 181.6 days for youth who did not have a new referral while on probation.

Table 7. Bivariate Statistics- Recidivism on Probation for Youth Receiving Treatment Services (N=944)

	Referral	No Referral
	%	%
Variables		
Source of funding*		
Court-based (reference)	24.3	75.7
External	17.6	82.4
Court-based and external	31.3	68.7
Exclusive type of treatment service ***		
GMH outpatient (reference)	17.3	82.7
GMH residential	20.4	79.6
Sex offender outpatient	4.0	96.0
Sex offender residential	0.0	100.0
Substance abuse outpatient	30.5	69.5
Substance abuse residential	30.4	69.6
Mentoring and life skills	29.5	70.5
Other service	35.3	64.7
Two services	31.9	68.1
Three or more services	37.3	62.7
Duration of services†	202.1, 9.26	181.6, 5.28
Gender		
Female (reference)	18.8	81.2
Male	24.2	75.8
Race/Ethnicity		
White (reference)	22.4	77.6
African American	24.8	75.2
Latino	24.6	75.4
Native American	13.0	87.0
Other	25.0	75.0
Age (Mean, SD)	15.7, 0.07	15.6, 0.05
Living situation		
Single Parent (reference)	25.9	74.1
Two parents	23.7	76.3
Grandparent or other family	18.8	81.2
Other-DCS	18.2	81.8
School Status***		
Enrolled (reference)	21.4	78.6
Not enrolled	29.4	70.6

Table 7 Continued. Descriptive Statistics- Recidivism on Probation for Youth Receiving Treatment Services

	Referral	No Referral
	%	%
Offense severity***		
Property Felony (reference)	31.1	68.9
Personal Felony	9.0	91.0
Property Misdemeanor	20.0	80.0
Personal Misdemeanor	23.8	76.2
Drugs	29.1	70.9
Public Peace	36.4	63.6
Other	45.5	54.5
Pre-adjudication detention		
Yes	21.6	78.4
No	24.5	75.5
Prior Referral***		
Yes	29.1	70.9
No	11.8	88.2
Prior Adjudication*		
Yes	32.9	67.1
No	22.2	77.8
Drug use		
Not drug tested (reference)	6.9	93.1
Negative drug test	27.5	72.5
Positive drug test	33.2	66.8
Psychological Evaluation**		
Yes	25.7	74.3
No	17.5	82.5
Prior Treatment Service***		
Yes	28.4	71.6
No	21.8	78.2
Risk Level***		
Low (reference)	7.8	92.2
Moderate	16.1	83.9
High	30.3	69.7
N=	*219*	*725*

***p ≤ .001, **p≤. 01, *p≤.05, †p≤ 0.1; Continuous measures were examined using a t-test and categorical variables were examined using a chi-square test.

There were few statistically significant differences between the demographic variables and recidivism while on probation for youth receiving treatment services. However, school status, offense severity, prior referral, prior adjudication, psych evaluation, prior treatment service, and risk level were significant in the expected direction. That is 29.4% of youth not enrolled in school recidivated while on probation, compared to 21.4% of youth enrolled in school. Only 9% of youth who committed a personal felony recidivated while under probation supervision, and 45.5% of youth who committed "other" offenses recidivated while on probation. In regard to prior behavior, 29.1% of youth who had a prior referral and 32.9% of youth with a prior adjudication had a new referral while on probation. Finally, having received a psychological evaluation (27.5%), having received prior treatment services (28.4%), or being classified as high-risk was associated with higher rates of recidivism (30.3%). Once again, many of the factors that appear to influence whether the youth gets a new referral while on probation were similar to the factors that influenced whether the youth received treatment services. In the next section, multivariate models that control for this selection process are presented and discussed to better identify predictors of the different dependent variables analyzed when controlling for other covariates.

Multivariate Models

This section of the results chapter presents results from multivariate models that used a variety of statistical methods to control for selection bias and isolate statistically significant effects associated with the dependent variables of interest. The results will be presented in order of the proposed research questions, similar to that of the results from the previous stage of the analysis. Significant coefficients will be in discussed using odds

ratios, which can be interpreted as the percent increase or decrease in the likelihood of a binary outcome occurring.

Research Question 1: What are the predictors (e.g., gender, race, delinquent background, etc.) associated with receiving treatment services under probation supervision?

Beginning with the first question of interest, examining factors associated with the receipt of treatment services, the results from a multivariate logistic regression are presented in Table 8. The significant demographics included age, being African American or Latino, living with grandparents or relatives, and living with the state (DCS) or other living arrangements. More specifically, the effect of age is negative, meaning that as age increases the likelihood of receiving treatment services decreases. In regard to race and ethnicity, African Americans and Latinos are less likely to receive treatment services than their White counterparts, 33.4% and 21.9%, respectively. In terms of the youth's living situation, youth that live with grandparents or relatives, or DCS were more likely to receive treatment services than youth living with single parents. Specifically, youth under DCS care were two times more likely to receive treatment services. There was no significant difference between youth who lived with two parents versus youth who lived with a single parent on the likelihood of receiving services.

Other significant variables included pre-adjudication detention, prior adjudication psychological evaluation and risk level. The effects of being detained and having a prior adjudication were negative, suggesting that youth were less likely to receive treatment services if they were detained pre-adjudication or had a prior adjudication. Finally, youth who had a psychological evaluation were more than five times more likely to receive treatment services, and high risk youth were 36% more likely to receive treatment

services. Many of these findings are in expected directions and consistent with prior research, which will be discussed in greater depth in the following chapter.

Table 8. Logistic Regression Predicting Youth Receiving Treatment Services (N=3,779)

	b	S.E.	Exp(b)
Variables			
Male	0.106	0.109	--
Age	-0.226***	0.033	0.797
Race/ethnicity			
African American	-0.407**	0.130	0.666
Latino(a)	-0.247**	0.097	0.781
Native American	-0.088	0.207	--
Other	-0.299	0.367	--
Living situation			
Two parents	0.029	0.114	--
Grandparents or relatives	0.296*	0.147	1.345
DCS and other	0.709***	0.126	2.032
Not enrolled in school	-0.129	0.105	--
Offense severity			
Felony person	0.601***	0.125	1.824
Misdemeanor property	-0.289	0.162	--
Misdemeanor person	0.014	0.172	--
Drugs	0.042	0.137	--
Public peace	0.175	0.145	--
Other	-0.116	0.363	--
Pre-adjudication detention	-0.261**	0.095	0.770
Prior referral	-0.121	0.121	--
Prior adjudication	-0.494***	0.144	0.610
Psychological evaluation	1.647***	0.092	5.189
Prior treatment service	0.131	0.111	--
Risk Level			
Moderate	0.035	0.137	--
High	0.351*	0.149	1.036
Constant	1.585**	0.543	--
Log Likelihood	-1754.29		

***p ≤ .001, **p≤. 01, *p≤.05

Research Question 2: Among youth receiving treatment services, what are the predictors associated with the source of funding for treatment services; specifically, what are the predictors of receiving treatment services via external funding sources relative to court-based funding?

The next dependent variable examined is the source of funding for the treatment services youth on probation received, particularly whether certain characteristics of youth influence whether they receive treatment services through external funding compared to court-based funding. The results from a two-stage FIML probit model predicting external funding are presented in Table 9.[4] The results from the analysis show that Native Americans are 76.5% more likely to receive treatment services through external funding, which is likely due to their tribal healthcare.

Youth who were living in state care, such as DCS, were over two times more likely to receive treatment services through external funding sources. Youth who committed personal felonies and public peace offenses were 67.6% and 53.7%, respectively, less likely to receive treatment services through external funding. Pre-adjudication detention and moderate-risk level had a positive significant effect, indicating that youth who were detained prior to adjudication and youth who were moderate risk-level are more likely to receive treatment services via external funding. In regard to psychological evaluation, youth who received a psychological evaluation were less likely to receive services through external funding.

[4] Stage one predicting treatment services are not presented, but are similar to the logistic regression results presented in Table 8.

Table 9. Stage-Two FIML Probit Model Predicting External Funding for Treatment Services[a] (N=861)

	b	S.E.	Exp(b)
Variables			
Male	0.239	0.161	--
Age	-0.084	0.069	--
Race/ethnicity			
African American	0.076	0.151	--
Latino(a)	0.141	0.111	--
Native American	0.568*	0.264	1.765
Other	0.299	0.438	--
Living situation			
Two parents	-0.285†	0.171	--
Grandparents or relatives	0.121	0.184	--
DCS and other	0.727**	0.265	2.069
Not enrolled in school	0.097	0.121	--
Offense severity			
Felony person	-0.391**	0.148	0.676
Misdemeanor property	0.294	0.181	--
Misdemeanor person	-0.100	0.193	--
Drugs	-0.097	0.159	--
Public peace	-0.621**	0.230	0.537
Other	-0.553	0.532	--
Pre-adjudication detention	0.247**	0.105	1.280
Prior referral	-0.054	0.139	--
Prior adjudication	-0.009	0.204	--
Psychological evaluation	-0.559***	0.184	0.572
Prior treatment service	0.165	0.145	--
Risk level			
Moderate	0.442*	0.199	1.556
High	0.356	0.238	--
Exclusive type of treatment service[b]			
GMH residential	0.929***	0.221	2.532
Sex offender outpatient	-0.155	0.199	--
Sex offender residential	-0.293	0.234	--
Substance abuse outpatient	-0.251	0.174	--
Substance abuse residential	1.235**	0.397	3.438

Table 9 Continued. Two FIML Probit Model Predicting External Funding for Treatment Services

	b	S.E.	Exp(b)
Exclusive type of treatment service (cont.)			
Other service	-0.822*	0.325	0.440
Two Services	-0.599**	0.208	0.549
Three or more services	-0.896**	0.342	0.408
Constant	1.648*	0.726	--
Log Likelihood	-1975.95		
N=	*861*		

Note: ***p ≤ .001, **p≤ .01, *p≤ .05, †p≤ 0.1

[a] Both sources of funding (court-based and external) not included in analysis.

[b] Mentoring/life skills services omitted due to perfect prediction into court-based funding Stage-one FIML Probit Model predicted youth receiving any treatment services

Finally, to address the second part of the research question—certain treatment services were more likely to be funded by external sources, while other services were less likely, after controlling for individual covariates. Specifically, general mental health and substance abuse residential services were more likely to be funded by external funding sources, whereas behavior specific education, evidence-based, and drug court services were less likely to be funded by external sources, and thus more likely to be funded by the court. Lastly, youth who received two services or three or more services were less likely to receive their services through external funding sources. These findings are informative for the court administrators to better understand the factors related to youth receiving treatment services through external funding compared to the youth that tend to receive services via court-based funding.

Research Question 3a: Are youth who receive treatment services less likely to recidivate (i.e., referral while under probation supervision and referral at 6 months post probation supervision) compared to youth who do not receive treatment services, after controlling for other covariates?

The next set of analyses examined recidivism outcomes of the youth to identify whether receiving treatment services helped reduce the likelihood that a youth will obtain a new referral both while under probation supervision and within 6 months from release off probation supervision. Many of these services meet therapeutic standards and consist of evidence-based components; therefore, it is expected that the receipt of treatment services will reduce the likelihood of recidivism. As previously discussed, however, the receipt of treatment services is not a random process and these youth are systematically different from a random sample of youth on probation. Propensity score matching was used to create a sample of juveniles that did not receive treatment services that are comparable to the youth who received treatment services across the independent variables. The results of this matching process are reported in Table 10.

The bivariate statistics for the independent variables and the treatment service outcome are provided for the matched and unmatched samples of youth. Consistent with the bivariate statistics presented in Table 3, race/ethnicity, age, living situation, offense severity, pre-adjudication detention, prior adjudication, psychological evaluation, prior treatment services, and risk level are significantly different between the treatment service youth and the youth who did receive treatment services for the unmatched, full sample. After the matching process, all of these variables do not remain significant. The mean bias due to the selection process is reduced from 16.3 to 2.8 and the LR test becomes

non-significant, demonstrating that the propensity score matching was successful in creating a balanced sample.

Table 10. Descriptive Statistics of Youth Receiving Treatment Services Before and After Propensity Score Matching- Referral Under Probation Supervision (N=3,779)

	Unmatched Sample			Matched Sample		
	Treatment Services	No Treatment Services	p-value	Treatment Services	No Treatment Services	p-value
	%	%		%	%	
Variables						
Male	82.0	80.9	0.450	82.0	82.4	0.810
Race/Ethnicity						
African American	16.2	15.1	0.398	16.2	15.6	0.706
Latino	37.5	42.7	0.005	37.5	37.6	0.962
Native American	4.9	4.1	0.282	4.9	4.8	0.914
Other	1.3	1.7	0.369	1.3	1.5	0.693
Age	15.6	16.2	0.000	15.6	15.6	0.846
Living situation						
Two parents	15.7	20.9	0.000	15.7	16.8	0.493
Grandparent or other family	10.2	7.7	0.015	10.2	8.9	0.347
Other-CPS	21.0	8.0	0.000	21.0	21.2	0.866
Not enrolled in school	22.7	25.6	0.070	22.7	22.1	0.740
Offense severity						
Personal felony	30.7	15.2	0.000	30.6	27.3	0.104
Property misdemeanor	9.0	13.8	0.000	9.0	10.6	0.246
Personal misdemeanor	8.5	7.9	0.575	8.5	9.5	0.422
Drugs	16.0	19.7	0.011	16.0	16.9	0.619
Public peace	12.5	15.6	0.022	12.5	12.7	0.890
Other	1.2	1.8	0.206	1.2	0.4	0.070
Pre-adjudication detention	45.1	38.9	0.001	45.2	42.9	0.330
Prior referral	65.9	67.5	0.348	66.0	68.1	0.328
Prior adjudication	9.0	14.1	0.000	9.0	9.5	0.692
Psychological evaluation	69.7	26.7	0.000	69.7	70.5	0.688
Prior treatment service	20.9	17.5	0.019	20.9	22.1	0.538
Risk level						
Moderate	22.4	25.3	0.066	22.4	23.9	0.445
High	60.1	53.3	0.000	60.1	62.1	0.370
Mean bias		16.3			2.8	
Likelihood ratio test		740.53***			13.86	
N=	*944*	*2,835*		*944*	*2,813*	

Nearest neighbor matching with replacement (0.01 caliper)

Now that there are two groups of youth that are similar across all individual variables, with the exception of receiving treatment services, the effect of receiving treatment services on recidivism while on probation can be determined. The estimates of the treatment effect and standard errors are reported in Table 12. ATT is the effect of receiving treatment services on recidivism for those youth that received treatment services compared to the same group of youth had they not received treatment services. The ATU is the effect of receiving treatment for youth who *did not* receive treatment services if they would have received such treatment, and the ATE is the weighted average of ATT and ATU according to their prevalence in the sample. Therefore, the ATE is the overall effect of treatment for the entire sample of matched and unmatched youth.

Interpreting the ATT first—roughly 23.2% of the youth who received treatment services had a new referral while on probation. Had the same youth not received treatment services, 37.1% would have had a new referral, a statistically significant difference of 13.9%. Therefore, receiving treatment services reduced recidivism my 13.9 percentage points, providing support for the argument that receiving treatment services reduces the likelihood of recidivism while under probation supervision. The ATU failed to reach significance, but the ATE was statistically significant, with a 7.4 percentage point reduction, on average, in rate of recidivism between youth who received treatment services and those who did not. Overall, the results offer evidence that the treatment services received by youth are effective in reducing referrals while on probation, primarily for youth who are selected into treatment services. Specifically, it appears that youth who are receiving treatment services are less likely to recidivate in the first place. Furthermore, while the propensity score matching creates balanced groups, there is still a

selection process, and the receipt of treatment services would not be as effective for youth who did not receive treatment services.

Table 11. Descriptive Statistics of Youth Receiving Treatment Services Before and After Propensity Score Matching- Referral at 6 Months Post Release from Probation Supervision (N= 781)

	Unmatched Sample			Matched Sample		
	Treatment Services	No Treatment Services	p-value	Treatment Services	No Treatment Services	p-value
	%	%		%	%	
Variables						
Male	76.8	78.7	0.627	78.5	73.8	0.385
Race/Ethnicity						
African American	11.6	15.2	0.271	12.3	12.3	1.000
Latino	37.0	43.5	0.156	36.9	38.5	0.799
Native American	2.2	4.2	0.262	2.3	2.3	1.000
Other	0.7	1.2	0.604	0.8	0.0	0.318
Age	15.6	15.6	0.554	15.6	15.5	0.693
Living situation						
Two parents	17.4	20.8	0.361	17.7	20.0	0.636
Grandparent or other family	11.6	6.8	0.057	12.3	12.3	1.000
Other-CPS	23.9	7.6	0.000	20.8	23.8	0.553
Not enrolled in school	30.4	16.9	0.000	29.2	26.9	0.680
Offense severity						
Personal felony	24.6	16.2	0.018	23.8	23.8	1.000
Property misdemeanor	8.0	12.1	0.162	8.5	10.8	0.530
Personal misdemeanor	9.4	8.9	0.836	10.0	12.3	0.556
Drugs	13.0	18.0	0.158	13.1	7.7	0.156
Public peace	19.6	15.9	0.289	2.0	2.0	1.000
Other	2.2	1.01	0.304	2.3	2.3	1.000
Pre-adjudication detention	43.5	38.9	0.317	45.4	44.6	0.901
Prior referral	64.5	57.4	0.124	64.6	70.0	0.357
Prior adjudication	12.0	10.3	0.644	12.3	16.2	0.377
Psychological evaluation	62.3	22.2	0.000	60.0	57.7	0.707
Prior treatment service	16.7	14.0	0.419	16.9	18.5	0.746
Risk level						
Moderate	28.3	26.3	0.634	26.9	24.6	0.672
High	54.3	42.8	0.013	54.6	56.9	0.709
Mean Bias		16.3			5.3	
Likelihood Ratio		123.95***			6.55	
N=	*138*	*643*		*130*	*639*	

Nearest neighbor matching with replacement and 0.01 caliper

The results to examine the effect of treatment services on recidivism at 6 months are presented the same way as the findings from recidivism while on probation. First, the results from the propensity score matching are presented in Table 11. For the unmatched sample, there were fewer variables that were significantly different between youth who received treatment services and youth who did not receive treatment services, but there was still a significant amount of bias in the unmatched sample that is corrected for in the matched sample. After the matching process, none of the independent variables were significantly different across the treatment services youth and the youth who did not receive treatment services.

Similar to the findings of recidivism while under probation supervision, treatment services were effective for reducing recidivism after probation supervision had ended. The treatment effects for recidivism at 6 months are also reported in Table 12. The results are similar to that of recidivism while on probation, specifically the ATT and ATE are significant, but not the ATU. Receiving treatment services reduced the likelihood of recidivating within 6 months by 13.8 percentage points for the youth who received treatment services compared to the same youth had they not received treatment services. The ATE was -8.2%, so for the entire sample of youth, receiving treatment services reduced the rate of recidivism at 6 months by 8.2%. Once again, the non-significant effect of ATU suggests that untreated youth would not be as responsive to services had they received them, and receiving treatment services is most effective for the youth who got selected to receive services. Overall, there is support for the argument that the treatment services provided by the court are effective in reducing the likelihood of

recidivism, both while under probation supervision and 6 months after release from probation supervision.

Table 12. Treatment Effects of Receiving Treatment Services on Recidivism Outcomes after Propensity Score Matching

	Coefficient				
	Treatment Services	**No Treatment Services**	**Difference**	**S.E.**	**p-value**
Referral on Probation					
ATT	0.232	0.371	-0.139	0.034	<0.001
ATU	0.273	0.221	-0.052	0.029	0.071
ATE			-0.074	0.022	0.001
Recidivism at 6 months					
ATT	0.108	0.246	-0.138	0.070	0.048
ATU	0.142	0.072	-0.070	0.066	0.289
ATE			-0.082	0.037	0.026

Research Question 3b: Among youth receiving treatment services, do characteristics of the treatment service, particularly, the source of funding, type of service, and duration of the service, have a significant effect on the likelihood of recidivating?

The final research question focuses on the youth who received treatment services in order to identify whether the source of funding for the treatment services, the type of treatment service received, or the duration of treatment services influences the likelihood of a new referral while under probation supervision. Based on the previous findings, there is support for the effectiveness of treatment services in reducing referrals while on probation, so it is important to identify whether certain characteristics of treatment services explain this effect. The results from a stage-two FIML probit model are presented in Table 13.

Table 13. Stage-Two FIML Probit Model Predicting Referral on Probation (N=944)

	b	S.E.	Exp (b)
Variables			
Source of Funding			
External	-0.080	0.156	--
Court-based and external	0.074	0.187	--
Type of treatment service [a]			
GMH residential	0.273	0.202	--
Sex offender outpatient	-0.308	0.306	--
Substance abuse outpatient	0.330†	0.196	--
Substance abuse residential	0.593†	0.338	--
Mentoring and life skills	0.454*	0.202	1.575
Other service	0.493*	0.240	1.637
Two Services	0.319†	0.173	--
Three or more services	0.034	0.238	--
Duration of services	0.002*	0.001	1.002
Male	0.279†	0.159	--
Age	-0.040	0.100	--
Race/ethnicity			
African American	0.100	0.192	--
Latino(a)	0.015	0.143	--
Native American	-0.270	0.291	--
Other	0.242	0.446	--
Living situation			
Two parents	0.047	0.147	--
Grandparents or relatives	0.038	0.210	--
Other	-0.140	0.210	--
Not enrolled in school	0.086	0.121	--
Offense severity			
Felony person	-0.634***	0.199	0.530
Misdemeanor property	-0.401	0.256	--
Misdemeanor person	-0.169	0.190	--
Drugs	-0.155	0.152	--
Public peace	0.198	0.187	--
Other	0.245	0.407	--
Pre-adjudication detention	-0.132	0.157	--
Prior referral	0.250†	0.147	--

Table 13 Continued. Stage-Two FIML Probit Model Predicting Referral on Probation

	b	S.E.	Exp (b)
Prior adjudication	0.107	0.225	--
Psychological evaluation	0.019	0.642	--
Prior treatment service use	-0.053	0.128	--
Drug use			
Negative drug test	0.542**	0.181	1.719
Positive drug test	0.599**	0.192	1.820
Risk Level			
Moderate	0.079	0.210	--
High	0.274	0.286	--
Constant	-1.202	0.853	--
Log Likelihood	-2179.88		
N=	944		

Note: ***p ≤ .001, **p≤. 01, *p≤.05, †p≤ 0.1
[a] Sex Offender Residential treatment omitted due to perfect prediction into no referral Stage-one FIML Probit Model predicted youth receiving any treatment services

In regard to treatment service characteristics, the funding source of treatment services did not have a statistically significant effect on the likelihood of recidivism while on probation. Compared to general mental health outpatient services, youth who received mentoring and life skills programs, behavior specific education, evidence-based programs or drug court were significantly more likely to have a new referral while on probation. Youth who were also in treatment services for a longer duration were more slightly more likely to have a new referral while on probation. Specifically, for each additional day in treatment services the likelihood of obtaining a referral on probation increases 0.2%. It is also important to note that youth receiving sex offender residential treatment did not have any new referrals while on probation (see Table 7), so this service dropped out of the

probit model, but is likely a contributing factor to the overall reduction in recidivism rates obtained after propensity score matching presented in Table 12.[5]

Other statistically significant variables that influenced the likelihood of recidivism while on probation were whether the youth committed a personal felony and drug tests while on probation. Specifically, youth who committed a personal felony were less likely to recidivate while on probation than youth who committed a property felony, and youth who were tested for drugs and had either positive or negative drug test results were more likely to recidivate while on probation than youth who were not tested all together.

In sum, the results presented in this chapter attempted to answer a number of research questions posed in this dissertation. Univariate and bivariate statistics were first presented to provide an account of the sample of youth on probation and youth receiving services and to examine the relationships between covariates and various dependent variables of interest. Finally, a series of multivariate models, as well as results from propensity score matching, were presented to examine the predictors of who receives treatment services, the predictors of the type of funding source for those treatment services, whether treatment services are effective in reducing recidivism, and if certain factors of treatment services are more or less effectives in reducing recidivism. The next chapter places these findings in the larger context of the juvenile justice system and current research on issues of treatment services and effectiveness to help inform researchers and practitioners.

[5] The propensity score matching was estimated excluding sex offenders, and the results for the treatment effects (ATT, ATU, ATE) did not differ substantially.

CHAPTER 5

DISCUSSION

The current study examined the receipt, funding, and effectiveness of treatment services for emotional and behavioral problems in reducing recidivism among a sample of youth under probation supervision in Maricopa County Juvenile Probation Department. The juvenile justice system has a long history of trying to balance multiple roles due to competing philosophical goals—to provide care and rehabilitate delinquent youth while holding youth accountable for their actions and providing punitive sanctions (Bernard, 1992; Feld, 1999). Currently, the juvenile justice system responds to delinquent youth that come from backgrounds where there is little opportunity for prosocial development and they suffer from a wide variety of emotional and behavioral service needs (Atkins et al., 1999; Garland et al., 2001; Teplin et al., 2002; Wasserman et al., 2002; 2005). The court has a degree of obligation to provide treatment services to youth with service needs and fund these services when youth do not have other means. It benefits the juvenile justice system and youth when these services are effective and help reduce future delinquent behavior, but providing treatment services has a number of challenges. Within the last two decades researchers and practitioners started to examine emotional and behavioral service needs of youth and understand the complexities of providing treatment services in the juvenile justice system.

Given this context, the current research examined a number of research questions related to treatment services provided by the juvenile justice system in Maricopa County, Arizona, one of the largest counties in the U.S. Specifically, the current study contributes to the larger body of research on juvenile justice and treatment services by 1) examining

the actual receipt of treatment services by youth under probation supervision, rather than referrals for services, 2) examining the source of funding for treatment services, and 3) examining the effectiveness of a wide range of treatment services, beyond evidence-based programs, in reducing recidivism. In light of the significant findings presented in the previous chapter that addressed each research question, there are a number of key findings: 1) few youth overall receive treatment services while on probation and there are racial disparities in the receipt of treatment services; 2) a disconnect exists between receiving treatment services and the willingness or capability of external funding sources to fund these service, and 3) youth who received treatment services were significantly less likely to recidivate, demonstrating an effectiveness of treatment services ordered by the court. The following sections place these findings in the broader context of research and discuss implications for practice and policy.

Access to Treatment Services

The first main finding of the current study is that less than 25% of youth on probation received treatment services. In general, research has found that children and adolescents as a population tend to have unmet service needs for emotional and behavioral problems (Angold et al., 1998; Flisher et al., 1997; Horwitz, Gary, Briggs-Gowan, & Carter, 2003; U.S. Department of Health and Human Services, 2000a). This is likely due to dependence on parents or guardians to identify need and seek our services (Angold et al., 1998; Costello & Janiszewski, 1990; Horwitz et al., 2003). Recent research has found youth in the juvenile justice system have higher rates of mental health and substance use disorders compared to youth in the general public. Specifically, estimates of mental health disorders among youth in the juvenile justice system are as

high as 60% to 70% (Garland et al., 2001; Teplin et al., 2002; Shufelt & Cocozza, 2006), and roughly half of which also suffer from substance use disorders (Teplin et al., 2002). Given what prior research has found and that almost 40% of the youth received a psychological evaluation (a proxy for a mental health problem), it was expected that more youth would be receiving treatment services. This rate of access to treatment services is generally consistent with other research (Wasserman, Whited, Keating, Musabegovic, & Yanling, 2008). However, estimates of the percentage of youth in the juvenile justice system that receive referrals to treatment services range widely from as low as 6% of youth (Rogers et al., 2006) to as high as 75% in other studies (Hoeve et al., 2014).These differences can be attributed to stage of the juvenile justice system examined (i.e., detained youth, incarcerated youth, etc.) and what is measured in regard to emotional and behavioral problems and service needs. While the current study did not have mental health diagnoses, it is one of the few studies to assess youth receiving treatment services, not just referrals for services.

Findings in this study provide additional support that youth with emotional and behavioral problems are an underserved segment of the population. The juvenile justice system needs to better understand the emotional and behavioral service needs of youth and how those needs can be met both in the system and the general population. Unmet emotional and behavioral service needs in youth can affect both their success while on probation and their future involvement in the criminal justice system (Binswanger, Redmond, Steiner, & Hicks, 2012; Kutcher & McDougall, 2009).

Racial and Ethnic Disparities

The second issue regarding access to treatment services is the presence of racial and ethnic disparities. Prior research found that unmet service needs among youth are not equal across groups. More specifically, minorities are more likely to have unmet service needs compared to White youth (Angold et al., 2002; Burns et al., 2004; Garland et al., 2005; Hough et al., 2002; Kataoka et al., 2002; Stahmer et al., 2005; Thompson, 2005; Yeh et al., 2003), and when they do receive treatment services, it is more likely to occur in the juvenile justice system rather than the mental health system (Atkins et al., 1999; Cohen et al., 1990; Dembo, Turner, Borden, & Schmeidler, 1994; Evans & Stoep, 1997; Stoep et al., 1997; Thomas & Stubbe, 1996). The current study found that among youth on probation, African Americans and Latinos were less likely to receive treatment services than their White counterparts, after controlling for other youth and behavioral characteristics. Therefore, even though the juvenile justice system may be their best opportunity to receive treatment services (Rawal et al., 2004), minorities remain less likely to receive treatment services while under probation supervision.

This finding can be understood in the larger context of health disparities and access to healthcare. It is well-established that minorities, particularly African Americans have poorer health which can be attributed to a number of factors such as low socioeconomic status and limited access to quality health care (Center for Disease Control and Prevention, 2013). The current state of knowledge on disparities in emotional and behavioral problems is less well-established. Recent studies have found that minorities tend to have fewer mental health disorders than their White counterparts, but symptoms from these disorders tend to be greater (McGuire & Miranda, 2008; U.S.

Department of Health and Human Services, 2001) Additionally, consistent with physical health, disparities occur in access and use of mental health services (Atdjian & Vega, 2005; Snowden, 2001; Williams, 2005). In general, racial and ethnic minorities have limited access to services, needs are more likely to go unmet, and when services are received they are of poor quality (Snowden, 2001; McGuire & Miranda, 2008; U.S. Department of Health and Human Services, 1999; 2001). Lack of resources and differences in health insurance limit their access to providers geographically and financially (Alegria, Cao, McGure, Ojeda, Sribney, Woo, & Takeuchi, 2006; Baicker & Chandra, 2004). The mistrust of beneficial services and stigma associated with receiving mental health services also inhibit minorities in particular from seeking treatment services (U.S. Department of Health and Humans Services, 2001).

Information on minority youth with emotional and behavioral services needs is limited because few large-scale studies have been done on prevalence rates of mental health disorders among minorities (Cauffman & Grisso, 2005); therefore, comparing rates of emotional and behavioral service needs to those of Whites in the juvenile justice system and to the general minority population is difficult. Much of what is known about minorities with emotional and behavioral service needs comes from the juvenile justice system due to the high representation of minority youth in the juvenile justice system (Cauffman & Grisso, 2005). Minorities are less likely to be referred to the mental health system for treatment services and end up in the juvenile justice (Atkins et al., 1999; Cohen et al., 1990; Dembo, Turner, Borden, & Schmeidler, 1994; Evans & Stoep, 1997; Stoep et al., 1997; Thomas & Stubbe, 1996). Compounding the disparity, within the juvenile justice system minorities are less likely to receive services (Herz, 2001; Dalton,

et al., 2009; Lopez-Williams et al., 2006; Maschi et al., 2008; Rogers et al., 2001; Rogers et al., 2006).

The disparate access to treatment services in the juvenile justice system can stem from multiple sources. The first factor pertains to identifying and diagnosing mental health and substance abuse disorders. Some of the most common psychological evaluations and diagnostic instruments have been criticized for their use on youth and minorities (Grisso, 2004). For example, diagnoses are not sensitive to contextual differences because disorders are identified based on the presence or absence of symptoms, but fail to take into account the developmental relevance to youth or cultural differences (Grisso, 2004; Hoge & Andrews, 1996; Regier, Kaebler, Rae et al., 1998; Rogler, 1993; Safran, Mays, Huang et al., 2009; Smith, Spillane, & Annus, 2006; Wakefield, 1997). As a result, the service needs of minority youth may not be adequately identified and assessed. Second, disparities may be the result of stereotyping and biased beliefs about amenability to treatment. Sentencing research has tested attribution theory (see Albonetti, 1991; Bridges and Steen, 1998) and has found that minorities are treated more harshly in the juvenile justice system because their behavior is attributed to internal causes or "bad" personality traits, rather than external factors that can be addressed with treatment. These negative stereotypes have also been found in the health field where doctors believe African Americans are less likely to comply with treatment (McGuire & Miranda, 2008). Similarly, court officials may also believe that minority youth are less deserving of treatment services, or that the treatment services will not be as effective or beneficial to minority youth.

Consistent with the historical argument that there are two juvenile justice systems, one for Whites and one for African Americans (Ward, 2012), minorities are not treated equally in terms of treatment services in the juvenile justice system. These findings suggest that minority youth have a different experience when they enter the juvenile justice system, due to harsher treatment and limited access to treatment. This can have long-term implications for their involvement in the juvenile and criminal justice systems, as well as perpetuating health differences that continue over the life course (Yazzie, 2011).

Additional factors

Other important factors that influenced whether a youth received treatment services were variables that could be considered indicators of risk and need. First, youth who did not live with parents (either single or both parents) were more likely to receive services. Parents and caregivers play an important role in recognizing mental health problems and accessing services to meet service needs (Harrison, McKay, & Bannon, 2004); therefore, youth not living with parents and entering the juvenile justice system may have greater unmet service needs that were not being addressed previously. In comparison, youth living with parents may have more opportunity for support from parents, have fewer service needs, or may already be receiving services. Youth who committed a personal felony, had a psychological evaluation, and were high-risk level were also more likely to receive treatment services while under probation supervision. While having a psychological evaluation is a strong indicator of the presence of an emotional or behavioral problem, the current study does not have diagnostic information, so the type of emotional or behavioral problem, the severity of the problem, and

comorbidity with other disorders cannot be determined. Therefore, it is difficult to truly assess the level of service needs these youth have in the current sample.

The youth also received the Arizona Risk Assessment, and while this is a validated assessment tool, it was designed to primarily assess risk of reoffending due to long-term, often static, factors rather than assess risks and needs related to treatment services. Arizona is moving towards using the Arizona Youth Assessment System (AZYAS) which is a more dynamic tool that allows for changes in youth's risks and a better assessment of changing emotional and behavioral service needs. Simply identifying service needs, however, does not require or justify the juvenile justice system's involvement in providing treatment services (Grisso, 2004). Some youth may benefit more from receiving services through their family's community and resources without the involvement of the court, so it is better that these youth not receive treatment services through the juvenile justice system. Grisso (2004) also acknowledged that some youth may not meet the diagnostic criteria of service need, but may still benefit from treatment services offered in the juvenile justice system. This issue speaks to the difficulty of identifying service needs and determining the role the juvenile justice system should play in providing treatment services. The juvenile justice system should collaborate with other agencies, the families of youth, and the community to better identify service needs and ensure needs is being met.

Funding Sources of Treatment Services

When youth receive a referral for court-ordered services by the juvenile justice system as part of their requirements for probation supervision, they are screened for behavioral health coverage. If the youth have private insurance, referrals for treatment

services are directed to the insurance company for approval, and if the youth does not have health insurance they are screened for coverage through external sources, such as AHCCCS or RBHA (i.e., Medicaid). If the youth's health insurance denies coverage for the treatment services or the youth is not eligible for Medicaid coverage, the court is responsible for funding the youth's services.

The current research found that very few youth received treatment services through private insurance, which was not unexpected because private insurance companies often have a disclaimer that the insurance company is not required to cover court-ordered services, unless medically necessary. Therefore, most of the youth who receive funding for treatment services through external funding sources, through AHCCCS or RBHA, as well as tribal health coverage. And even these sources were only accessible by one-third of the youth. That is the court ended up being responsible for funding over 66% of the youth that received treatment services.

Service providers that provide services to youth with external funding sources work independently from the court and are not required to provide progress reports or update on youth's progress to the court. Additionally, many youth in the juvenile justice system are eligible for Medicaid, so it is unclear why so few youth are funded by external funding sources. It suggests there is disconnect between systems of care and services providers in determining the service needs of these youth and the necessary treatment services to address those needs. Unfortunately, the current study was not able to capture whether the youth had health coverage prior to their involvement in the juvenile justice system, or the type of health insurance, so it is difficult to assess the role of prior health

coverage, and whether the court still funded the treatment services when a youth had coverage.

Pertaining to the factors associated with receiving treatment services through external funding sources, Native American youth, youth in the custody of the Department of Child Safety (DCS) or some other non-familial care, youth who were detained before adjudication, and youth in residential services were more likely receive services funded by external sources. These factors appear to reflect a group of youth that are either likely already receiving treatment services through AHCCCS/RBHA, such as those youth living in DCS care or youth who were detained and started services before disposition, or youth who displayed a high medical need for treatment services demonstrated by receiving residential treatment services. On the other hand, the court was more likely to fund treatment services when the youth committed a personal felony (likely due to their risk to the public), if the youth received a psychological evaluation, and if the treatment services received were behavior specific education, evidence-based programs, drug court services, or multiple services. Unlike the other services that are offered by the external service providers, provided the by contracted service providers and therefore more likely to be funded by the court. Additionally, psychological evaluations were always funded by the court so the court may be more inclined to continue funding the treatment services received by these youth. Overall, these findings are informative for the court to better understand who and which services it is funding versus the services and youth that are funded through external sources. The implications for funding source on recidivism will be discussed in the following section.

Treatment Effectiveness on Recidivism

Two measures of recidivism were examined in the current study to evaluate whether receiving treatment services was effective in reducing the likelihood of recidivism. For both measures of recidivism—while under probation supervision and 6 months post-release from probation supervision—the receipt of treatment services reduced the likelihood of receiving a new referral by nearly 14 percentage points for the treated group (i.e., youth receiving treatment services). As mentioned in the results section, there still appears to be a selection effect into treatment services where youth receiving treatment services were less likely to reoffend in the first place, at least for certain variables. In particular, youth who were detained or had a prior adjudication were less likely to get services than youth who did have not these characteristics, but these factors were associated with receiving a new referral. This implies that simply expanding treatment services to youth that were otherwise not receiving treatment services would likely yield smaller returns because the "untreated" youth might be less responsive to treatment services. Overall, for the entire sample of youth (both treated and untreated) the effect of receiving treatment services reduced recidivism while on probation by 7.4%, and 8.2% for recidivism at 6 months post-probation.

After comparing recidivism outcomes for youth who received treatment services to those who did not, the final research question aimed to identify characteristics of treatment services that may explain the treatment effect found in the full sample of youth. First, the source of funding for treatment services did not have an impact on recidivism, supporting the hypothesis that the funding source or payer of treatment services would not influence the effectiveness of treatment services. Since many of the service providers

that accepted court-based funding also accepted external funding sources, this finding was not unexpected. Secondly, regarding the type of service examined, it was not clear which services were most effective. Youth that received sex offender services had significantly fewer referrals while on probation, suggesting these are effective services; however, sex offenders are a unique population with low risk for recidivism in the first place (see Appendix C). Additionally, the analyses were conducted excluding sex offenders and the results did not change substantially, particularly in regards to recidivism.

The more rehabilitative programs, such as mentoring, behavior specific education, and evidence-based services were not successful in reducing recidivism compared to general mental health outpatient services. This could be due to three factors: 1) these services were examined as individual services, and it may be that these services are not as successful unless paired with other services; 2) the role of families and parents are often an important factor in the success of these services, especially evidence-based programs (Baglivio et al., 2014; Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001); and 3) youth receiving these services may have had other services prior to the current probation that appeared unsuccessful, so services like mentoring or evidence-based programs were provided to youth already struggling to avoid new referrals. An example is the expanded use of mentoring services over this time period. The Office of Juvenile Justice and Delinquency Prevention established the Center for Advancement of Mentoring, greatly increased the amount of resources to support mentoring services between 2008 and 2014 (National Research Council, 2013). In 2012, Maricopa County started adding mentoring services to youth's treatment plans, particularly for high-risk youth. Additionally, other

research has also found that evidence-based programs, such as Multi-systemic Therapy has been unsuccessful in reducing recidivism among juveniles (Baglivio et al., 2014; Littell, Campbell, Green, & Toews, 2009). Therefore, the lack of success of these programs may not be due to the quality and integrity of the program, but to the type of youth receiving these services.

A final characteristic of treatment services examined was the duration of treatment services, or the number of days youth received services while on probation. Unexpectedly, this variable had a positive effect on recidivism. Specifically, youth who were in services longer were more likely to recidivate while on probation. This finding counters much of the substance abuse treatment research that finds longer duration is more effective in treating addiction (Hser, Evans, Hunag, & Anglin, 2004; Hubbard, Marsden, Rachal, Harwood, Cavanaugh, & Ginzburg, 1989; National Institute on Drug Abuse, 2011; Simpson, 1981). It may be that there is a turning point, where being in services for a longer duration starts to be detrimental to the success of youth. The current analysis tested for a nonlinear effect of days in treatment services that would account for this turning point. While the squared term of length was in the expected direction, it failed to reach significance. Another possible explanation for this finding is the amount of control or supervision the court (i.e., probation officer) has over the youth when the youth receives services for longer, therefore increasing the likelihood of getting caught.

An important consideration is that the termination dates of services do not always reflect the end of treatment services, a problem that is common for service providers; therefore, the validity of the duration of treatment services measure is suspect and results should be taken with caution. This is a central characteristic of treatment services that

needs further exploration, along with the dosage of treatment services to better understand how these factors affect the successfulness of treatment services.

Implications

Based on the findings from this research there are a number of implications that can be drawn from the three research questions examined to help inform policy and practice. First pertains to the issue to providing treatment services to more youth with emotional and behavioral problems in the juvenile justice system, particularly minorities who have unequal access to services. Second, the topic of funding source will be discussed in the larger context of continuity of care, the Affordable Care Act and how changes in healthcare coverage may impact treatment services of individuals involved in the justice system. And finally, the importance of providing treatment services that are beneficial and effective in reducing recidivism will be discussed.

Unmet service needs can have long-term effects on emotional and behavioral health and involvement in the justice system (Yazzie, 2011), as well as other aspects of life like successful employment and healthy relationships. Consistent with prior research the current study found relatively few youth received treatment services despite current knowledge on the prevalence of mental health and substance use disorders among juvenile justice involved youth. Youth with emotional and behavioral service needs can be found in multiple “systems of care”, including the education system, the mental health system, child welfare system, and the juvenile justice system (Garland et al., 2001; Stroul, 2002; Stroul & Friedman, 1986; Stroul, Blau, & Sondheimer, 2008). It is essential that these systems of care collaborate by sharing information and resources to help ensure

that service needs for youth who are vulnerable to emotional and behavioral problems are identified as early as possible and that services are provided.

This concerns minority youth in particular who continue to be an underserved population when it comes to access and use of health services (Alegria et al., 2011; Garland et al., 2005; Kataoka et al., 2002; Yeh et al., 2003). Additional research is needed to understand the barriers that prevent minorities from receiving services. Service needs of minority youth exist long before they come in contact with the juvenile justice system where addressing unmet service needs might be too late. A focus on preventative efforts before the youth enter the juvenile justice system might be more beneficial to the mental health and overall well-being of minority youth (Rawal et al., 2004). Greater attention is needed to ensure emotional and behavioral service needs among minorities are identified at earlier stages of the juvenile justice system so that youth gain access to appropriate treatment services in the community without the additional involvement of the juvenile justice system. This includes informing families about emotional and behavior problems, such as recognizing early symptoms of problems and avenues to find and access services. Targeting these youth would help prevent future involvement in the juvenile justice system.

Expanding collaborative efforts to identify emotional and behavioral service needs and provide early care would have beneficial outcomes for youth and their families, as well as the larger community. Mental health problems are a strong predictor of delinquency and later criminality (Elliott et al.et al., 1989; Huizinga et al., 2000; Kazdin, 1993) that when left untreated can continue to put individuals at risk for continued involvement in the criminal justice system. These individuals will continue to

suffer from emotional and behavioral problems and cycle in and out of the justice system if care is not provided which in turn is disruptive to families and communities and costs society resources.

Mental illness is also highly stigmatized in the U.S. so families tend to be apprehensive about seeking care for their children, especially minorities (Connor, Copeland, Koeske, & Reynolds, 2010; Cooper et al., 2003; Gonzalez, Alegria, & Prihoda, 2005). In addition to efforts made through the Affordable Care Act, educating families, schools, and communities will help normalize mental illness, making mental health a component of general healthcare. As a result, children and adults alike may be more willing to seek care for emotional and behavioral problems (Farmer, Burns, Phillips, Angold, & Costello, 2003; Power, Eiraldi, Clarke, Mazzuca, 2005). These preventative efforts will help reduce the likelihood that youth with emotional and behavioral service needs, particularly youth with severe mental health and substance abuse disorders, end up in the juvenile justice system. Furthermore, the juvenile justice system will be better equipped to identify and provide services for youth with emotional and behavioral service needs when they do end up in the juvenile justice system. More collaboration among systems of care will help the juvenile justice system divert youth suffering from emotional and behavioral problems from further involvement in the juvenile justice system. Accordingly, the juvenile justice system can devote more resources to ensuring public safety and punishing delinquent and criminal behavior.

A number of implications also pertain to the funding of treatment services. The current research was interested in the source of funding for treatment services and whether this had an impact on the effectiveness of services. First, it is important to

acknowledge that the source of funding did not have a significant effect on recidivism outcomes of youth. This should be reassuring to the juvenile justice system in Maricopa County that contracting out services will not be problematic for the effectiveness of services the youth receives. It also provides rationale to continue seeking external funding sources for treatment services for youth. It relieves resources from the juvenile justice system to have youth receive services through alternative funding sources, so the juvenile justice system can focus resources in other areas.

Second, a majority of youth were funded by the court, which has implication for the continuity of treatment services. Particularly, treatment services such as general mental health outpatient services may be beneficial to youth after their involvement in the juvenile justice system, but without court-based funding the services cannot be continued unless the youth is able to attain other sources to cover the cost of the services. If the youth is eligible for Medicaid to cover services, there may be a change in service provider and any established rapport with a mental health professional is disrupted. The process of continuing care after probation supervision has ended for youth receiving services through external sources may be less disruptive. Youth may be able to continue using the same service provider with the same healthcare coverage, such as Medicaid. The shortcoming of this being that services received through Medicaid are discontinued if the youth becomes detained or incarcerated due to the Inmate Exclusion provision (Council of State Governments Justice Center, 2013; Cuellar, 2011).

These limitations illustrate the obstacles families and youth face when trying to ensure continual care for youth with emotional and behavioral service needs. Increased collaboration among systems of care and service providers is needed to coordinate care as

youth become involved in the juvenile justice system and transition back into the community. Efforts like suspending Medicaid benefits when a youth is detained, rather than terminating coverage can help prevent a lapse in services when the family would have to reapply. It does not solve the problem of disrupted care, which can be important for youth undergoing a difficult developmental period.

The issue of funding sources also relates to the broader area of health care coverage, the Affordable Care Act (ACA), and the juvenile justice system's role in the referring youth to treatment services. The primary components of the ACA have implications for research in this area and the justice system more broadly. These components include the general expansion of health insurance coverage and Medicaid to get more uninsured families affordable health care and the integration of mental health care into primary care, also known as parity status of behavioral health care (Barry & Huskamp, 2011; Munoz, 2013). Specifically, health insurance providers can no longer place caps on mental health and substance abuse services and they cannot deny coverage for pre-existing conditions, which typically applies to behavioral health problems. The primary goal is to make coverage for behavioral health care coverage equivalent to medical and surgical benefits (Barry & Huskamp, 2011).

The current study found that most youth's services, particularly mental health and substance abuse outpatient services were funded by the court, rather than external sources such as Medicaid or private insurance. This is likely to change over the next few years as more youth will be insured and behavioral health services will be covered to a greater extent (Council of State Governments Justice Center, 2013; Cockburn, Heller, & Sayegh, 2013). As it stands in the current study, the level of involvement by private health

insurance companies in funding these treatment services is problematic. Since there is likely a degree of medical necessity for services, private insurance companies should be required to assist in funding these services regardless of if they are court ordered. The expansion of behavioral health coverage should change the climate surrounding behavioral health for both providers and individuals. As discussed previously, stigma associated with mental health and substance use disorders will be reduced as it becomes easier and more common to receive services. As a result, when youth come into contact with the juvenile justice system they will be more likely to already have health insurance and if not, it will be easier to get them enrolled in coverage that will help fund treatment services. The juvenile justice system will no longer have the responsibility of funding treatment services.

Speaking to the issue of getting youth enrolled in healthcare, it is in the best interest of the juvenile and criminal justice system to make sure defendants have health insurance. Despite the socioeconomic status of individuals involved in the justice system, it is estimated that as many as 90% of individuals in jail or prisons are uninsured (Council of State Governments Justice Center, 2013; Wang, White, Jamison, Goldenson, Estes, & Tulsky, 2008); therefore, the expansion of healthcare provides an opportunity to get offenders enrolled in health care, reducing the costs and burden on the justice system in providing services for offenders (Council of State Governments Justice Center, 2013). Due to level of service needs and higher levels of uninsured among offender populations, programs and collaborative efforts have started to develop in justice systems across the country to get offenders screened and enrolled in health care. For example in Pima County, Arizona a partnership has been established between the Community Service

Provider (CSP) Criminal Justice Teams and Pima County Adult Probation Office (APO) to coordinate behavioral healthcare through screening and assessments, providing service referrals, developing treatment plans and enrolling offenders in health care. Getting offenders involved in affordable treatment for mental health and substance use disorders can also prevent these individuals from cycling in and out of the criminal justice system (Phillips, 2012). While this mostly applies to adult offenders, similar initiative to get youth enrolled in health care, which would be predominately Medicaid as early as possible.

Lastly, the issue of funding and expanding behavioral health coverage speaks to the larger issue surrounding the role of the court and juvenile justice system in making treatment decisions. The juvenile justice system is obligated to provide treatment to youth under its supervision, but as an agency, it is not a designed to make clinical judgments and recommendations on treatment. That is not to say that the juvenile justice system does not have the best interest of youth and contracts with service providers have improved the quality of assessment of youth for treatment service, but the goals of the juvenile justice system differ from the mental health system. The mental health system, such as services providers contracted through RBHA in Maricopa County are more equipped to assess youth and recommend beneficial and effective services. There may be a disconnect between what a judge believes a youth needs in terms of services based on a youth's case file presented at court and treatment services that are recommended by RBHA, which may result in inappropriate treatment services for youth. This is consistent with Feld's (1999) argument that the juvenile justice system should be responsible for responding to delinquent and criminal behavior and other systems of care should be

responsible for the care and welfare of youth. Once again, this would require the collaboration of agencies to work together and share information regarding the service needs of youth to help them be successful while involved in the juvenile justice system and ensure treatment services are provided. There also needs to be clarity in the roles of different systems of care or agencies and implicit guidelines for responding to delinquency and youth experiencing emotional and behavioral problems. The Office of Juvenile Justice and Delinquency Prevention has been providing grants for juvenile information sharing (JIS) to "improve information sharing among key agencies responsible for community safety and the health and wellbeing of at-risk youth and juvenile offenders" (Mankey, Baca, Rondenell, Webb, & McHugh, 2006, p. 1). The project is aimed to help agencies build collaborative relationships, establish confidentiality practices, and provide technology to implement information sharing. When dealing with health records and the funding source of services, sharing information is imperative to ensure needs are met and youth receive continual care.

Finally, the effect of treatment services on youth's behavior, particularly recidivism, has important implications for practitioners. Not only is it important that youth's service needs be responded to, it is important that the services provided are effective and improve outcomes for youth. "Reducing recidivism is a goal shared by every agency and program of the juvenile justice system" (Mennis & Harris, 2009, p. 951), therefore treatment services are provided to meet this goal. The current research found that treatment services did reduce recidivism while on probation and 6 months post, so efforts should be focused on improving services and offering treatment services to youth with emotional and behavioral service needs. This is not a simple task, but with

increasing amount of research on identifying service needs and factors associated with service use, the juvenile justice system can better serve the youth that come into contact with the juvenile justice system.

Limitations

This dissertation was informed by data collected on youth as they enter and proceed through various avenues in the juvenile justice system, particularly, youth adjudicated and placed on court-ordered probation. The Maricopa County Juvenile Probation Department uses multiple electronic databases to collect information on different aspects of youth in the juvenile justice system, including demographics, cases statuses (diversion, probation, etc.), referral history, detentions, and treatment service, providing a number of variables that were used to answer questions related to treatment service use and recidivism of youth in the juvenile justice system. However, it is important to acknowledge the limitations of the data that future research should attempt to address. First, information from psychological evaluations such as mental health disorder diagnoses was measured in this dissertation. Information in the youth's case file is typically not transferred into an electronic form. Particularly, psychological evaluations and mental health records are not accessible without reading the youth's case files. Without mental health diagnoses it is difficult to directly measure service needs. In particular, the type and severity of emotional and behavioral disorders, as well as the comorbidity of disorders, has important implications for the receipt of treatment services. Furthermore, the current study could not assess the prevalence of mental health disorders among youth on probation and the degree to which services are provided for mental

health disorders. Differences across groups, such as race/ethnicity, may be accounted for by differences in mental health disorders and service needs.

Along with mental health problems, there may be other factors that influence whether a youth receives treatment and the likelihood of recidivism, such as socioeconomic class, whether the youth is already receiving services through the mental health system or community, or other characteristics of the offense. Although an extensive list of critical covariates was included in the current study, and the propensity score matching procedure was able to create balanced groups to evaluate the effect of treatment, it is likely these unmeasured characteristics of youth and offenses influence the court's decision to require treatment services and youth's recidivism outcomes. Since randomization into treatment services is not a realistic option due to the complexity of providing treatment services and the ethical concern of denying treatment services, propensity score matching provides a strong statistical tool to evaluate treatment effects. Incorporating additional covariates will improve the matching procedure estimates and help isolate the effect of treatment.

An additional limitation is the timeframe of the study and the ability to capture behavior beyond 6 months after probation. As discussed earlier, Maricopa County Juvenile Probation Department started using an electronic Service Authorization Form in December 2012 in order to assess the research questions in this dissertation; youth had to begin probation on July 1, 2012 or later. Due to the recent timing of the data, only 339 youth had completed probation early enough to examine recidivism at 12 months. Additionally, nearly 40% of the youth were still on probation when the data were collected. Future research should continue to follow youth for a longer period of time to

see if treatment services continue to decrease the likelihood of future delinquency. By examining the youth's behavior while on probation, youth receiving treatment services may be less likely to get a referral while on probation because they are actively participating in treatment services that are being monitored by probation officers, further limiting the opportunity to be delinquent. While receiving treatment services may improve behavior while the youth is on probation, it is important to understand whether the treatment services are effective in altering behavior and improving life outcomes of youth.

On a related note, youth's recidivism could not be examined for youth who turned 18 because any criminal behavior was dealt with by the criminal justice system rather than the juvenile justice system. Youth that were 17 at the time of referral were removed from the sample to examine recidivism post-lease from probation supervision because they were likely 18 when they finished probation. It is also likely that some 16 year olds were 18 by the time they finished probation. As a result, the number youth who received a new referral at 6 month post-release from probation supervision is likely underestimated because any arrests by youths who are 18 will not be captured. From a data perspective, this limits data from the juvenile justice system to answer questions regarding later behavior; adult records from the criminal justice system are needed to fully understand the delinquent and criminal of these individuals as they become adults.

Another limitation is the lack of data collected on youth who receive treatment services through external funds. As previously discussed, when the court is not funding the treatment services, the information collected on these youth is limited. The court-funded Treatment Services Division keeps track of every unit of a service that the youth

receives, so the “dosage” of services for these youth is documented. Therefore the court knows how often a youth is receiving services and for long, as well as if the youth stops going to services. On the other hand, when the treatment services are funded by external agencies, the court does not know how many units of service the youth receives. Furthermore, the termination date of services recorded for these youth may not accurately reflect when the youth stopped receiving services, so there is a greater degree of error in the number of days the youth received treatment services. This makes it difficult to measure the dosage and duration of services received by youth whose treatment services are not funded by the court, as well as make comparisons across the type of funding source. The court is also faced with a difficult situation, because external funding sources relieve limited resources for treatment services, but as a consequence the court knows less detail about the youth’s receipt of treatment services. Probation officers are required to follow-up with the youth’s services and update the Service Authorization Forms, but this is still a new process for probation officers to adjust to. It is important to note that many of the service providers are the same regardless of the funding source, so the court already has working relationships with all the service providers. Therefore, it should not be unreasonable for the court to obtain additional information regarding the actual use of court-ordered services, regardless of the alternative payer.

Two final limitations of the data are the amount of missing data and the limited generalizability of findings. Two variables in particular had a larger amount of missing data—that is—school status and living situation, which is likely due to the changing nature of these variables. The living situation of the youth had to be obtained manually, but there were 150 youth of the original sample that had their files destroyed in the

system, so this information could not be found. In regard to school status, this is a difficult characteristic for the court to keep up-to-date. Results can be biased due to missing data, and while the current study removed cases with missing data because the amount of missing data fell below the 10% threshold, imputation is an alternative option that may better account for missing data. The research is also limited to one county in the Southwest, so it is not appropriate to generate findings to juvenile justice systems in other jurisdictions. Findings pertaining to the tracking of treatment services through the Service Authorization Form used by MCJPD, are more applicable to the policies in Maricopa County, but the implications of funding source can inform other systems. Treatment service budgets and the ability of youth's families to provide services through public or private insurance is not unique to Maricopa County, and the juvenile justice system needs to work with other agencies to provide treatment services and ensure youth's service needs are being met.

Future Research

While practitioners can work together to provide services more efficiently, additional research is still needed to understand how youth with emotional and behavioral problems are processed through the juvenile justice system and how the juvenile justice system responds to their service needs. Research on the prevalence of mental health disorders among youth in the juvenile justice system is limited and often focused on youth in detention (Teplin et al., 2002; 2005). The response to youth with emotional and behavioral problems in detention will likely differ from the long term service needs and care of youth. Research is needed to examine how mental health problems influence decisions by judges and other juvenile justice workers and how services needs are

responded to at different stages in the juvenile justice system. Research also needs to better understand how involvement in the juvenile justice system disrupts services that may already be ongoing. For example, if a youth gets detained, any ongoing services that the youth is receiving through Medicaid are suspended, and the youth is unable to see his or her ongoing service provider, which may also include medications. It can take time to return the youth to services. If the detention is lengthy, it can be disruptive for their ongoing care (Acoca, Stephens, & Van Vleet, 2014). These types of situations are not well-understood and it is difficult to inform policy-makers and encourage collaborations among agencies when we do not know where the problems arise. The youth's health, including mental health, must be protected regardless of the situation and agencies need to work together so that care is not disrupted.

Many of the limitations discussed in the previous section provide directions for future research, but one area that is continuing to receive attention is the unique population of sex offenders. The current research included sex offenders, but due to the nature of their offenses, the required use of treatment services for these youth, and their relatively low risk of reoffending (see Appendix B), this population of offenders may be better suited for a separate analysis or comparative analysis with the general population of youth on probation receiving treatment services. For example, the youth in sex offender treatment services, both residential and outpatient had very few referrals which may be due to the quality of treatment services and degree of supervision placed on these youth, but also because of their low-risk nature. Teasing out these factors is difficult and future research needs to further examine the service needs, treatment service use, and long-term implications of their crimes and receipt of services.

Another area for research to examine is the effect of treatment on other aspects of life, such as family and peer relations, involvement in school and other prosocial activities, and overall well-being. Due to the nature of data collected by the juvenile and criminal justice system, and the goals of the justice system to reduce crime, the primary focus is on recidivism. Most recidivism measures do not account for behavior that is not brought to the attention of the juvenile or criminal justice system through arrest; therefore, there is delinquent and criminal behavior that is not captured in formal recidivism measures. Second, improving other life outcomes has implications for criminal behavior. This suggests that future research should examine the mechanisms through which treatment services and other justice policies influence criminal behavior. While it is helpful to know that treatment services reduced recidivism the reasons why remain unknown. To study other outcomes besides recidivism, would require qualitative data to better capture the processes through which treatment services benefit youth and reduce delinquency. It may be that the treatment services help youth build stronger relationships with family and prosocial friends that prevent the youth from continued delinquent behavior. Last, reducing reoffending is an important outcome, but the juvenile justice system and researchers should also be interested in the greater well-being of youth.

Conclusion

The current study examined a number of questions related to treatment services offered in the juvenile justice system of a single U.S. county and whether the services helped reduce levels of recidivism among youth on probation. There is growing recognition that youth suffer from emotional and behavioral problems which affect

multiple aspects of their lives and put them at risk for delinquency and involvement in the juvenile justice system. Public policy is becoming more responsive in mental health problems and their impact on society in general, which will impact judicial system practices and other systems of care, such as schools, child welfare, and the juvenile justice system. Lipsey et al., (2010) argue that "the two most progressive policy reforms of recent years are the drive for evidence-based practice, which focuses on effective treatments, services, and supports for children and families, and the effort to establish systems of care to address the infrastructure of funding and linkages between services and programs" (p. 9). Identifying service needs and providing services matched to those needs is not an easy process, but the consequences of ignoring the problems can have long-term negative effects both for the individual youth and the larger community.

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APPENDIX A

SERVICE PACKAGES-MULTIPLE TREATMENT SERVICES

Appendix A. Service Packages-Multiple Treatment Services (N=944)

	Receiving Service Package
	N
Two Services	*188*
GMH Residential and Outpatient	25
GMH Residential and Sex Offender Residential	2
GMH Residential and Substance Abuse Residential	6
GMH Residential and Substance Abuse Outpatient	16
GMH Residential and Evidence-based program	7
GMH Outpatient and Sex Offender Outpatient	3
GMH Outpatient and Substance Abuse Residential	2
GMH Outpatient and Substance Abuse Outpatient	16
GMH Outpatient and Behavior Specific Education	1
GMH Outpatient and Evidence-based program	1
GMH Outpatient and Mentoring/life skills	22
GMH Outpatient and Drug Court	1
Sex Offender Residential and Outpatient	32
Sex Offender Residential and Evidence-based program	3
Substance Abuse Residential and Outpatient	3
Substance Abuse Residential and Mentoring/life skills	1
Substance Abuse Residential and Drug Court	2
Substance Abuse Outpatient and Evidence-based program	1
Substance Abuse Outpatient and Mentoring/life skills	9
Substance Abuse Outpatient and Drug Court	13
Evidence-based program and Mentoring/life skills	7
Mentoring/life skills and Drug Court	15
Three Services	*47*
GMH Residential and Outpatient and Mentoring/life skills	3
GMH Residential and Outpatient and Evidence-based program	2
GMH Residential and Outpatient and Substance Abuse Outpatient	12
GMH Residential, Substance Abuse Outpatient, and Drug Court	2
GMH Residential, Substance Abuse Outpatient, and Evidence-based program	1

GMH Outpatient, Substance Abuse Residential and Outpatient	2
GMH Outpatient, Substance Abuse Residential, and Drug Court	1
GMH Outpatient, Substance Abuse Outpatient, and Mentoring/life skills	3
GMH Outpatient, Substance Abuse Outpatient, and Drug Court	1
GMH Outpatient, Evidence-based program, and Mentoring/life skills	1
GMH Outpatient, Sex Offender Residential and Outpatient	1
Sex Offender Residential and Outpatient, and Evidence-based program	3
Substance Abuse Residential, Mentoring/life skills, and Drug Court	2
Substance Abuse Outpatient, Evidence-based program, and Mentoring/life skills	1
Substance Abuse Outpatient, Mentoring/life skills, and Drug Court	11
Evidence-based program, Mentoring/life skills, and Drug Court	1
Four Services	*11*
GMH Residential and Outpatient, Evidence-based program, and Drug Court	1
GMH Residential and Outpatient, Evidence-based program, and Mentoring	1
GMH Residential and Outpatient, Substance Abuse Outpatient and Drug Court	1
GMH Residential and Outpatient, Substance Abuse Outpatient and Mentoring	2
GMH Residential and Outpatient, Substance Abuse Outpatient and Evidence-based program	1
GMH Outpatient, Substance Abuse Outpatient, Evidence-based program, and Mentoring/life skills	1
GMH Outpatient, Substance Abuse Outpatient, Behavior Specific Education, and Mentoring/life skills	1
GMH Residential, Substance Abuse Outpatient, Mentoring/life skills, and Drug Court	1
GMH Residential, Substance Abuse Residential and Outpatient, and Evidence-based program	1
Substance Abuse Outpatient and Residential, Mentoring/life skills, and Drug Court	1
Five services	
GMH Residential and Outpatient, Substance Abuse Outpatient, Mentoring, and Drug	1

APPENDIX B

BIVARIATE STATISTICS FOR RISK LEVEL BY TYPE OF TREATMENT SERVICE

Appendix B. Bivariate statistics for Risk Level by Type of Treatment Service

	Exclusive Type of Treatment Service										
	GMH outpatient	GMH residential	Sex offender outpatient	Sex offender residential	Substance abuse outpatient	Substance abuse residential	Mentoring and life skills	Other service	Two services	Three or more services	Total
Risk Level***											
Low	14.5	1.2	43.4	8.4	3.0	0.6	6.6	3.0	17.5	1.8	100.0
Moderate	17.6	9.1	10.5	12.4	6.7	2.4	11.0	6.2	22.4	1.9	100.0
High	19.8	14.5	1.2	2.7	13.4	3.0	10.8	5.8	19.8	9.2	100.0

Note: ***$p \leq .001$; chi-square test

APPENDIX C

BIVARIATE STATISTICS- YOUTH RECEIVING PSYCHOLOGICAL EVALUATION

Appendix C. Bivariate Statistics- Youth Receiving Psychological Evaluation (N= 3,779)

	Psychological Evaluation	No Psychological Evaluation
	%	%
Variables		
Gender		
Female (reference)	36.5	63.5
Male	37.7	62.3
Race/Ethnicity***		
White (reference)	35.3	64.7
African American	48.6	51.4
Latino	35.7	64.3
Native American	36.6	63.4
Other	28.3	71.7
Age (Mean, SD)***	15.7, 0.04	16.3, 0.03
Living situation***		
Single parent (reference)	34.8	65.2
Two parents	27.3	72.7
Grandparent or other family	44.7	55.3
Other-DCS	64.6	35.4
School status***		
Enrolled	35.7	64.3
Not enrolled	43..0	57.0
Offense severity***		
Property felony (reference)	34.9	65.1
Personal felony	53.1	46..9
Property misdemeanor	32.9	67.1
Personal misdemeanor	47.0	53.0
Drugs	32.0	68.0
Public peace	28.3	71.7
Other	29.5	70.5
Pre-adjudication detention***		
Yes	48.6	51.4
No	29.9	70.1

Appendix C. Bivariate Statistics- Youth Receiving Psychological Evaluation (N= 3,779)

	Psychological Evaluation	No Psychological Evaluation
	%	%
Prior referral***		
Yes	40.1	59.9
No	38.2	67.8
Prior adjudication***		
Yes	42.0	58.1
No	36.8	63.2
Prior treatment service**		
Yes	46.5	53.5
No	35.4	64.6
Risk level***		
Low (reference)	21.4	78.6
Moderate	32.7	67.3
High	45.5	54.5
N=	*1416*	*2363*

***p ≤ .001, **p≤. 01, *p≤.05 † p≤ 0.1; Continuous measures were examined using a t-test and categorical variables were examined using a chi-square test.