

Heroin Use and Recidivism:
The Impact of Familial Social Support
by
Amber Griffin

A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Science

Approved April 2016 by the
Graduate Supervisory Committee:

Danielle Wallace, Chair
Alyssa Chamberlain
Kevin Wright

ARIZONA STATE UNIVERSITY

May 2016

ABSTRACT

There has been a rise in heroin use throughout the United States due to doctors increasingly prescribing painkillers to patients with chronic pain (Kanouse & Compton, 2015; Compton, Boyle, & Wargo, 2015). Individuals get addicted to painkillers and, when their doctor will no longer prescribe them, turn to alternative methods of relief; heroin is often their cheapest option (Kolodny, Courtwright, Hwang, Kreiner, Eadie, Clark, & Alexander 2015). Heroin users are three to four times more likely to die from overdose than other types of drug users (Darke & Hall, 2003). The purpose of this study is to determine the likelihood that heroin users successfully reenter the community upon release from prison in comparison to other types of drug users. There are several re-entry outcomes that can be considered “success”; this study measures success as an index of the quality of the returning offender’s familial relationships as well as recidivism. The data used for this analysis is the Serious and Violent Offender Reentry Initiative (SVORI). The sample consists of male offenders, aged 18 years and older, who have been convicted of and imprisoned for a serious or violent crime. Findings suggest familial social support does not have an effect on heroin use, but heroin use increases the risk of recidivism. These findings will provide a context for rehabilitation of heroin offenders and will launch future research focusing on the differences between heroin users and other types of drug users.

TABLE OF CONTENTS

	Page
LIST OF TABLES.....	v
CHAPTER	
1. INTRODUCTION.....	1
Theoretical Perspective.....	6
Drug Use and Recidivism.....	8
Social Support and Recidivism.....	10
Drug Use and Social Support.....	12
Limitations of Existing Literature.....	14
2. CURRENT FOCUS.....	14
3. METHODS.....	16
Data.....	16
Variables.....	17
Analysis Plan.....	18
4. RESULTS.....	19
5. DISCUSSION.....	23
REFERENCES.....	26
APPENDIX	

	Page
A ANALYSIS TABLES.....	30

LIST OF TABLES

Table	Page
1. Descriptive Statistics of All Variables.....	31
2. Test for Multicollinearity.....	33
3. Correlations between “Rearrest” and All Other Variables.....	34
4. Logistic Regression Analysis.....	35

INTRODUCTION

Heroin use has skyrocketed in recent years, due in part to doctors overprescribing painkillers to patients with chronic pain (Kanouse & Compton, 2015; Compton, Boyle, & Wargo, 2015). Opioid dependence and addiction has been described, appropriately, as an epidemic in the United States (Cicero, Ellis & Harney, 2015; Kolodny, Courtwright, Hwang, Kreiner, Eadie, Clark & Alexander, 2015; Davis, Green, & Zaller, 2015; Compton, Jones, & Baldwin, 2016). Overprescription of painkillers often leads to “doctor shopping” and, when that fails, individuals turn to street-level drug networks to cope (Inciardi, Surratt, Kurtz, & Cicero, 2007; Compton et al., 2015).

“Doctor shopping” is when a patient realizes that he has a choice in the quality of medical care he receives. For the general public, this means the individual can choose a doctor he feels is competent and is not forced to see any one doctor. For those addicted to painkillers, this makes it easier to see multiple doctors and be prescribed more medication than one single doctor might deem sufficient. This also allows for patients to seek out doctors that are willing to prescribe more painkillers than are generally recommended (Kasteler, Kane, Olsen & Thetford, 1976).

Street-level drug dealers who sell prescription drugs do exist; however prescription drugs are harder to get, increasing their cost. This is a main reason individuals struggling with prescription pill addiction turn to heroin. Heroin is a cheaper, stronger, more easily accessible high (Rigg, 2015; Kolodny et al., 2015; Cicero et al., 2015). It is also one of the most deadly illicit substances. Heroin users are three to four times more likely than other types of drug users to die prematurely (Lopez-Quintero,

Roth, Eaton, Wu, Cottler, & Anthony, 2015). Overdose deaths involving opioid pain relievers and heroin have increased exponentially since 2010 (Davis et al., 2015).

Heroin use is not only a threat to the user; it is also a public health concern (Kolodny et al., 2015; Rigg, 2015). While heroin can be smoked or inhaled, it is often injected. Drug users can spread diseases such as HIV, Tuberculosis, and Hepatitis C (Kim, Jin, McFarland, & Raymond, 2015) by sharing needles, which is common. Aside from spreading disease amongst each other, heroin users can also spread these illnesses to their intimate partners. However, individuals with no association with a heroin addict can be affected by these behaviors if they come in contact with a used needle (Wurcel, Merchant, Clark, & Stone, 2015). At this point, the risk of disease is no longer limited to the drug user's network. While these diseases, and others, are not spread exclusively in this way, sharing needles perpetuates the problem and presents a real threat of contracting illness for users and nonusers alike.

Another concern associated with heroin use is public safety. While this relationship needs to be explored more extensively in the literature, a few studies have found connections between heroin and crime. Heroin use is correlated with an increased crime rate, specifically street crime. Heroin has been associated with increased criminal activity for both men and women (Inciardi, 1979). When police departments crack down on street-level heroin dealing, rates of burglary, robbery, homicide, forcible rape, and aggravated assault decrease substantially (Kleiman, 1988). Historically, however, arrests are low among heroin users (Inciardi, 1979). While opioid dependence has been found to be associated with increased property crimes, heroin use, specifically, is associated with

increased violent crime (Sutherland, Sindicich, Barrett, Whittaker, Peacock, Hickey & Burns, 2015). This discrepancy between increased violent crime and lower arrest rates is striking, though it is not extensively explored in prior literature. What we do know about arrests of heroin users is that they are more likely to be arrested for the violent crimes than for lesser crimes, such as pick pocketing and dealing in stolen goods (Inciardi, 1979). Given that violent crimes happen less frequently, this could be an explanation for why heroin users are associated with violent crime but fewer arrests.

Reentry studies can focus on more than persistence and desistance from crime. Employment opportunities, educational achievement levels, health, and ability to obtain housing are just a few outcome measures that are important to consider for returning offenders. While these are all worthy contributions, few studies focus specifically on the impact heroin has on recidivism. Usually, drug users are lumped into one category (Casey, 2015). Due to that limitation, much of the correctional literature focuses on how drug use in general impacts recidivism rates (Farabee, Joshi, & Anglin, 2001). However, previous research suggests heroin users are less likely to obtain stable employment (Callahan, LoSasso, Olson, Beasley, Nisele, Campagna & Jason, 2015) and are more likely to relapse than other types of drug users (Darke & Hall, 2003). Much of the attention in the literature to date is also placed on non-violent drug offenders. While this is useful, if the violent crime rate significantly decreases when heroin offenders are removed from the community, more research should examine the relationship (Kleiman, 1988; Sutherland et al., 2015).

There is also research that indicates drug users are often reincarcerated due to parole violations, such as using drugs. However, relapse is a common occurrence on any drug addict's road to recovery (Colman & Vander Laenen, 2012; Leshner, 1997; Hubbard & Marsden, 1986). Based on these studies, it is counterintuitive to rearrest offenders who use drugs if they are making a concerted effort to desist. The types of drugs that offenders on parole are using should also be taken into account. If a heroin user gets caught using marijuana, for example, it could be argued that he is improving by engaging in *less* delinquent activity (Colman & Vander Laenen, 2012). While still delinquent, the degree of delinquency is less severe.

There is a copious amount of research that links the presence of social support to desistance from crime (Cullen, 1994; Cochran, 2013; Mowen & Visher, 2015). Offenders who have higher levels of social support throughout their prison sentence have decreased chances of recidivating in comparison to offenders who do not sustain these relationships while incarcerated (Cochran, 2013; Mowen & Visher, 2015). Some prisons emphasize the importance of visitation for incarcerated individuals, because of the benefits both the offender and the community will see when the offender desists from crime upon his release (Cochran, 2013).

Social support may be particularly important to the desistance process for offenders who use heroin. One of the most cited factors that lead to recidivism is failure to obtain employment. Heroin users are less likely than the average offender to find a steady job upon release from prison (Callahan et al., 2015). Because of this disadvantage, social support may provide offenders who use heroin with the resources they need prior

to finding a job, such as housing. Networking with family members is also a common way recently released offenders are able to obtain employment, which would be particularly beneficial for heroin users (Tripodi, 2010).

The purpose of this study is find an answer to the question: do serious and violent offenders who identify as heroin users have a more difficult time reentering society after imprisonment due to a lower level of perceived social support than other types of drug offenders? The hypotheses being tested are: (1) Heroin users have lower social support than other types of drug offenders and (2) Heroin users are more likely to recidivate than other types of offenders. The mediating impact of social support will be discussed further in later sections. If the two hypotheses outlined above are not supported by the study, it can be assumed that heroin users are no different from other types of drug offenders and there is no harm in grouping them together. The study will also discredit the hypothesis that heroin users have weaker social bonds than other types of drug users. Therefore, less emphasis can be placed on drug treatment at the time of release, because heroin users are no more or less likely to recidivate than any other offender.

If these hypotheses are correct, however, this has serious potential policy implications for the United States criminal justice system and for the medical community. The criminal justice system may need to focus more on drug treatment for heroin users, both in prison and in the community. Not only does there need to be focus on the users themselves, but more should be done to encourage families of heroin users to support them throughout their stay in prison and beyond. Perhaps these support systems could be

encouraged while the offender is still incarcerated as a way to strengthen these prosocial relationships prior to release.

While this study does not directly focus on the impact the medical community has on heroin users, it does suggest that there are issues that need to be addressed in that capacity, specifically focusing on the protocol doctors follow when prescribing prescription pain relievers. Finally, research should begin focusing on each type of drug offender as a separate population. This study will provide support for heroin users being different than other types of drug users. If that is the case, then there may be differences between offenders who use other types of drugs as well. Drug offenders should not be lumped into one category. Instead, each type of user should be studied to determine what impact different types of drugs have on crime and desistance. It is possible that some users have similar risks of recidivism and/or similar levels of support, but it would be beneficial to find out if this is the case.

THEORETICAL PERSPECTIVE

Sampson and Laub's Age-Graded Theory of Informal Social Control posits that as offenders age, they tend to desist from crime (2006). This is due to their increased ability over time to form strong connections with prosocial institutions, such as obtaining employment, getting married, and having children. Another component of these connections is the development, or sustainment, of positive relationships with family members (Colman & Vander Laenen, 2012). Prosocial ties to family provide an impetus for change among offenders, while also helping to connect offenders with employment and housing (Tripodi, 2010). Failure to obtain employment and housing are two major

components that offenders often cite as reasons for recidivating (Callahan et al., 2015). With the help of strong relationships with family members, these obstacles can be overcome much easier and integration back into the community may be less painful.

However, individual differences may play into this theory with heroin users being less likely to have the social controls mentioned. Their drug use likely impedes their ability to form these types of relationships with others. Heroin addiction is hardly a desirable quality in a mate and use of the drug decreases the chances of an individual maintaining employment. It may also construct barriers between an addicted parent and his ability to have quality relationships with his children.

Cullen's social support theory provides the backbone for the hypotheses of this paper (1994). Social support impacts desistance from crime, whether this is in the form of familial support, as discussed here, or other types of social support, such as neighborhoods and communities, social service agencies, other members of an offender's social network, or even the criminal justice system (1994). Cullen posits that social support works as a protective factor against criminal and delinquent behavior, increasing social control, while decreasing crime and victimization (1994). Instrumental support, such as financial help or networking to find a job, and expressive support, such as having someone to vent to, are both important in the discussion of offenders addicted to heroin (Cullen, 1994). Familial social support may be limited for heroin users, because of the nature and severity of their addiction.

Many heroin users begin using prescription pain relievers for a legitimate medical concern. Family members often begin to provide care for the individual at this time.

Interestingly, “60-80% of people who are drug dependent – especially those under Age 35 – either live with their parents or are in daily contact with at least one parent; 80-95% are in at least weekly contact” (Stanton & Shadish, 1997, p.170). As the individual’s dependence on opioids intensifies, and they turn to heroin, it is often families who bear the brunt of the financial strain, as well as emotional strain worrying about the user. Over time, the high rate of stress associated with helping the user may become too much for the family and they will cut ties with the user, either because they have lost hope or because they believe the user has to hit “rock bottom” before he will help himself (Cunningham, L. Sobell, M. Sobell, & Gaskin, 1994). “Rock bottom” is when the user is so fed up with his situation that he understands he must stop using in order to save his own life (Cunningham et al., 1994; McIntosh & McKeganey, 2001).

In combination, these two theories help to explain the impact of social support on heroin users. Heroin users are less likely to have developed prosocial bonds that would exercise social control over their behavior and, according to the hypothesis for this paper, they are less likely to have support from family members due to the intense strain their addiction places on those close to them, both financially and emotionally.

DRUG USE AND RECIDIVISM

Desistance, whether from crime, drug use, or other addictive behaviors, should be viewed as a process (Tripodi, 2010). This idea applies specifically to drug use, because addiction research has found relapse to be a common part of recovery (Leshner, 1997). Recovery from drug addiction is also viewed as a separate battle from desistance from crime for many drug offenders. All of the user’s effort is focused on overcoming his

addiction and he believes his desistance from crime will eventually follow (Colman & Vander Laenen, 2012). Due to this mindset, the progress of the offenders should be taken into account when determining whether or not they have desisted, as opposed to desistance being strictly the cessation of offending. For example, determining if the frequency of the offender's drug use decreases over time could have an impact on desistance research (Colman & Vander Laenen, 2012).

The concept of desistance as a process is especially important for offenders released on parole. Many drug offenders are returned to prison because of a technical violation, such as testing positive for drugs (Dowden & Brown, 2002). Because recovery from drug addiction is also a process, with relapse a common occurrence, many offenders who use drugs are reincarcerated. Offenders who are imprisoned based on a technical violation have been found to be more likely to commit a new crime once they are released again (Campbell, 2015). This creates a cycle that is difficult for the offender to break. There is also evidence that there is a pronounced effect on the delinquent behaviors of drug offenders after they have been imprisoned as compared to offenders who do not report using drugs. Offenders who report using drugs recidivate at higher and faster rates than other types of offenders (Spohn & Holleran, 2002).

Not much is known about the effect of heroin use in particular on the desistance process. However, some studies do examine how heroin is different from other types of drugs in terms of the severity of the addiction. Heroin users are thirteen times more likely to die prematurely than their peers and are 14 times more likely than their peers to die by suicide (Darke & Ross, 2002). "Contrary to popular misconception, it is not younger,

inexperienced heroin users that are at greatest risk for overdose death, with the mean age of overdose fatalities in the late 20s to early 30s. Rather than novice users, it is long-term, dependent heroin users who are at greatest risk” (Darke & Hall, 2003, p. 190). Also, within one year of receiving treatment, relapse to daily heroin use is much higher in comparison to relapse to use of alcohol, marijuana, or cocaine (Hubbard & Marsden, 1986). Recovery from drug addiction is an integral part of the desistance process. Relapsing, or failing to overcome the addiction, likely leads to recidivism. (Coleman & Vander Laenen, 2012).

SOCIAL SUPPORT AND RECIDIVISM

The link between social support and desistance has been firmly established in prior literature. Visitation for inmates has been shown to have a positive impact on prisoners in general: establishing relationships with family or maintaining existing relationships while incarcerated reduces the risk of recidivism for offenders who view their relationships as positive (Cochran, 2013). According to the age-graded theory of informal social control, the quality of the relationship is what will lead to desistance (Sampson & Laub, 1990).

Sampson and Laub’s age-graded theory of informal social control stresses the importance of quality prosocial relationships in the desistance process (1990). As offenders age, their opportunity to establish bonds with prosocial institutions increases. This can be accomplished through getting married, having children, joining the military, or obtaining employment. These ties can give the offender incentive to desist from engaging in criminal activity, because they have more to lose if they are arrested or

sanctioned. The quality of prosocial relationships is also important in the desistance process, with social support being integral to the success of the offender (Sampson & Laub, 1990).

Familial support for prison inmates helps establish goals and reasons for offenders to desist from crime upon release. Offenders often cite their children as motivation for getting out of prison and becoming contributing members of society (Sampson & Laub, 2006; Pierce, 2015). Familial relationships in general are also important entities that create reasons for offenders to change their ways. Support from family eases the stress of reentering society after being released from prison (Pierce, 2015). The hope is that returning offenders will have supportive prosocial influences in their family members who can assist during the transition to the community.

The importance of positive relationships translates into the success of the offender upon release, because returning offenders often find employment and housing due to support from family or friends (Berg & Huebner, 2011; Tripodi, 2010). Two factors that have been shown to reduce recidivism are having a stable job and a stable place to live. (Sampson & Laub, 1990). Returning offenders who obtain employment exhibited the initial motivation to find a job. They also exhibited at least some level of commitment to the job, which illustrates behavioral change (Tripodi, 2010). However, while employment is a major form of informal social control that aids in the desistance process, heroin users have been shown to have lower employment rates than other types of drug users (Callahan, LoSasso, Olson, Beasley, Nisle, Campagna, & Jason, 2015). This may be due

to decreased levels of familial social support, which cuts off one avenue the offender could potentially use to find employment upon release.

DRUG USE AND SOCIAL SUPPORT

Considering that illicit drug use on its own is a crime, it would follow that social support should also be important to a drug offender's recovery (Campbell, 2015). It is especially important that social support comes from a prosocial influence and not from friends who are also drug users or engaged in other forms of criminal activity. While these individuals may mean well, their influences are likely to negatively impact the offender's recovery process (Schroeder, Giordano, & Cernkovich, 2007).

However, drug users often have decreased levels of social support from such prosocial influences because of their increased networking and association with delinquent others (Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979). In fact, an important part of drug treatment is to help drug addicts regain their social skills and relearn how to function in society without being under the influence of drugs (Hawkins & Fraser, 1989). When an offender's network is primarily composed of delinquent individuals, the offender is likely to continue his delinquent behavior (Akers et al., 1979).

Heroin users specifically may suffer from decreased levels of social support. Prior research suggests family members and partners of drug users generally have increased stress due to multiple factors, including health/emotional problems, financial problems, relationship problems, and physical abuse (Kirby, Dugosh, Benishek, & Harrington, 2005). Significant others of drug users are often less well-adjusted socially than the user's

own parents (Hudson, Kirby, Firely, Festinger, & Marlowe, 2002). This suggests there is even more incentive for policy to help users overcome addiction. The users themselves are not the only individuals affected by addiction.

While there is limited research available detailing the reasons heroin users differ from other types of drug users, one study conducted by Tucker (1982) focuses specifically on drug users with dysfunctional coping strategies. It found that, even when individuals felt they had high levels of social support, it was unlikely they would utilize these relationships in times of distress. This study found that the relationship between utilization of dysfunctional coping mechanisms was especially significant for female heroin users (Tucker, 1982).

One significant type of distress that the majority of the offenders in the present study will face is reentering the community upon release from prison (Ekland-Olson, Supancic, Campbell, & Lenihan, 1983). As discussed above, relationships with family members is a way that many offenders find employment (Callahan et al., 2015). Without that social support to assist the offender, it is more difficult for the offender to find a job and more likely that the offender will return to his network of delinquent peers (Sampson & Laub, 1990). This will aid in the repetition of criminogenic behavior that familial support may have been able to alleviate.

If the results from Tucker's study are generalizable, even if heroin users have high levels of social support, it is unlikely to make a difference in their delinquent behavior (1982). They will be more likely to engage in their old ways of coping when they are released from prison. Examining this relationship in further studies would help to know if

the results should be generalized to other populations. This is unclear based on the one sample of drug offenders available in Tucker's study.

LIMITATIONS OF EXISTING LITERATURE

One limitation of existing literature is that drug users are usually presented as a homogeneous group (Farabee et al., 2001). Differences between alcohol use and drug use have been distinguished in terms of their impact on desistance, but individuals who use drugs, excluding alcohol, are still generally categorized into one group. Drug users are usually enmeshed in a criminal community. That is, many of the members in their networks are also drug users or dealers. This provides unique challenges that drug users face when attempting to desist from crime. Since their network of close friends and associations are generally also criminogenic and drug-involved, it may be difficult for them to find prosocial influences that will steer them to more positive relationships and experiences (Schroeder et al., 2007).

Additionally, few studies focus specifically on the effect of social support on heroin users and the effect that heroin use has on recidivism. Relapse may be a part of recovery from drug addiction, but it is important to consider the effect of relapse on recidivism. This is generally addressed in parole research, where offenders are returned to prison for violations involving drug use (Dowden & Brown, 2002).

CURRENT FOCUS

This study uses Serious and Violent Offender Reentry Initiative (SVORI) data (Lattimore & Visher, 2009) to determine if male offenders, aged 18 years and up, who

identify as heroin users have a more difficult time reentering society after imprisonment due to a lower level of perceived social support than other types of drug offenders. A combination of Sampson and Laub's (2006) age-graded theory of informal social control and Cullen's (1994) theory of social support is the framework for the hypotheses being tested. The assumptions are that heroin users are more likely to recidivate than other offenders and that social support is an important component of the desistance process for heroin users.

Taking previous research into account, the following hypotheses are proposed:

1. Heroin use increases risk of recidivism.
2. Familial social support mediates the relationship between heroin use and recidivism. More specifically, lack of support increases recidivism risk.

Another main component of this project is its focus on heroin users who have been imprisoned for a serious or violent crime. Mainstream media is generally only concerned with the "non-violent drug offender." This study, however, focuses on violent offenders who report using drugs, which is a different dynamic. It could be argued that these are more seriously addicted offenders who have gone to greater extremes to obtain their fix or sustain their habit. Instead of shoplifting or stealing, these offenders may have been convicted of armed robbery, for example. It should be stressed this is speculation and is simply one possible scenario. It would be beneficial for future research to make these connections. However, it is beyond the scope of the present study.

This study seeks to test the hypothesis that offenders who report using heroin have lower levels of social support due to the nature of their addiction. The goal is to determine if the absence of social support has a detrimental effect on heroin users by first determining if those levels of social support are, in fact, lower than those of other types of drug offenders. In effect, if the outcome supports the hypotheses, it would also lend support to Sampson and Laub's (2006) theory of informal social control and Cullen's (1994) social support theory.

METHODS

DATA

This study conducts secondary data analysis using the Serious and Violent Offender Reentry Initiative (SVORI) data (Lattimore & Visser, 2009). SVORI funded agencies to create programs that would help returning offenders reintegrate back into their communities. The purpose of the data collection was to determine the effectiveness of these programs. Effectiveness was measured by the degree to which the program increased public safety by reducing recidivism. The main goal of the SVORI project was to determine whether ex-offenders who participated in SVORI programming were more successful in their reintegration attempts than ex-offenders who did not participate in these programs. These data were collected in four waves. One interview was conducted prior to the offender's release from prison and three more at 3, 9, and 15 month intervals after release. These interviews addressed three separate populations: adult males, adult females, and juvenile males (Lattimore & Visser, 2009). The current study uses variables from both wave 1 and wave 3 of the adult male sample in order to gauge whether a

relationship exists between returning offenders and the effects of heroin use on recidivism. Since the adult male sample is the largest, it was selected for this study. Given that heroin use is not as common as use of other drugs, like marijuana, a larger sample was needed to determine statistical effects. Some variables from wave 1 were used to measure characteristics that would remain constant throughout an offender's life. Variables from wave 3 were used to determine their effect on the offender within one year of release from prison. The recidivism measures were collected separately from the original SVORI data. This is administrative data that was collected from state and local law enforcement agencies. This is different from the self-report information collected for SVORI.

VARIABLES

The dependent variable is a dichotomous measure taken from the recidivism data indicating whether or not the offender has been rearrested within twelve months after release from prison (0=No, 1=Yes). The independent variable is heroin use, specifically a dichotomous variable measuring whether or not the offender reports having ever used heroin. This was asked during the first wave of interviews. To test the mediating variable, an index measuring familial social support was created combining five variables from the third wave describing the offender's perceived relationship with family. The offender could rate each statement on a Likert scale ranging from one to four. A score of one denotes "strongly agree" and four denotes "strongly disagree." The statements the offenders rated were (1) I feel close to my family, (2) I want my family involved in my life, (3) I have someone in my family to talk to, (4) I have someone in my family to turn

to, and (5) I have someone in my family who understands my problems. This index was created using the sum of these variables. Cronbach's alpha for the index is 0.8727, which means these variables have a relatively high internal consistency. In other words, these variables can be used to measure the same concept, in this case, familial social support.

Control variables from the first wave include continuous measures of number of days incarcerated, number of previous convictions, number of prior prison stays, and number of prior arrests. Education is a dichotomous variable consisting of 0 = less than high school and 1 = high school or equivalent. Race is measured with three separate dichotomous variables: Black (0=All others, 1=Black), Hispanic (0=All others, 1=Hispanic) or Other Race (0=All others, 1=Other). Control variables from the third wave include a continuous measure for age and four dichotomous variables measuring marital status (0=Unmarried, 1=Married), children (0=No children, 1=Has children), gang membership (0=Gang member, 1=Not a gang member), employment (0=Not employed, 1=Employed).

Insert Table 1 Here

ANALYSIS PLAN

The first step in conducting an analysis on the relationship between the dependent variables and the independent variables is to determine whether or not multicollinearity is an issue. Next, tetrachoric correlations, which are primarily used when variables are dichotomous, are analyzed to find out which independent variables have significant

relationships with the dependent variable. Finally, a logistic regression model is run to determine first, if heroin use has a significant impact on the likelihood of an offender being rearrested within one year after being released from prison. Second, another logistic regression model is run to determine if familial social support does, in fact, predict recidivism. Finally, in order to test the effect of the mediating variable, a third logistic regression model is run to determine if the index for familial social support mediates the relationship between heroin use and rearrest. The purpose of testing the mediating relationship is to find out if heroin use has an indirect effect on recidivism by way of varying levels of familial social support.

RESULTS

In brief, the results of this study indicate that heroin users are not more likely to recidivate than other types of drug users. This does not support the first hypothesis outlined above. The results suggest that heroin users are not more resistant to desistance than other offenders. The second hypothesis is also not supported by the results. Social support does not mediate the relationship between heroin use and recidivism. Below, these results are discussed in more detail.

The first step taken to begin testing the above research questions is to assess the model for multicollinearity. This is accomplished by running logistic regression and then determining the variance inflation factor (VIF) values for each independent variable. VIF values measure how much of each variable is being explained by all of the other independent variables in the model. If the value is greater than four, there may be problematic multicollinearity. In the models for this study, the highest value is 2.14,

which is not an issue. Based on VIF values, there is no problematic multicollinearity in the model. Based on the condition indices of the model, there is also no problematic multicollinearity. Multicollinearity is a concern when the condition indices exceed thirty. The index total is 21.8336. Therefore, there is no problematic multicollinearity in the model.

Insert Table 2 Here

Next, analysis of the tetrachoric correlations output reveals, at the 0.01 level of significance, family support is significantly correlated with rearrest. The control variables identifying as Black, number of days incarcerated, number of prior arrests, number of previous prison stays, age, employment status, being married, and having a high school diploma or equivalent are also significantly correlated with the dependent variable. Identifying racially as “other” is significant, but only at the 0.05 level. The remaining control variables are not significant. Reporting ever having used heroin is also not significant. Identifying as black ($r^* = .120$), number of prior arrests ($r^* = .120$), and number of prior prison stays ($r^* = .133$) are positively correlated with rearrest. Identifying as Black increases the likelihood of rearrest. As number of prior arrests and number of prior prison stays increase, the likelihood of rearrest also increases. Age ($r^* = -0.084$), employment status ($r^* = -.160$), being married ($r^* = -.107$), having a high school diploma or equivalent ($r^* = -.136$) and being categorized as “other” with respect to race ($r^* = -.056$) are negatively correlated with rearrest. Older ex-offenders, those with a job, those who are married, those who have received a high school diploma or equivalent, and who fall in the “other” race category are less likely to be rearrested than younger ex-offenders, those without a

job, those who are unmarried, those with less education than a high school diploma, and those who do not fall into the “other” category when identifying race. Number of days incarcerated is also correlated with arrest ($r^*=.000$).

Insert Table 3 Here

Finally, three separate logistic regression models are run. The first model is to determine the relationship between heroin use and recidivism. The second model tests the relationship between familial social support and recidivism. The third model tests whether the familial social support variable is mediating the relationship between heroin use and recidivism.

In the first model, identifying as black, number of prior prison stays, and being married are significant ($p<.05$). Age and employment status are also significant ($p<.01$). Holding all other variables constant, the odds of being rearrested within twelve months after release increase when an individual identifies as Black by a multiple of .482 or 48.2% since $(1.482-1)*100=48.2$. The odds of being rearrested, holding all other variables constant, increase in terms of reported number of prior prison stays by a multiple of .123 or 12.3% since $(1.123-1)*100=12.3$. The odds of being rearrested, holding all other variables constant, decrease by a multiple of .567 or 56.7% when an individual is employed since $(.433-1)*100=-56.7$. Being married decreases the odds of being rearrested by a multiple of .409 or 40.9% since $(.591-1)*100=40.9$, holding all other variables constant. Finally, holding all other variables constant, a one year increase in age reduces the odds of being rearrested by a multiple of .055 or 5.5% since $(.945-1)*100=-5.5$.

In the second model, social support is found to not be a significant predictor of recidivism. However, age and employment status are significant ($p < .01$). Identifying as Black and number of prior prison stays are also significant ($p < .05$). Holding all other variables constant, a one year increase in age reduces the odds of being rearrested by a multiple of 0.044 or 4.4% since $(.956-1)*100=-4.4$. The odds of being rearrested, holding all other variables constant, decrease by a multiple of .569 or 56.9% since $(.431-1)*100=-56.9$ when an individual is employed. Identifying as Black increases the odds of rearrest by a multiple of .483 or 48.3% since $(1.483-1)*100=48.3$. Finally, number of prior prison stays increases the odds of rearrest by a multiple of .121 or 12.1%, holding all other variables constant, since $(1.121-1)*100=12.1$.

In the third model, familial social support is not mediating the relationship between heroin use and rearrest. Age and employment status are significant ($p < .01$). Identifying as Black and number of prior prison stays are also significant ($p < .05$). Holding all other variables constant, a one year increase in age reduces the odds of being rearrested by a multiple of 0.047 or 4.7% since $(.953-1)*100=-4.7$. The odds of being rearrested, holding all other variables constant, decrease by a multiple of .568 or 56.8% since $(.432-1)*100=-56.8$ when an individual is employed. Identifying as Black increases the odds of rearrest by a multiple of .511 or 51.1% since $(1.511-1)*100=51.1$. Finally, number of prior prison stays increases the odds of rearrest by a multiple of .121 or 12.1%, holding all other variables constant, since $(1.121-1)*100=12.1$.

Insert Table 4 Here

DISCUSSION

This study utilized logistic regression to test two relationships: (1) the relationship between heroin use and recidivism and (2) the mediating effect social support has on heroin use and recidivism. Neither of the two hypotheses were supported by the analysis. In this analysis, heroin use is not a significant predictor of recidivism and social support also does not have an effect on a heroin user's chances of recidivism.

Based on the results of this study alone, social support does not have a significant effect on recidivism for serious and violent male offenders, regardless of whether or not they use drugs. It may be beneficial to explore the relationship based on level of social support. Perhaps higher levels of social support do have an impact on recidivism while lower levels will not be significant predictors of desistance. Since social support does not predict recidivism based on this analysis, social support also does not promote or inhibit desistance for heroin users. Perhaps heroin users perceive their levels of social support as lower than they actually are. Or they simply do not utilize those resources when it would be beneficial for them, such as when reentering society. Either way, social support is not a contributing factor to the heroin using offender's desistance process. There is no significant effect of social support in the models at all, either in the likelihood of recidivism for all offenders in the sample or as a mediator in the relationship between heroin use and recidivism.

These findings have potential policy implications for corrections as it may decrease the importance placed on creating and sustaining familial ties to aid in the desistance process. The results of this study do not find support for Cullen's (1994)

theory of social support which suggests offenders with social support from family are more likely to desist from crime. This study also does not support Sampson and Laub's (2006) social control theory, which suggests social bonds created through employment, marriage, having children, and joining the military facilitate desistance. The results do not find support for the claim that social support will prevent offenders from recidivating within one year of their release from prison, whether they use heroin or not. However, there is one component of Sampson and Laub's (2006) social control theory that the results of this study do support. Employment is found to have a significant impact on desistance in all three logistic regression models. It may be beneficial for employment opportunities and career counseling to be made more readily available for returning offenders as employment is shown to be a significant predictor of desistance.

Heroin use among serious and violent offenders does not seem to impact recidivism. Therefore, drug treatment for this group is not likely to produce the results it would among a population of less serious and violent offenders. The criminal justice system may need to utilize different approaches than drug treatment to foster desistance in these types of offenders.

There are also limitations to this study. First, the population includes only male, violent offenders, so these results cannot be generalized to other populations. It also may be beneficial to use a different measure of social support. The measure used here focused on the offender's *perception* of his relationship with his family, which could be different from the reality. The amount of family support may also be important. Perhaps there needs to be high levels of familial support in order for an impact on recidivism to be

significant. Also, since this study only considered rearrest within a twelve month period, there may be effects of social support that reveal themselves after the offender has been out of prison for a longer period of time. It would also be beneficial to include a measure of drug treatment as a control variable to take into account the possible effects of rehab on heroin users.

Future research should address the limitations discussed above regarding the social support measure. Research should also explore the impact of drug relapse on violent crime. While beyond the scope of the present study it would be beneficial for future research to conduct similar studies to this one focused exclusively on female offenders who report using heroin to determine if the results of this study are generalizable to other populations. It would also be prudent to replicate the study testing the impact of other types of hard drug use, such as methamphetamine or cocaine on recidivism, both for female and for male offenders. It may be useful to replicate the study using non-violent drug offenders as well in order to determine if social support affects non-violent offenders differently than those who commit more serious crimes. Perhaps social support was not significant in this study because of a unique relationship between families and violent offenders. More research will have to be conducted to understand that relationship.

References

- Akers, R. L., Krohn, M. D., Lanza-Kaduce, L., & Radosevich, M. (1979). "Social Learning and Deviant Behavior: A Specific Test of General Theory." *American Sociological Review*, 44(4), 636-655.
- Berg, M.T. & Huebner, B.M. (2011). "Reentry and the ties that bind: An examination of social ties, employment, and recidivism." *Justice Quarterly*, 28(2), 382-410.
- Callahan, S., LoSasso, A., Olson, B., Beasley, C., Nisle, S., Campagna, K., & Jason, L. A. (2015). Income Generation in Recovering Heroin Users: A Comparative Analysis of Legal and Illegal Earnings. *Journal of Offender Rehabilitation*, (ahead-of-print), 1-12.
- Campbell, C. M. (2015). *Dooming Failure: Understanding the Impact, Utility, and Practice of Returns on Technical Violations* (Doctoral dissertation, WASHINGTON STATE UNIVERSITY).
- Casey, S. (2015). Offending: Drug-related expertise and decision making. *Aggression and Violent Behavior*, 20, 82-91.
- Cicero, T. J., Ellis, M. S., & Harney, J. (2015). Shifting patterns of prescription opioid and heroin abuse in the United States. *New England Journal of Medicine*, 373(18), 1789-1790.
- Cochran, J.C. (2013). "Breach in the Wall: Imprisonment, Social Support, and Recidivism." *Journal of Research in Crime and Delinquency*.
- Colman, C., & Vander Laenen, F. (2012). "Recovery Came First": Desistance versus Recovery in the Criminal Careers of Drug-Using Offenders. *The Scientific World Journal*, 2012.
- Compton, W.M., Boyle, M., & Wargo, E. (2015). "Prescription opioid abuse: problems and responses." *Preventive medicine*, 80, 5-9.
- Compton, W. M., Jones, C.M., & Baldwin, G.T. (2016). "Relationship between Nonmedical Prescription-Opioid Use and Heroin Use." *The New England Journal of Medicine*, 374(2), 154-163.
- Cullen, F. T. (1994). "Social support as an organizing concept for criminology: Presidential address to the academy of criminal justice sciences." *Justice Quarterly*, 11(4), 527-559.

- Cunningham, J.A., Sobell, L.C., Sobell, M.B., & Gaskin, J. (1994). "Alcohol and Drug Abusers' Reasons for Seeking Treatment." *Addictive Behaviors, 19*(6), 691-696.
- Darke, S. & Hall, W. (2003). "Heroin Overdose: Research and Evidence-Based Intervention." *Journal of Urban Health 80*(2), 189-200.
- Darke, S. & Ross, J. (2002). "Suicide among heroin users: rates, risk factors and methods." *Addiction, 97*(11), 1383-1394.
- Davis, C. S., Green, T. C., & Zaller, N. D. (2015). "Addressing the overdose epidemic requires timely access to data to guide interventions." *Drug and Alcohol Review.*
- Dowden, C. & Brown, S.L. (2002). "The role of substance abuse factors in predicting recidivism: A meta-analysis." *Psychology, Crime and Law, 8*(3), 243-264.
- Ekland-Olson, S., Supancic, M., Campbell, J., & Lenihan, K.J. (1983). "Postrelease depression and the importance of familial social support." *Criminology, 21*(2), 253-275.
- Farabee, D., Joshi, V., & Anglin, M. D. (2001). "Addiction careers and criminal specialization." *Crime & Delinquency, 47*, 196-220.
- Hawkins, J.D. & Fraser, M.W. (1989). "The social networks of drug abusers before and after treatment." *Drug and Alcohol Use, 73-91.*
- Hubbard, R. L., & Marsden, M. E. (1986). "Relapse to use of heroin, cocaine, and other drugs in the first year after treatment." *Relapse and Recovery in Drug Abuse. National Institute on Drug Abuse Research Monograph, 72*, 157-166.
- Hudson, C.R., Kirby, K.C., Firely, M.L., Festinger, D.S., & Marlowe, D.B. (2002). "Social adjustment of family members and significant others (FSOs) of drug users." *Journal of Substance Abuse Treatment, 23*(3), 171-181.
- Inciardi, J.A. (1979). "Heroin use and street crime." *Crime & Delinquency, 25*(3), 335-346.
- Inciardi, J. A., Surratt, H. L., Kurtz, S. P., & Cicero, T. J. (2007). "Mechanisms of prescription drug diversion among drug-involved club-and street-based populations." *Pain Medicine, 8*(2), 171-183.
- Kanouse, A. B., & Compton, P. (2015). "The epidemic of prescription opioid abuse, the subsequent rising prevalence of heroin use, and the federal response." *Journal of pain & palliative care pharmacotherapy, 29*(2), 102-114.

- Kasteler, J., Kane, R.L., Olsen, D.M., & Thetford, C. (1976). "Issues Underlying Presence of "Doctor-Shopping Behavior." *Journal of Health and Social Behavior*, 17(4), 328-339.
- Kim, N. J., Jin, H., McFarland, W., & Raymond, H. F. (2015). "Trends in sources and sharing of needles among people who inject drugs, San Francisco, 2005–2012." *International Journal of Drug Policy*.
- Kirby, K.C., Dugosh, K.L., Benishek, L.A., & Harrington, V.M. (2005). "The Significant Other Checklist: Measuring the problems experienced by family members of drug users." *Addictive Behaviors*, 30(1), 29-47.
- Kleiman, M. (1988). "Crackdowns: The Effects of Intensive Enforcement on Retail Heroin Dealing." In M. Chaiken (ed.), *Street-Level Drug Enforcement: Examining the Issues*. Washington, D.C.: U.S. Department of Justice, National Institute of Justice.
- Kolodny, A., Courtwright, D. T., Hwang, C. S., Kreiner, P., Eadie, J. L., Clark, T. W., & Alexander, G. C. (2015). "The prescription opioid and heroin crisis: a public health approach to an epidemic of addiction." *Annual review of public health*, 36, 559-574.
- Lattimore, Pamela K., and Christy A. Visher. Serious and Violent Offender Reentry Initiative (SVORI) Multi-site Impact Evaluation, 2004-2011. ICPSR27101-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research, 2013-11-07.
- Leshner, A. I. (1997). "Addiction is a brain disease, and it matters." *Science*, 278(5335), 45-47.
- Lopez-Quintero, C., Roth, K. B., Eaton, W. W., Wu, L. T., Cottler, L. B., Bruce, M., & Anthony, J. C. (2015). "Mortality among heroin users and users of other internationally regulated drugs: A 27-year follow-up of users in the Epidemiologic Catchment Area Program household samples." *Drug and alcohol dependence*, 156, 104-111.
- McIntosh, J. & McKeganey, N. (2001). "Identity and Recovery from Dependent Drug Use: the addict's perspective." *Drugs: education, prevention, and policy*, 8(1), 47-59.
- Mowen, T.J. & Visher, C.A. (2015). "Drug use and crime after incarceration: The role of family support and family conflict." *Justice Quarterly*, 32(2), 337-359.

- Pierce, M.B. (2015). "Male Inmate Perceptions of the Visitation Experience Suggestions on How Prisons Can Promote Inmate-Family Relationships." *The Prison Journal*, 1-27.
- Rigg, K. (2015). "Comparing the Characteristics of US Adult Heroin Users and Prescription Opioid Misusers." In *143rd APHA Annual Meeting and Exposition (October 31-November 4, 2015)*. APHA.
- Sampson, R.J. & Laub, J.H. (1990). "Crime and deviance over the life course: The salience of adult social bonds." *American Sociological Review*, 609-627.
- Sampson, R. J., & Laub, J. H. (2006). "An age-graded theory of informal social control." *Criminological Theory: Past to Present*. CA: Roxbury Publishing Company.
- Schroeder, R.D., Giordano, P.C., & Cernkovich, S.A. (2007). "Drug Use and Desistance Processes." *Criminology*, 45(1), 191-222.
- Spohn, C. & Holleran, D. (2002). "The effect of imprisonment on recidivism rates of felony offenders: a focus on drug offenders." *Criminology*, 40(2), 329-358.
- Stanton, M.D. & Shadish, W.R. (1997). "Outcome, attrition, and family-couples treatment for drug abuse: A meta-analysis and review of the controlled, comparative studies." *Psychological bulletin*, 122(2), 170-191.
- Sutherland, R., Sindich, N., Barrett, E., Whittaker, E., Peacock, A., Hickey, S., & Burns, L. (2015). "Motivations, substance use and other correlates amongst property and violent offenders who regularly inject drugs." *Addictive Behaviors*, 45, 207-213.
- Tripodi, S. J. (2010). "The influence of social bonds on recidivism: A study of Texas male prisoners." *Victims & Offenders*, 5(4), 354-370.
- Tucker, M.B. (1982). "Social support and coping: Applications for the study of female drug abuse." *Journal of Social Issues*, 38(2), 117-137.
- Wurcel, A. G., Merchant, E. A., Clark, R. P., & Stone, D. R. (2015). "Emerging and Underrecognized Complications of Illicit Drug Use." *Clinical Infectious Diseases*.

APPENDIX A
ANALYSIS TABLES

Table 1. Descriptive Statistics of All Variables

Characteristic	Valid % or Mean	N
Rearrested within 12 Months of Release (Recidivism)		
Has been arrested	50.5%	1581
Has not been arrested	49.5%	
Ever Used Heroin (Wave 1)		
Have used	20.4%	1695
Never used	79.6%	
Race (Wave 1)		
White	34.1%	1694
Black	53.4%	
Hispanic	4.1%	
Other	8.4%	
Number of Days Incarcerated (Wave 1)		
Number of Prior Arrests (Wave 1)	14.51	1586
Number of Previous Convictions (Wave 1)	6.38	1658
Number of Prison Stays (Wave 1)	1.58	1434
Age (Wave 3)	29.95	1035
Current Gang Membership (Wave 3)		
Gang Member	5.5%	1688
Not a Gang Member	94.5%	
Employment Status (Wave 3)		
Working	80.7%	987
Not Working	19.3%	
Married (Wave 3)		
Not Married	89.2%	1035
Married	10.8%	
Children (Wave 3)		
No Children	38.0%	1033
Has Children	62.0%	

Education Completed (Wave 3)		
No High School Diploma	70.1%	1697
High School Diploma or equivalent	29.9%	

Familial Social Support Index (Wave 3)		
I feel close to my family.	1.61	957
I want my family involved in my life.	1.56	958
I have someone in my family to talk to about problems.	1.76	957
I have someone in my family to turn to for suggestions.	1.74	956
I have someone in my family who understands my problems.	1.82	956

Cronbach's Alpha: 0.8727

Source: Serious and Violent Offender Re-Entry Initiative (SVORI)

Table 2. Test for Multicollinearity

Independent Variables	VIF	Condition Index
Family Support	1.02	1.000
Heroin	1.13	2.618
Black	1.28	2.700
Hispanic	1.07	2.777
Other Race	1.05	2.877
Number of Days Incarcerated	1.08	2.944
Prior Arrests	1.11	2.970
Lifetime Convictions	1.04	3.169
Prison Stays	1.21	3.662
Age	1.31	3.772
Gang Membership	1.06	4.406
Employment Status	1.08	4.909
Married	1.05	5.162
Children	1.07	6.621
High School Diploma	2.02	7.286
Less than High School Diploma	2.14	10.792
Mean VIF/Condition Number	1.23	21.8336

Table 3. Correlations between “Rearrest” and All Other Variables+

Independent Variables	Rho (r*)
Family Support	-.157**
Heroin	.042
Black	.120**
Hispanic	.009
Other	-.056*
Number of Days Incarcerated	-.102**
Prior Arrests	.120**
Previous Convictions	.043
Prison Stays	.133**
Age	-.084**
Gang Membership	.040
Employment	-.160**
Married	-.107**
Children	-.018
High School Diploma	-.136**
No High School Diploma	.026

+Correlations are tetrachoric

**Correlation significant at .01 level

*Correlation significant at .05 level

Table 4. Logistic Regression Analysis

VARIABLES	Model 1: Predicting Recidivism with Heroin Use		Model 2: Predicting Recidivism with Social Support		Model 3: Predicting Mediating Effect of Social Support	
	B	Odds Ratio	B	Odds Ratio	B	Odds Ratio
Heroin User	0.156 (0.216)	1.168 (0.253)			0.158 (0.217)	1.171 (0.254)
Family Support			0.035 (0.026)	1.036 (0.027)	0.035 (0.026)	1.036 (0.027)
Black	0.393* (0.187)	1.482* (0.277)	0.394* (0.186)	1.483* (0.277)	0.413* (0.188)	1.511* (0.285)
Hispanic	0.565 (0.433)	1.759 (0.761)	0.579 (0.434)	1.784 (0.773)	0.575 (0.434)	1.777 (0.772)
Other Race	-0.384 (0.347)	.681 (0.236)	-0.372 (0.348)	0.689 (0.240)	-0.377 (0.348)	0.686 (0.239)
Number of Days Incarcerated	-0.000** (0.000)	1.000** (0.000)	-0.000** (0.000)	1.000** (0.000)	-0.000** (0.000)	1.000** (0.000)
Prior Arrests	0.003 (0.004)	1.003 (0.004)	0.003 (0.004)	1.003 (0.005)	0.003 (0.004)	1.003 (0.004)
Previous Convictions	0.012 (0.012)	1.012 (0.013)	0.013 (0.013)	1.013 (0.013)	0.012 (0.013)	1.012 (0.013)
Prison Stays	0.116* (0.046)	1.123* (0.052)	0.114* (0.047)	1.121* (0.053)	0.111* (0.047)	1.117* (0.052)
Age	-0.049** (0.014)	0.953** (0.013)	-0.045** (0.013)	0.956** (0.013)	-0.048** (0.014)	0.953** (0.013)
Gang Membership	0.083 (0.402)	1.086 (0.437)	0.078 (0.401)	1.081 (0.434)	0.078 (0.402)	1.081 (0.434)
Employment	-0.836** (0.206)	0.433** (0.089)	-0.842** (0.206)	0.431** (0.089)	-0.840** (0.206)	0.432** (0.089)
Married	-0.526* (0.267)	0.591* (0.158)	-0.516 (0.267)	0.597 (0.159)	-0.517 (0.267)	0.596 (0.159)
Children	-0.055 (0.175)	0.946 (0.165)	-0.066 (0.174)	0.936 (0.163)	-0.052 (0.175)	0.949 (0.166)
High School Diploma	-0.114 (0.228)	0.892 (0.203)	-0.091 (0.229)	0.913 (0.209)	-0.092 (0.229)	0.912 (0.209)
No High School Diploma	0.168 (0.247)	1.183 (0.292)	0.194 (0.248)	1.214 (0.301)	0.188 (0.248)	1.207 (0.299)

Constant	1.644** (0.499)	5.177** (2.584)	1.275* (0.552)	3.579* (1.975)	1.309* (0.554)	3.701* (2.051)
Observations	719	719	719	719	719	719

Standard errors in parentheses

** p<0.01, *

p<0.05