

University of Kentucky

UKnowledge

Theses and Dissertations--Social Work

College of Social Work

2019

THE DRUGS/VIOLENCE NEXUS: THEORY TESTING AND BEHAVIORAL HEALTH FACTORS AMONG JUSTICE-INVOLVED APPALACHIAN WOMEN

Grant Victor

University of Kentucky, grant.victor7@uky.edu

Author ORCID Identifier:

 <https://orcid.org/0000-0003-1654-5294>

Digital Object Identifier: <https://doi.org/10.13023/etd.2019.366>

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

Recommended Citation

Victor, Grant, "THE DRUGS/VIOLENCE NEXUS: THEORY TESTING AND BEHAVIORAL HEALTH FACTORS AMONG JUSTICE-INVOLVED APPALACHIAN WOMEN" (2019). *Theses and Dissertations--Social Work*. 27. https://uknowledge.uky.edu/csw_etds/27

This Doctoral Dissertation is brought to you for free and open access by the College of Social Work at UKnowledge. It has been accepted for inclusion in Theses and Dissertations--Social Work by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@sv.uky.edu.

STUDENT AGREEMENT:

I represent that my thesis or dissertation and abstract are my original work. Proper attribution has been given to all outside sources. I understand that I am solely responsible for obtaining any needed copyright permissions. I have obtained needed written permission statement(s) from the owner(s) of each third-party copyrighted matter to be included in my work, allowing electronic distribution (if such use is not permitted by the fair use doctrine) which will be submitted to UKnowledge as Additional File.

I hereby grant to The University of Kentucky and its agents the irrevocable, non-exclusive, and royalty-free license to archive and make accessible my work in whole or in part in all forms of media, now or hereafter known. I agree that the document mentioned above may be made available immediately for worldwide access unless an embargo applies.

I retain all other ownership rights to the copyright of my work. I also retain the right to use in future works (such as articles or books) all or part of my work. I understand that I am free to register the copyright to my work.

REVIEW, APPROVAL AND ACCEPTANCE

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Director of Graduate Studies (DGS), on behalf of the program; we verify that this is the final, approved version of the student's thesis including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Grant Victor, Student

Dr. Chris Flaherty, Major Professor

Dr. Julie Cerel, Director of Graduate Studies

THE DRUGS/VIOLENCE NEXUS: THEORY TESTING AND BEHAVIORAL
HEALTH FACTORS AMONG JUSTICE-INVOLVED APPALACHIAN WOMEN

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Social Work at the University of Kentucky

By
Grant Victor

Lexington, Kentucky

Director: Dr. Chris Flaherty, Professor of Social Work

Lexington, Kentucky

Copyright © Grant Victor 2019

ABSTRACT OF DISSERTATION

THE DRUGS/VIOLENCE NEXUS: THEORY TESTING AND BEHAVIORAL HEALTH FACTORS AMONG JUSTICE-INVOLVED APPALACHIAN WOMEN

This study examined the relationship between drug use and violence among justice-involved women in Appalachian Kentucky. Goldstein's (1985) conceptual framework was used as a theoretical guide in formulating the drugs and violence relationships. Therefore, three types of drug use and violence relationships were explored, including: 1) psychopharmacological violence; economic-compulsive violence; and 3) systemic violence. Although these drug-related violence typologies have been investigated, little research has been devoted to rural justice-involved women. Moreover, to date no studies have examined how these drug/violence relationships might be associated with behavioral health factors. Ergo, there were three aims of the current study. First, to build psychopharmacological, economic-compulsive, and systemic drug/violence predictive group models. Second, examine the associations between mental health symptomology and predicted group models. Third, examine the associations between infectious disease risk-factors and predicted group models. This study used secondary data from a NIDA-funded grant focused on risk reduction among high-risk incarcerated women in Appalachia (N=400). All study recruitment and data collection procedures were approved by the university IRB. Predicted drugs/violence groups were developed using a series of discriminant function analyses. Predicted group models were examined for associations with mental health symptomology and risk factors for infectious disease using a series of binary logistic regression analyses. Results indicated that rural justice-involved women can be discriminated into distinct drugs/violence subgroups, and the psychopharmacological group showed the greatest prevalence. In addition, several behavioral health factors were uniquely associated with the psychopharmacological group and the economic-compulsive group. These findings could offer novel considerations for theory development regarding the drug-related risks for violence victimization among rural justice-involved women. The current research may also inform future traditional substance use treatment (e.g., outpatient or residential) and jail-based treatment (e.g., brief intervention) for rural women. Implications for theory development, substance use treatment and policy, future research, and the social work profession were discussed.

Keywords: Drugs, Violence, Theory, Appalachia, Incarceration, Women's Health

Grant Victor

June 5, 2019

THE DRUGS/VIOLENCE NEXUS: THEORY TESTING AND BEHAVIORAL
HEALTH FACTORS AMONG JUSTICE-INVOLVED APPALACHIAN WOMEN

By

Grant Victor

Dr. Chris Flaherty

Director of Dissertation

Dr. Julie Cerel

Director of Graduate Studies

June 5, 2019

Date

ACKNOWLEDGEMENTS

This dissertation would not have been possible without the thoughtful, attentive, and guiding support from my mentor, Dr. Michele Staton. I would like to convey my sincere gratitude for her countless contributions to my professional development.

In addition, allow me to identify the other committee members for their valuable insights and contributions to this dissertation and their support throughout graduate school as mentors. They include, Drs. Chris Flaherty (advisor), Julie Cerel, David Royse, Bibhuti Sar, and Mark Dignan.

I would also like to thank members of the Center for Drug and Alcohol Research for their role in providing me a supportive and nurturing research environment. Specifically, I would like to recognize Drs. TK Logan and Jennifer Cole for their dual roles as collaborators and mentors. Professor Robert Walker, now retired, was a key figure in my scholarly and personal maturation. His considerate conveyance of trust in my capacity and wisdom across various domains were invaluable to me.

To my family, without which I would likely not be in the privileged position to identify as a college graduate, and certainly not a doctorate degree. To that end, I would like to extend my regards to Grant and Nina Victor, Seth, Jessica and Leo Victor, as well as Parvin Tajali and Athena Kheibari, for their continued love and support throughout this process.

Table of Contents

Acknowledgements	iii
List of Tables	vi
List of Figures	vii
Chapter I: Introduction	1
Statement of Problem	1
Perspective of Appalachia.....	6
Economic Distress in Appalachia	8
Health Disparities in Appalachia	9
Health and Social Factors for Justice-Involved Women.....	11
Chapter II: Review of Relevant Literature	13
Substance Use Epidemiology in Rural Areas	13
Patterns of Substance Use among Women	14
Patterns of Substance Use among Rural Appalachian Women	16
Background on Substance Use and Violence	16
Theoretical Perspective: Goldstein’s Tripartite Conceptual Framework.....	18
Psychopharmacologic Violence among Women in Community Populations	21
Psychopharmacologic Violence among Women in Substance Use Treatment	25
Psychopharmacologic Violence among Criminal-Justice-Involved Women	29
Psychopharmacologic Violence among Women in Mental Health/Medical Populations.....	32
Systemic Violence among Justice-Involved Women	34
Systemic Violence among Illegal Economy Working Women	35
Economic-Compulsive Violence among Justice-Involved Women	36
Current Study	40
Research Questions and Hypotheses	41
Chapter III: Methods	43
Data Source	43
Procedures.....	43
Measures	44
Demographics	45
Psychopharmacologic Variables.....	46
Economic-Compulsive Variables	47
Systemic Variables.....	47
Grouping Variable	47
Risk Behaviors for Infectious Disease.....	48
Mental Health Symptomology Variables.....	48
Analytic Plan.....	50

Chapter IV: Results	52
Demographics	52
Research Question 1	53
Research Question 2	56
Research Question 3	57
Chapter V: Discussion	59
Theoretical Relationship between Drug Use and Violence	60
Psychopharmacological Violence	62
Economic-Compulsive Violence	65
Systemic Violence	68
Findings among Mental Health and Infectious Disease Factors.....	72
Mental Health Symptomology.....	73
Risk Factors for Infectious Disease	78
Recommendations for Substance Use Disorder Treatment Providers	84
Treatment Issues Specific to Jails	85
Recommendations for Research	93
Role of Social Workers.....	96
Limitations	98
Conclusions	99
References	102
Vita	118

List of Tables

Table 1: Variables Used in Multivariate Analyses	50
Table 2: Demographic Characteristics (N=400)	52
Table 3: Results from Discriminant Function Analyses	56
Table 4: Binary Logistic Regression Analyses Results for Mental Health Symptomology	57
Table 5: Binary Logistic Regression Analyses Results for Infectious Disease Risk Factors	58

List of Figures

Figure 1: Goldstein's tripartite conceptual framework.	19
Figure 2: Drugs/Violence nexus predicted groups (N=313).....	54
Figure 3: Recommendations for research with rural justice-involved women.	95

Chapter I: Introduction

This section provides an outline of the purpose of the current study and an overview of pertinent research. A profile of the Appalachian region is provided; including, an overview of the predominant cultural characteristics and economic conditions, as well as the health disparities and social determinants of health within the region. A comprehensive review of substance use in Appalachia is also provided; including, epidemiology of substance use, differentiated patterns of substance use between men and women, differential patterns of substance use between urban and rural populations, and a brief description of Kentucky's state drug policy efforts aimed at mitigating the adverse effects of the opioid crisis. The background information on substance use will segue to an integrated summary of violence victimization, and how it and substance use are an interrelated public health concern for women. To this end, Goldstein's (1985) tripartite conceptual framework is introduced with support from relevant literature and is used to conceptually guide the summary of the drugs-violence victimization nexus among women.

Statement of the Problem

The United States (U.S.) is witnessing its most fatal drug-related crisis in its history as demonstrated by the fact that drug-related deaths are now the leading cause of unintentional death (Beletsky & Davis, 2017). Since the mid-2000s drug-related deaths in the US have increased precipitously, as recent reporting estimated that 72,000 died of a drug overdose in 2017 (Center for Disease Control and Prevention, 2018). An estimated 10.6% of Americans (28.6 million) ages 12 years or older used any controlled substances in the past month (SAMHSA, 2017). That equates to about 1 in 10 individuals aged 12 or

older in the U.S. used illicit substances in the past month. The most commonly used illicit substance in the past month was marijuana (24 million). About 6.2 million people reported using psychotherapeutic drugs, and among them, 3.3 million people were misusers of prescription pain medication. In other words, among specific illicit drugs, prescription pain medication was the second highest used substance behind marijuana (SAMHSA, 2017). Past 12 months prevalence rates (in millions) for the remaining illicit substances is as follows: misuse of prescription tranquilizers (2.0); cocaine (1.9); misuse of prescription stimulants (1.7); hallucinogens (1.4); methamphetamine (0.7); inhalants (0.6); misuse of prescription sedatives (0.5); and heroin (0.5).

To better understand the current drug-related public health crisis, it is important to contextualize how opioid prescription practices have changed over the recent decades. At the national level, the assessment and treatment of chronic non-cancer pain underwent major changes with the issuance of new practice standards of care. For example, in 1998, the Veterans Health Administration (VHA) implemented an initiative called “Pain as the 5th Vital Sign,” which was strategically designed to improve the quality of patients’ pain treatment (Tompkins, Hobelmann, & Compton, 2017).

This initiative expanded primary care physician’s opioid prescribing capacity. Prior to these changes, prescription opioids were typically only considered for the treatment of severe pain (Hwang, Chang, & Alexander, 2015; Van Zee, 2009). Concurrently, pharmaceutical manufacturers promoted off-label application of opioids to ailments that were not traditionally thought of as being treated by this class of medication (Chou et al., 2015). Taken together, the increasing rate of prescribing opioid analgesics may have resulted in the high prevalence of prescription opioid misuse and mortality. To

reign in liberal prescribing practices, most states enacted medical surveillance laws that aimed to monitor prescribing patterns to reduce the illicit use of prescription opioids. Although well intended, these policy actions have led researchers to suggest that individuals have been forced to more dangerous opioid analogs (e.g., heroin and fentanyl), resulting in increases in opioid-related mortality (Beletsky & Davis, 2017; CDC, 2018).

The Office of National Drug Control Policy's (ONDCP) recently expanded its strategy for reducing opioid misuse (Brady, McCauley, & Back, 2015). The ONDCP initiatives have largely targeted education to patients and providers (e.g., informing the dangers of misuse), and policy reform (e.g., Prescription Drug Monitoring Programs). Apart from federal policies, state and local governments have also enacted policies to reduce opioid misuse, with varied objectives and approaches (Dasgupta et al., 2014; Cicero et al., 2014). For instance, policy measures have attempted to address this problem in many ways by reducing supply, by monitoring use and potential misuse, by reversing overdoses, by increasing access to treatment and prevention, and by humanizing the epidemic (Koh, 2015).

At the forefront of enforcement efforts are Prescription Drug Monitoring Programs (PMDPs), which electronically tracked prescriptions of all controlled drugs. Prescription Drug Monitoring Programs currently operate in 49 states except Missouri and Washington, DC (Koh, 2015). Although nearly all states have PDMPs, most do not have legislation that mandates utilization; thus, many states have utilization rates at or below 50%. As of July 2013, 16 states (Colorado, Delaware, Kentucky, Louisiana, Massachusetts, Minnesota, Nevada, New Mexico, New York, North Carolina, Ohio,

Oklahoma, Rhode Island, Tennessee, Vermont, and West Virginia) had legislation mandating prescribers, and in some cases, dispensers use their respective PDMP (Haffajee, Jena, & Weiner, 2015). Yet, the mentioned legislative mandates differ in the conditions under which they must be operated. For example, the Oklahoma statute (2010) requires checking PDMP only when prescribing methadone (Prescription Monitoring Programs Center of Excellence, 2014). On the contrary, Kentucky's PDMP mandates have wider conditions of application, including all scheduled drugs—perhaps because Kentucky ranks among the highest prescribers of opioid medication (Keyes, Cerdá, Brady, Havens, & Galea, 2014).

In general, women represent a population-group that displays an increasing prevalence rates of substance misuse (SAMHSA, 2017). Compared to men, women more often present with more significant comorbid conditions, such as mood and anxiety disorders (Moon, 2017). According to SAMHSA (2017), gender has been found to predict differences in how men and women administered and were impacted by substance use. For instance, women have been found to use substances differently (e.g., increased injection drug use among young women). In addition, women have been found to have different acute and chronic effects of substance use (e.g., endocrinology, dosage, etc.), to be more likely to overdose or die from substance use, and to be more likely to use substances if they are victims of domestic violence (Evans et al., 2015; SAMHSA, 2017).

Gender differences also have been found when investigating the typology of violent acts (e.g., perpetrator of violence and/or victim of violence) in association to substance misuse. Past research supports the notion that women are significantly more likely to be victimized by violent acts than men (Goldstein, 1998; Goldstein, 1985).

Empirical evidence has also demonstrated that violent perpetrators and victims of violence have similar characteristics, insofar that they are both vulnerable to violent behavior (Goldstein, 1985). For instance, an individual using substances may be vulnerable to victimization because of impairment due to his or her use (e.g., psychopharmacological violence), due to economic crimes committed to support drug use (e.g., economic-compulsive violence), and individuals working in illicit markets are vulnerable because they often carry large sums of money or drugs (e.g., systemic violence) (Oser, Money, Staton-Tindall, & Leukefeld, 2009; Weiner, Sussman, Sun, & Dent, 2005). Therefore, individuals who use drugs – independent of gender – may be perpetrators or victims of violent behavior for reasons related to the psychopharmacological, the economic compulsive, or the systemic contexts of drug use (Boles & Miotto, 2003; Goldstein, 1985; Goldstein, 1998; MacCoun, Kilmer, & Reuter, 2003).

The majority of research to date on substance use and violence has neglected to consider varied contextual and demographic factors that distinguish rural residents from urban- or national-samples. Justice-involved individuals are a vulnerable population group that typically have higher incidents of substance use prevalence as well as higher occurrences of violence, compared to the general population (Glaze & Herberman, 2011). Moreover, justice-involved women from the economically distressed region of Appalachia represent a unique subpopulation relative to generalized justice-involved samples (Staton-Tindall et al., 2015). Specifically, the central Appalachian region is one in which substance using women have significant barriers to treatment (Staton-Tindall, Duvall, Leukefeld, & Oser, 2007; Victor, Kheibari, Staton, Oser, 2017) and the region

has been disproportionately impacted by the prescription opioid crisis (Victor, Walker, Cole, & Logan, 2017; Slavova et al., 2017).

Perspective of Appalachia

The Appalachian region is defined as a 205,000-square-mile region that is connected by the Appalachian Mountains, which span from southern New York to northern Mississippi (Appalachian Regional Commission [ARC], 2017). This region includes all of West Virginia and portions of 12 other states, including: Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia. Appalachia is further divided into three sub-regions, which include the north, central, and southern regions..

Appalachia was defined as a distinct region primarily due to the nation's interest in addressing the social welfare needs of the inhabitants of the region. Generally, the Appalachian region has been marked by endemic poverty, limited economic growth, poor housing, greater health disparities compared to the general population, and limited transportation and medical facilities (ARC, 2017). This study primarily focuses on the eastern Kentucky counties that form the central Appalachian sub-region (ARC, 2017).

Racial minorities make up a marginal percentage of Appalachia's population (18.2%), but this number has increased by 16.2% since 2010 (ARC, 2017). Among Appalachia's minority populations, African Americans are the largest group (9.7%); followed by Hispanics/Latinos (4.9%). The median age in Appalachia (40.9 years) is higher than the national average (38.0 years). Education attainment falls behind national averages in Appalachia; among Appalachian adults, 85.9% (U.S. 87.0%) have earned a high school diploma, and 23.2% (U.S. 30.3%) have earned a bachelor's degree (ARC,

2017). Compared to the greater Appalachian region, Kentucky's Appalachia has the lowest education attainment of a bachelor's degree at 13.6% (ARC, 2017).

Appalachia's household income is 80% of the U.S. average (\$62,299 vs 77,866), and Appalachia's poverty rate is higher than the U.S. average (16.7% vs 15.1%). Within Appalachia, household income is lowest in central Appalachia (i.e., \$48,706). Although much of the Appalachian region has experienced outmigration, the southern Appalachia has witnessed population growth of 4.7% from 2012 to 2016 (ARC, 2017). In Appalachian Kentucky, 37 of the 54 counties are considered economically distressed, with pockets of distress and at-risk counties throughout the region; thus, making this one of the most underserved economic regions in the entire U.S. (ARC, 2017).

Women residents living in Appalachian Kentucky have contrasting socioeconomic factors compared to men. For instance, Fiene (2002) notes that Appalachian women of low socioeconomic status may have their opportunities for educational and professional attainment curtailed by traditional gender roles within the family and community. Gender roles and patriarchal formalities are not the only factor that may impede central Appalachian women's socioeconomic standing, as much of the labor force in the region is dominated by male-oriented jobs (e.g., coal mining) (Miewald & McCann, 2004). Although recent evidence suggests that employment in the extraction industries are waning in favor of careers that require more education, progress has been gradual, and the central Appalachian region still compares unfavorably to other regions (ARC, 2017).

Appalachian women living in Kentucky have the highest high school drop-out rate compared to all Appalachian regions (i.e., 24.0%) and to the U.S. national rate (i.e.,

14.2%) (Haaga, 2004). In addition, women in Kentucky's Appalachia rank lowest in terms of post-secondary degree attainment (Brinley et al., 2018; Ferris, 2017). The inequalities in occupation, income and status – all social determinants of health – faced by Kentucky's Appalachian women have been linked with a predisposition of poorer health and quality of life (Marmot & Allen, 2014). Furthermore, considering the intersectionality of social class and gender, the inequalities among Kentucky's Appalachian women – including inequalities within Appalachian women – may predispose the most underserved populations to negative coping strategies, such as substance misuse, and put them at-risk for victimization.

Economic Distress in Appalachia

The Kentuckian Appalachian region is one of the most economically distressed regions in the nation (ARC, 2017). The ARC uses a socioeconomic classification system that compares three-year averages of central Appalachian counties with the national averages, based on measures of unemployment rates, per capita income, and poverty rates (ARC, 2017). Against that backdrop, the region has witnessed improvements in poverty rates – 31% in 1960 to 17.1% in 2015 – and the number of “high-poverty” counties (i.e., counties with poverty rates more than 1.5 the U.S. average) has declined from 295 in 1960 to 87 in 2015 (ARC, 2017). Several Kentucky Appalachian communities have developed multifaceted economies, yet others still lack basic infrastructure, such as water and sewage systems (ARC, 2017). This region has the largest number of counties that rank in the lowest 10% in terms of socioeconomic status (Pollard & Jacobsen, 2015). In addition, the region has the most rural counties, as compared to other Appalachian sub-regions, and the least number of inhabitants per square mile than the other sub-regions

(ARC, 2017). The rural and isolated nature of Kentucky's Appalachia have implications for health disparities in the region. These health disparities are accentuated by limited access to specialized healthcare services and an overall lack of a community-level continuity of care (Halverson, Friedell, Cantrell, & Behringer, 2012).

Health Disparities in Appalachia

Many challenges persist despite the gradual economic progress made in select areas of the Appalachian regions. Overall, the health disparities in Appalachia are greater than those of the general U.S. population. Among the top ten leading causes of death in the U.S., the Appalachian region has higher mortality rates for 7 of the 10 – heart disease, cancer, chronic obstructive pulmonary disease (COPD), injury, stroke, diabetes, and suicide. Mortality due to poisoning, which includes drug overdose, is higher by a distinct margin when compared to the general U.S. population (ARC, 2017; Borak et al., 2012). Compared to the general U.S. population, Appalachian non-fatal health outcomes are worse across several health domains, including, the number of physically unhealthy days, the number of mentally unhealthy days and the prevalence rates of depression (ARC, 2017; Borak et al., 2012). In addition, risk factors that are associated with a host of health problems are also higher in Appalachia; these include, obesity, smoking and physical inactivity (ARC, 2017; Borak et al., 2012). Social determinates of health also play a role, as low household incomes and high poverty rates reflect poor living conditions compared to the general U.S. (ARC, 2017; Borak et al., 2012).

Drug overdoses and other forms of mortality due to poisoning are 37% higher in Appalachia than in the general U.S. population. Behavioral health is also a concern, as Major Depressive Disorder (MDD) in Appalachia is 16.7% higher than the national rate,

and suicide rates are 17.0% higher than the national rate (ARC, 2017). In addition, individuals living within Appalachian Region's rural counties are 21 percent more likely to commit suicide than those living in the Region's large metro counties, and the poisoning mortality rate is 40 percent higher in the Region's rural counties than in its large metro counties (ARC, 2017). Among all behavioral health indicators, 46% of Appalachian counties are in the worst-performing national quintile for poisoning mortality (ARC, 2017).

Individuals residing Appalachia demonstrate numerous needs and barriers to care, including: 1) poverty and unemployment rates well above state and national averages; 2) incarceration rates above the national average; 3) significant problems in accessing affordable health care; 4) fewer health care providers per capita when compared to national averages; 5) substance misuse and mortality rates well above national averages; and 6) individual and community health indicators that are ranked nationally near the bottom in most health-related metrics (e.g., chronic disease, substance abuse and addiction, heart disease, diabetes, etc.). More recently, Kentucky ranks in the top five among states that have been impacted by the opioid crisis. According to the Kentucky Injury and Prevention and Research Center (KIPRC) approximately 30 out of every 100,000 people have died of a drug overdose in Kentucky from 2011 to 2014.

Drug Use-Related Health Disparities

The risk of contracting a chronic disease, such as HIV/AIDS or Hepatitis C, increases significantly among individuals with a substance use disorder (SUD), among injection drug users (IDU) and among individuals who experience a discontinuity of health care (Perazzo, Reyes, & Webel, 2017). Much of the Appalachian region is

considered by the CDC to be high-risk for HIV and HCV infections due to IDU (Van Handel et al., 2016). Of note, Appalachian Kentucky was identified as having 8 of the top 10 at-risk counties, among the 220 nation-wide counties listed by the CDC (Van Handel et al., 2016).

Among those engaging in IDU, research links low health literacy to the contraction of a chronic disease or life-threatening infection, and there is evidence to suggest health education mitigates this risk (Perazzo et al., 2017). That is, individuals have been found to be unaware of the potential health risks that are associated with their substance use (e.g., sharing syringes), although they may be aware of more direct health risks (e.g., overdose). In addition, being introduced to injection behavior by a male intimate partner has been found to increase high-risk injection (Morris et al., 2014). Most experts agree that prevention, education, and harm reduction strategies are some of the best tools to combating the potentially lethal effects of the current opioid crisis (Kolodny et al., 2015).

Health and Social Factors for Justice-Involved Women

Women have been disproportionately affected by the policies and practices that have contributed to mass incarceration (Alexander, 2012). Since 1980, the rate of incarcerated women has increased by 336%; during the same period, men's incarceration rate has increased by 189% (Belenko, 2006). In terms of treatment needs, there are generalities that can be made between justice-involved men and women. However, the etiology and severity of treatment needs requires a gender-focused perspective. These disparities are particularly pronounced for mental and physical health, vocational training

and employment, familial issues, child care, and HIV and other infectious disease (Belenko, 2006).

Recent major welfare reform – the Federal Personal Responsibility Act of 1996 (PRWORA) – has arguably increased the burden of employment for women. This legislation, which includes Temporary Assistance for Needy Families (TANF), established limits on the length of time that an individual is eligible to receive welfare benefits, it requires employment in some cases, and denies benefits to felons with substance use histories (Belenko, 2006). This is problematic for many justice-involved women with substance use issues, because employment is a meaningful component of recovery, and because women who use substances are more likely to have more extensive trauma histories that significantly influence offending behavior, and as an extension, negatively influence their employment opportunities (Moloney, van den Bergh, & Moller, 2009). In addition, parenting responsibilities commonly are placed on women, which may limit women's ability to attend post-release treatment and attain additional resources (Moloney et al., 2009).

Chapter II: Review of Relevant Literature

Substance Use Epidemiology in Appalachia

Compared to urban settings, rural areas have greater prevalence rates of substance use among several substances, such as prescription opioids (Small, Curran, & Booth, 2010; Shannon, Havens, & Hays, 2010; Jackson & Shannon, 2012). Kentucky, and other states with large rural populations (e.g., Kentucky, West Virginia, Tennessee) have witnessed higher concentrations of prescription opioid morbidity, mortality, and infectious disease in recent years (Keyes et al., 2014; Zibbell et al., 2015). Paulozzi and Xi (2008) note that rural area non-medical use of prescription opioids (NMUPO) has increased at a rate greater than three-fold when contrasted to metropolitan counties. Along with the high prevalence of substance use, rural areas also have unique challenges to providing recovery services. For example, rural communities are more likely to have limited health service providers, and if recovery services are available, utilization of services can be complicated by client transportation challenges (Victor et al., 2017; Beardsley, Wish, Fitzelle, O'Grady, & Arria, 2003; Pullen & Oser, 2014).

Along with the unique challenges of providing substance use treatment in rural communities, there are also regional (e.g., rural southeast) and demographic (e.g., vulnerable populations) differences in the prevalence of substance use disorders (SUD) and the need for services (Oser et al., 2016; Varga & Surratt, 2014; Shannon, Havens, Mateyoke-Scriver, & Walker, 2009). For instance, NMUPO is more prevalent in the southeastern rural areas of the U.S., and rural areas have also beheld a pronounced increase in injection drug use (IDU) in recent years (Reifler et al., 2012; Staton-Tindall et al., 2015b). Havens and colleagues (2006) found that the high rate of opioid prescriptions

in rural Kentucky was correlated with regions that were classified as economically distressed, which was operationally defined as poverty, fewer local treatment resources, and higher rates of disability.

In rural Kentucky communities, substance use remains a growing public health concern, with specific emphasis placed on NMUPO, heroin, and co-occurring IDU and infectious disease (Keyes et al., 2014; Staton-Tindall et al., 2015b; Havens et al., 2011). This region ranks among the highest in the country for rates of prescription drug misuse, and rural residents have been found to be significantly more likely to misuse prescription drugs as compared to urban residents (Young, Havens, & Leukefeld, 2010). In recent years, the rise in IDU in the Appalachian region has elevated the public health risk. In Kentucky, by 2002 approximately 16% of self-reported drug users indicated having ever injected any drug (Christian, Hopenhayn, Christian, McIntosh, & Koch, 2010; Young & Havens, 2012). Injection prevalence rates (44.3%) in Appalachian Kentucky have increased considerably since the mid-2000's and are higher among samples of opioid users (Havens et al., 2007; Staton-Tindall et al., 2015b).

Patterns of Substance Use Among Women

The past three-decades of addiction research has revealed gender differences in the health consequences of drug use, in the physiological responses to drug use, clinical correlates of drug use, and in the patterns of both the administration of drugs and the general use (Ashenberg-Staussner & Brown, 2002; Tuchman, 2010). Gender differences have been reported in the types of substances used and patterns of drug use over one's lifespan (SAMHSA, 2017). National survey data (SAMHSA, 2017) shows that illicit drug use (e.g., marijuana, cocaine, psychotherapeutics) among individuals over the age of

12 was more common among men (11.5%) compared with women (7.3%) and that men were more likely to report alcohol use (57.1%) than women (47.5%).

Gender differences emerge when investigating the patterns of illicit and licit substance use. Generally, women begin self-administering licit and illicit substances at lower doses compared to men. However, women's use generally escalates to dependence more quickly, as compared to men. In addition, gender disparities in substance use prevalence is demonstrated by the striking data regarding prescription opioid use among women. That is, there has been a 400% increase in deaths related to prescription opioid overdoses, relative to the 265% increase in deaths among men; although, men continue to have higher rate of prescription opioid deaths (Dart et al., 2015). Given the rise in NMUPO in the past decade, researchers have begun to identify trajectories of drug use.

Back and colleagues' (2011) describe the accelerated progression of OUD among women by focusing on several biopsychosocial elements. These gender differences in physiology (i.e., metabolic rate, gastric dehydrogenase, hormonal fluctuations) and in society (i.e., adverse social consequences) can place women at increased risk of experiencing negative health consequences as a result of their OUD (Greenfield, Back, Lawson, & Brady, 2010). The empirical findings of gender-specific correlates of NMUPO are consistent with previous research concerning other drugs of misuse (Tuchman, 2010), as women appear to have different reasons for engaging in drug use, accelerated progression of addiction, and complex health and mental health-related concerns (McHuegh et al., 2013).

Patters of Substance Use among Rural Appalachian Women

One population group that is affected at a greater proportion by the mentioned rural drug trends are women; more specifically, economically disadvantaged rural women (Staton-Tindall et al., 2015a; Staton-Tindall et al., 2015b; Browne et al., 2016; Appalachian Regional Commission, 2017). Many of these women have been incarcerated for drug offenses, particularly as sentencing has changed (Mumola and Karberg 2006). Though initially public health advocates drew attention to the adverse health effects of incarceration itself (Massoglia 2008), more recent research has stressed the health risks that may occur upon reentry (Cook et al. 2005; Fogel et al. 2014).

Conditions related to economic distress increases the likelihood that individuals from Kentucky's Appalachian region will have low social capital, greater health disparities, and limited environmental resources (Marmot & Bell, 2009). For drug-using women in central Appalachian Kentucky, the economic and substance misuse problems in the region are compounded by co-occurring mental and physical health concerns, low health literacy regarding drug misuse, and the scarcity of treatment centers and/or resources (Snell-Rood, Staton-Tindall, & Victor, 2015; Havens et al., 2006). Moreover, these social determinates of health increase the likelihood of numerous health issues; including among others, substance misuse and co-occurring related health issues (Varga & Surratt, 2014; Webster et al., 2006).

Background on Substance Use and Violence

The relationship between substance use and violence has been given considerable empirical attention. Current research has been primarily suggestive rather than conclusive (Goldstein, 1998; Weiner, Sussman, Sun, & Dent, 2005). Evidence suggests that those

who use alcohol and drugs are commonly non-violent (Fagan, 1990); although, there is empirical support to suggest alcohol use, and to a lesser degree substance use, has been found to be present in both offenders and victims of violent acts. Substance use occurs in a myriad of conditions; including, the environmental, the social, and the cultural contexts that influence the potential for exposure to violence (Weiner et al., 2005). Certain substances have been linked with a greater likelihood of violence; such as, alcohol and illicit stimulants (e.g., amphetamines and cocaine) (Boles & Miotto, 2003; Goldstein, 1998; Goldstein, 1985; Oser et al., 2009). Furthermore, violence has been found to occur in various phases of drug use, including acute intoxication, acquiring or distributing drugs, and during episodes of drug induced psychosis and paranoia (Boles & Miotto, 2003; Goldstein, 1998).

It is also important to consider neurobiological factors involved in violence, although there is no evidence to date that suggests these factors cause violence (Boles & Miotto, 2003). The current understanding of how neurobiology is associated with aggression is centered on monoamine neurotransmitters (i.e., serotonin, dopamine and norepinephrine). That is, researchers believe that alterations in these neurotransmitters are correlated with violent behavior. Broadly stated, these neurotransmitters are involved in behavioral regulation. Abnormal serotonergic activity has been correlated to psychological disorders and aggression (Kyes, Botchin, Kaplan, Manuck, & Mann, 1995), as well as being predictive of impulsive behavior, depression, and anxiety (Robbins & Dailey, 2017; Higley & Linnoila, 1997).

Acute alcohol consumption causes a release of serotonin, and among a subset of individuals with alcohol use disorder, baseline serotonin activity is lower compared to

control groups (Higley & Linnoila, 1997). Therefore, the association between alcohol and violence may be mediated by the neuroactivity of serotonin (Duke, Bègue, Bell, & Eisenlohr-Moul, 2013). Dopamine and norepinephrine have been linked to reward cues (e.g. environmental triggers) and multiple behavioral processes; such as, attention, arousal and vigilance (Duke et al., 2013).

Endocrinological interactions have also been found to possibly play a role in aggressive behavior (Boles & Miotto, 2003). Elevated levels of the sex hormone testosterone have been correlated with violent behavior. In studies comparing violent and nonviolent participants, among an array of study samples, those with higher blood testosterone levels were consistently in the violent group (Brooks & Reddon, 1996). More generally, “top-down” control systems in the prefrontal cortex fail to modulate aggressive behavior when there is insufficient serotonergic facilitation (Siever, 2008). The hypothalamus-pituitary-adrenal (HPA) axis also plays a key role in both substance use behaviors and violent aggression, and these systems are influenced by regulatory action found in the prefrontal cortex. Such that, a hyper-responsive arousal system, including the amygdala, can affect evaluations of threat while also drive compulsory substance use (Siever, 2008).

Theoretical Perspective: Goldstein’s Tripartite Conceptual Framework

In 1985, Goldstein first published his tripartite conceptual framework (Table 1), which posited three pathways by which the use of controlled substances may influence interactions with violence: 1) psychopharmacological pathways; 2) economic-compulsive pathways; and 3) systemic pathways. The psychopharmacological pathway theorizes that the altered psychological and physical effects of drug use lead to agitation, aggression,

impulsivity, and cognitive impairment, increase the risk for violent behavior; along with impairing decision-making and communication skills needed to avoid violence. The economic compulsive pathway theorizes that obtaining illicit substances often entails an individual to produce the capital to make a purchase; therefore, during a robbery or a similar incident, violence may be used as a mean expedite the process, or for the purposes of risk-aversion on part of the perpetrator. The systemic pathway theorizes that disputes within illegal markets, such as the drug trade, can lead to violence to resolve conflicts over “turf”, and/or for coercion and power.

<u>Drug/Violence Relationship</u>	<u>Definition</u>
Psychopharmacological	Physical and psychological effects of controlled substances on violence
Economic-compulsive	Violence as the means for financing illicit drug use (e.g., assault during a robbery)
Systemic	Violence emerging from disputes within illegal markets/informal economies (e.g., drug dealing or sex work in exchange for drugs)

Goldstein (1985)

Figure 1: Goldstein’s tripartite conceptual framework.

Literature applying the Goldstein (1985) framework has identified that urban men and women contrast in their experiences of violence in association to their substance use. Goldstein et al. (1988) initial study of his conceptual framework was conducted in New York City amid the crack cocaine epidemic. In this seminal study, Goldstein et al. (1988) worked alongside law enforcement to identify 218 drug-related homicides. In this sample, 17% were classified as psychopharmacological, 4% were classified as economic compulsive, and 75% were classified as systemic, while 7% were considered “multidimensional.”

Among urban samples, men have been found to have a greater likelihood to perpetrate violence when under the influence of greater volumes of drugs (Goldstein, Brownstein, & Ryan, 1988; Goldstein, Brownstein, Ryan, 1992; Weiner et al., 2005). However, under similar conditions, women have been found to be at a greater risk for victimization of violence in association to their drug use (Oser et al., 2009). To date, there has been limited application of Goldstein's (1985) framework on rural incarcerated women; in addition, it is unclear how rural incarcerated women's substance use and violence would be situated within this framework, and to what extent this framework is associated with infectious disease and mental health among incarcerated women.

In addition to Goldstein's (1985) conceptual framework, over the past three decades feminism scholarship has developed a strong body of literature that has informed the modern understanding of women's configuration within the criminal justice system (Chesney-Lind, 2006; Renzetti & Goodstein, 2000). Feminist criminology was developed across the late 1960s to early 1970s, as a response to the general lack of diversity and discrimination in the study of criminal justice research and the fundamental features of the "backlash political agenda" – racism and sexism (Chesney-Lind, 2006).

In response, feminist criminologists centered the foci of their scholarship and research on race/gender/punishment nexus. This meant advocating against the oppressive and racist nature of the criminal justice system and its disproportionately punitive nature, especially with respect to African American women (Chesney-Lind, 2006). Moreover, feminist criminologists challenged the mischaracterization(s) of women in criminal justice theory and research. These efforts in advocacy and scholarship have brought forth meaningful social change and advancement of policy. Women's victimization,

particularly domestic violence, began to be defined and criminalized after an extended period of neglect due to the androcentric authority over the discourse within the criminal justice system (Chesney-Lind, 2006).

Feminist criminologists argue that one of the most comprehensive case studies in the race/gender/punishment nexus is the “war on drugs.” This called for an increase attention to the documentation and discussion of women in crime, with less emphasis on “victimology,” and more so on the gender-specific pathways to criminal involvement (Chesney-Lind, 2006). Formative scholarship and research followed that began to identify how violent victimization shaped women’s drug use and criminal behavior, especially in underserved communities (Burkhart, 1976; Chesney-Lind & Rodriguez, 1983; Chesney-Lind & Shelden, 2013; Gilfus, 1993). And the attention is surely still relevant to the race/gender/punishment nexus. Current feminist advocacy and scholarship, such as the #MeToo movement, has begun to develop a literature base with themes relevant to gender-based violence and justice (Wexler & Robbennolt, 2019).

Psychopharmacologic Violence among Women in Community Populations

McCoy et al. (2001) analyzed how an individual’s experience in ever observing violence, perpetrating violence, or victimized by violence based on their drug use status (i.e., chronic drug users (CDUs) versus non-chronic drug users (NCDUs)). This study used a snowball sample that was comprised of community members in Miami, Florida. For their analyses, the authors used chi-square tests and logistic regression models. They found that among CDUs and NCDUs, women were significantly less likely to be observers ($p < .001$) and perpetrators ($p < .001$). Gender was also a significant predictor in the regression models. Compared to women, men were significantly more likely to

observe someone beaten (OR = 3.07; CI = 2.26-4.14, $p < .001$), shot (OR = 2.28; CI = 1.81-2.87, $p < .001$), robbed (OR = 2.77; CI = 2.18-3.53, $p < .001$), or killed (OR = 2.17; CI = 1.72-2.74, $p < .001$). Men were also significantly more likely to perpetrate a beating (OR = 3.25; CI = 2.54-4.16, $p < .001$), a shooting (OR = 1.68; CI = 1.22-2.31, $p < .01$), a robbery (OR = 2.13; CI = 1.56-2.91, $p < .001$), or a rape (OR = 5.56; CI = 1.19-25.64, $p < .05$); however, women were significantly more likely to be victims of rape (OR = 0.06; CI = 0.04-0.09, $p < .001$).

Overall, the regression models suggested that female CDUs were at greater risk for violence victimization compared to female NCDUs. Of note, female CDUs and NCDUs were both found to be at greater risk for violent victimization compared to men ($p < .01$). The findings in this article suggest that drug use severity is a major factor in the incidents of violence one is exposed to, as well as a strong predictor of different types of violent acts. However, the authors stressed that the linkages found in this study between drug use and violence are more indicative of a network interacting processes, rather than causal processes.

Busch-Armendariz et al. (2010) compared victims' sexual assault experiences based on whether the perpetrators were or were not using alcohol or drugs during a sexual assault. This study used a statewide survey sample of Texas residents via the Health Survey of Texans: A Focus on Sexual Assault. The analyses conducted included descriptive tests, cluster analysis, and logistic regression models. The outcome variables included variables of violence (i.e., slapping, hitting, kicking, biting) that occurred concurrently with sexual assault, and variables of events (i.e., how many days a participant had to take time off work, school, home, or recreational time). The

independent variables included the alcohol and/or drug use by victim at the time of the assault, alcohol and/or drug use by perpetrator at the time of the assault, race/ethnicity, and the victims' relationship to the perpetrator.

Findings relevant to the perpetrators' alcohol and/or drug use indicated that 38.8% used at the time of the assault. Moreover, victims' alcohol and/or drug use at the time of the assault was reported at 13.0%. The logistic regression results indicated that for concurrent assault outcomes, the use of alcohol and/or drugs by the perpetrator significantly increased the likelihood of intercourse or penetration (OR = 3.99, $p = .002$), violence (OR = 3.92, $p = .021$), threat to harm or kill (OR = 3.14, $p = .016$), and physical injury (OR = 2.64, $p = .038$). In terms of the post-assault outcomes, the perpetrators' use of alcohol and/or drugs significantly increased the likelihood of the victim taking recreation time off (OR = 4.17, $p = .004$) and at least one day off recreation (OR = 3.27, $p = .016$). The findings from this article suggest that a perpetrators' use of alcohol or drugs at the time of a sexual assault places the victim at a greater likelihood for further physical injury, and a loss of time from a multitude of life events. Also, the impact of the psychopharmacological pathway is highlighted in this study given that the relationship to the perpetrator, the location of the sexual assault and the race/ethnicity of the victims did not affect the findings.

Afifi et al. (2012) examined the relationship between perpetration and victimization of physical and sexual IPV, and substance use disorders (SUDs) in the past year by using national-level epidemiological survey data. The sample was stratified by sex and used a four adjusted logistic regression models. The substances that were significantly associated with victimization of IPV, included alcohol (AOR = 0.33; CI =

0.24-0.44), cocaine (AOR = 0.28; CI = 0.10-0.80) and cannabis (AOR = 0.49; CI = 0.29-0.81). These results indicate that women with alcohol, sedative/tranquilizer, cocaine, and cannabis SUD in the past year were significantly less likely to perpetrate IPV compared to men with the same SUDs in the past year. Female victims of IPV were also significantly less likely to have alcohol, cocaine, and cannabis SUD in the past year compared to male victims of IPV.

Kramer et al (2012) examined how drug use affected physical victimization among a sample of rural residents in Arkansas, Kentucky and Ohio. A series of logistic regression models found that several factors significantly increased women's risk of violence victimization in the past year. For instance, compared to women over 41 years old, women aged 23 to 41 were significantly more likely (OR = 3.88; CI = 1.18-12.71) to experience IPV. Substance use also significantly identified risk for women; such that, alcohol misuse/dependence (OR = 3.76; CI = 1.59-8.88), cocaine abuse/dependence (OR = 3.09; CI = 1.15-8.30), methamphetamine abuse/dependence (OR = 2.93; CI = 1.06-8.06), and the number of drugs used (OR = 0.74; CI = 0.60-0.92) increased the likelihood of being a victim of IPV among this sample of rural women.

Lee et al (2010) examined the association of both perpetrators' and victims' substance use with victim outcomes. The researchers utilized a snowball sampling technique to recruit 114 battered women to conduct phone interviews in the following metropolitan areas: 1) Pittsburgh (35%); 2) San Jose (28%); 3) Dallas (19%); and 4) Minneapolis/St. Paul (18%). The two outcome measures were defined as, victims' physical injury, and victims' functional impairment following the violent incident.

Substance use by both perpetrators and victims was not significantly associated to increased risk of victims' physical injuries. However, Lee and colleagues (2010) did find a significant association between victims' substance use and their functionality following an IPV incident. That is, compared to those who reported no substance use by perpetrator or victim, the group where substance use by a perpetrator and victim was entered, R^2 was significantly increased from .32 to .40 ($p < .05$). Meaning, this finding suggests that when perpetrators and victims both are involved in substance use at the time of a violent incident, the victim is more likely to have greater functional impairment versus a control group.

Psychopharmacologic Violence among Women in Substance Use Treatment

Schumm et al (2011) tested a conceptual model that integrates individual and relationship pathways of IPV, to examine the IPV risk factors among a sample of 277 women entering substance abuse treatment. To qualify women must have had a relationship with a male partner. Participants were questioned about their partners across four domains, and these domains also functioned as the independent variables for this article, they included: 1) antisociality/generalized violence; 2) heavy alcohol or drug use; 3) relationship adjustment; and 4) psychological and physical IPV. The primary outcome variables were physical and psychological IPV by gender. A structural equation model (SEM) was used to test pathways from latent predictor variables to the outcome variables (i.e., IPV). Results revealed several statistically significant pathways of IPV.

Partner's antisociality/generalized violence showed a direct positive association with her or his own perpetration of IPV (Female psychological IPV = $R^2 = .25$, $p < .001$; Female physical IPV = $R^2 = .29$, $p < .001$; Male psychological IPV = $R^2 = .21$, $p < .001$;

Male physical IPV = $R^2 = .25$, $p < .001$). A negative association was found between both partners' relationship adjustment and psychological IPV (Female psychological IPV = $R^2 = -.24$, $p < .001$; Male psychological IPV = $R^2 = -.23$, $p < .001$). The findings regarding substance use and IPV were mixed. A positive relationship was found between female drug use and female physical IPV ($R^2 = .18$, $p < .001$), yet male heavy drinking had a positive association with male psychological IPV ($R^2 = .12$, $p < .05$).

Additional tests were conducted to examine indirect pathways to IPV. Female heavy drinking is shown to exhibit a positive indirect effect on female psychological IPV via relationship functioning (standardized indirect effect = $.04$, $p < .01$). Female heavy drinking also exhibited a positive indirect effect on female physical IPV via the pathway involving relationship functioning to psychological IPV (standardized indirect effect = $.03$, $p < .01$). Collectively, the findings from Schumm et al (2011) show the pathways to IPV are complex and at times gender-specific; more specifically, both partners' antisociality/generalized violence, substance use, and overall relationship adjustment are key to understanding IPV among women entering substance misuse treatment.

El-Bassel et al (2005) examined whether the frequent drug use increased the likelihood of subsequent sexual or physical IPV and whether IPV increases the likelihood of subsequent frequent drug use. This article used a random sample of 416 women who were recruited from a methadone maintenance treatment facility in New York City, New York. This study utilized propensity score matching and logistic regression analyses to test three hypotheses, they included: H^1) that frequent drug use increases the likelihood of IPV; H^2) that IPV increases the likelihood of subsequent frequent drug use; and H^3) the relationship between frequent drug use and IPV is reciprocal.

For hypothesis 1, women who used crack at least once a week were more than 4 times as likely to report physical or sexual IPV compared to women who did not report using any drugs or binge drinking (OR = 4.4; 95% CI = 2.1-9.1; $p < .01$); similar results were found for marijuana (OR = 4.5; 95% CI = 2.4-8.4, $p < .01$). Results also indicated that women who reported cocaine use did experience higher rates of IPV, but this result did not reach statistical significance. For hypothesis 2, women who reported physical or sexual IPV were more likely than women who did not report IPV to indicate frequent use of heroin (OR = 2.7; 95% CI = 1.1-6.5, $p < 0.4$). Near significant findings were found for an increased likelihood of frequent crack use ($p < .06$), marijuana use ($p < .07$), and cocaine use ($p < .11$). Therefore, hypothesis 3 was not supported at a 95% level of confidence, yet hypothesis 1 and 2 were indicative of crack and marijuana use; suggesting that the relationship between frequent drug use and IPV is bidirectional and varies by type of drug.

Chermack et al (2002) examined the relationship between violence severity and alcohol and cocaine consumption among a sample of substance abuse treatment clients ($n = 125$ women, $n = 125$ men) in Michigan. Repeated measures ANOVAs and regression analyses were conducted to test the relationship between violence severity and alcohol and cocaine use. Both general alcohol and cocaine use patterns (on days not involving significant interpersonal conflict) [$F(2,208) = 15.11$, $P < 0.001$], as well as alcohol and cocaine use on the day of the violent incident [$F(2,208) = 3.38$, $P < 0.05$], were associated with violence severity. Regression analyses revealed that race ($\beta = 0.23$), age ($\beta = -0.16$), and both general drinking ($\beta = 0.28$) and cocaine use patterns ($\beta = 0.18$) were positively associated with violence severity for the most severe violent incident reported. Similarly,

regression analyses focusing on alcohol and cocaine use on the day of the most severe incident revealed that higher drinking levels, younger age, minority status, and the interaction of alcohol and cocaine use have a significant positive association with violence severity. Chermack et al (2002) posited that these findings suggest the need for implementation of routine screening and intervention protocol aimed at violence-related problems in substance abuse treatment settings.

Schneider et al. (2009) examined the prevalence rates and correlates of IPV victimization among a national sample of men and women in substance abuse treatment. This article used secondary data from the National Treatment Improvement Evaluation Study (NTIES) where men ($n = 4,459$) and women ($n = 1,774$) were recruited across 71 treatment sites between July 1993 and November 1994. Bivariate relations between demographic, substance use, and child abuse variables and lifetime IPV victimization were tested separately by gender. Demographic, substance use and child abuse variables that were significant ($p < .05$) at the bivariate level were included as covariates in the logistic regression model. Results indicate that nearly 1 in 2 women and 1 in 10 men reported lifetime victimization by an intimate partner.

Lifetime IPV victimization was reported by 46.7% of women ($n = 828$) and 9.5% of men ($n = 422$). Bivariate logistic regression results indicated that women at or above the median age of 32 ($OR = 1.37$; $CI = 1.12-1.64$, $p < .01$) women without a high school diploma or GED ($OR = 1.25$; $CI = 1.04-1.51$, $p < .001$), and women who had been married ($OR = 1.91$; $CI = 1.57-2.31$, $p < .001$) were more likely to report lifetime IPV victimization; Black women were less likely ($OR = 0.67$; $CI = .54-.83$, $p < .001$) to report IPV victimization relative to non-Black, non-Hispanic women. Relative to women

entering treatment for drug abuse only, women entering treatment for alcohol abuse (or alcohol and drug abuse) were more likely to report IPV victimization (OR = 1.55; CI = 1.28-1.88). Cocaine, “crack”, heroin, and marijuana use did not correlate to IPV. The admission of drug use was significant, as injection drug use was associated with IPV victimization in bivariate analyses (OR = 1.47; CI = 1.21-1.79).

In addition, women with a history of child physical (OR = 4.61; CI = 3.45-6.17) or sexual abuse (OR = 2.48; CI = 2.00-3.08) had greater odds of experiencing victimization by an intimate partner. In multivariate analyses with women, IPV victimization was associated with greater odds of reporting symptoms of anxiety (aOR = 1.58; CI = 1.27-1.96, $p < .001$), depression (aOR = 1.54; CI = 1.21-1.96, $p < .001$), and psychosis (aOR = 1.51; CI = 1.22-1.87, $p < .001$) as well as suicidal ideation (aOR = 1.69; CI = 1.37-2.09, $p < .001$) and lifetime suicide attempt (aOR = 1.73; CI = 1.39-2.16, $p < .001$). After adjusting for covariates, IPV victimization was also associated with greater odds of reporting recent circulatory, neurological, and bone or muscle problems and an STD among women. These findings build on the understanding that IPV among women in substance misuse treatment warrants a nuanced examination, and one that expects variation by gender.

Psychopharmacologic Violence among Criminal Justice-Involved Women

Stuart et al. (2008) analyzed the role of illicit substance use in IPV and examined the potential influence of overall and specific illicit substance use on IPV perpetration in men and women arrested batterers and their relationship partners. The sample consisted of males ($n = 271$) and females ($n = 135$) who were at least 18 years-of-age, who were arrested for violence, and who were court-referred to batterer intervention programs. The

analytical plan of this study included several analyses to test whether the addition of drug use variables significantly increased the model's ability to predict psychological and physical victimization. First, structural equation models (SEM) were constructed to examine model fit for men and women. Two sets of analyses were used in SEM; the first set examined how overall drug use predicted IPV relative to other variables, and the second set examined how specific drug use (i.e., marijuana, sedative, and stimulant) became separate predictors of IPV. For both sets, confirmatory factor analyses (CFA) were conducted to assure the factor structures adequately describe latent variable indicators, to fit the CFA into a larger structural regression model and to involve supplementary analyses by comparing models in which the drug use variables have direct paths to victimization with one in which those paths did not have direct effects.

Demographic analyses found that use of any drug by female partners of male perpetrators (33%) was substantially lower than that for male perpetrators (54%), female perpetrators (59%), and male partners of female perpetrators (56%). Four of the five significant drug-to-victimization paths varied by gender. For male perpetrators, the paths from their marijuana use ($.10, p < 0.05$) and stimulant use ($.10, p < 0.05$) to their own physical aggression was significant. For female perpetrators, none of the drug use variables showed any significant effects on the aggression variables. Male perpetrator's reports of their female partners' sedative use ($.08, p < 0.05$) were associated with their reports of their partners' psychological aggression, whereas the male's reports of their partners' stimulant use ($.07, p < 0.05$) were associated with their reports of their partners' physical aggression. Female perpetrators' results showed that only their reports of their partners' stimulant use were a significant predictor; where, male partner stimulant use

was associated with both his psychological (.15, $p < 0.05$) and physical aggression (.08, $p < 0.05$). These results provide further evidence that drug problems by both partners may be important in the evolution of aggression.

Sheehan et al. (2013) aimed to compare men and women based on the presence of drugs when considering deaths that were attributable to homicides and suicides. Data were used from the Colorado Violent Death Reporting System (COVDRS), which is conducted by the Colorado Department of Public Health as a participant in the National Violent Death Report System (NVDRS) and funded by the Centers for Disease Control and Prevention. Data spanned from 2004-09 and included $N=5,791$ violent death victims among individuals aged 18 years and older. Researchers used a logistic regression to investigate the associations between the presence of substance use (i.e., alcohol, amphetamines, antidepressants, cocaine, marijuana, and opiates) and type of death (i.e., homicide or suicide). Comparisons were also made between individuals' sex, age, race/ethnicity, and educational attainment. The type of violent death was used as the outcome variable and it was coded as 1 = homicide and 0 = suicide.

The results underscored strong associations between drug use and type of violent death, as well as significant gender differences. Compared with suicide decedents, homicide decedents are significantly more likely to test positive for amphetamines (OR = 1.79; CI = 1.34-2.39], marijuana (OR = 2.03; CI: 1.60-2.58) and cocaine (OR: 2.60 = CI: 2.04-3.31) and are less likely to test positive for opiates (OR = 0.27; CI = 0.18-0.39) and antidepressants (OR = 0.17; CI = 0.10-0.28). For women, only cocaine indicated a significant association with homicide as it increased the odds of death by homicide than by suicide (OR = 1.96; CI = 1.11-3.45, $p < .05$). The presence of antidepressants in

women increased their odds of death from suicide compared with homicide by ~12 times. Drugs associated with homicide (marijuana, cocaine and amphetamines) are stronger among males, while drugs associated with suicide are stronger among females (antidepressants and opiates). Taking these differences into consideration may allow for targeted interventions to reduce violent deaths.

Psychopharmacologic Violence among Women in Mental Health/Medical Populations

Gilbert et al. (2012) examined the temporal and bidirectional associations between different types of substance use and different types of IPV among a sample (N = 241) of urban women receiving emergency room care. The sample was collected from a New York City Emergency Department in the Bronx, where 90% identified as Latino or African American, and nearly one-third lived below the poverty level. This article applied a theoretical framework – the ecological perspective – to allow the researchers to conceptualize the multilevel risk and protective factors that were associated with substance use and IPV among women.

This longitudinal study was organized in three waves; such as, wave 1 was baseline, wave 2 was at the 6-month follow-up mark, and wave 3 was at the 12-month follow-up mark. This authors of this study outlined two hypotheses for their study. Hypothesis 1 aimed to use of different illicit drugs and binge drinking at Wave 1 increases the subsequent likelihood of experiencing different types of IPV at subsequent Wave 2 (6-month follow-up) and/or Wave 3 (12-month follow-up), after adjusting for sociodemographic, multilevel risk and protective covariates, and the baseline indicator of IPV outcome using modified Poisson regression and propensity score weighting.

Hypothesis 2 aimed to investigate if the experiences of different types of IPV at Wave 1 increases the likelihood of subsequent use of different drugs and binge drinking at Waves 2 and/or 3, after adjusting for sociodemographic, multilevel risk and protective covariates, and baseline indicator of substance use outcome using modified Poisson regression and propensity score weighting.

Hypothesis 1 was partially supported with significant findings. At Wave 1, results indicated that 43.2% of women reported using illicit drugs within the previous 6-months. Moreover, 33.2% reported marijuana use, 12.9% reported crack or cocaine use, and 7.5% reported heroin use. At Wave 3, illicit drug use was reported at 33%, with marijuana being the largest decrease in reported use – heroin, crack/cocaine, and other "hard drugs" remained more consistent. The results from hypothesis one revealed several significant results. Presented as risk ratios (RR), women who reported heroin use at Wave 1 were about twice (RR = 2.1; CI = 1.2-3.6; $p < .05$) were more likely to report IPV and to report injuries (RR = 2.7; CI = 1.1-6.5; $p < .05$). Compared to women who did not report crack/cocaine use at Wave 1, women who reported crack/cocaine use at Wave 1 were about twice (RR = 2.4; CI = 1.2-4.7; $p < .05$) as likely to report injurious IPV and about twice as likely to report severe verbal abuse (RR = 2.01; CI = 1.2-3.3; $p < .05$).

Collectively, the use of "hard drugs" (i.e., heroin, cocaine and "crack" cocaine) was found to increase the likelihood of experiencing all types of any IPV (RR = 1.6; CI = 1.1-2.4, $p < .05$), physical IPV (RR = 1.7; CI = 1.1-2.6), injurious IPV (RR = 3.0; CI = 1.4-6.4, $p < .01$). Hypothesis 2 was also partially supported with significant findings. That is, women who reported sexual IPV at Wave 1 were nearly three-times more likely to have reported the use of crack or cocaine (RR = 3.3; CI = 1.1-9.5, $p < .05$) and nearly

twice as likely to report the use of “hard drugs” ($RR = 2.4$; $CI = 1.2-4.8$, $p < .05$) at subsequent Waves. The findings in this study underscore the importance of understanding the bidirectional ways that substance use and IPV interact. This study also describes the importance of having substance use- and IPV-related screening tools that are specified to ED settings.

Systemic Violence among Justice-Involved Women

Weir et al. (2008) examined the prevalence and correlates of IPV and other violence (OV) among justice-involved women ($N = 529$) who were identified as being at high-risk for HIV/AIDS. Women were eligible if they reported (a) being at least 18 years old, (b) having been incarcerated in the past year or currently being on parole or probation, and (c) engaging in HIV risk behavior (injection drug use, crack use, intercourse with a male IDU, exchanging sex, or having had 10 or more sexual partners) in the past year. Results indicated that 44% of this sample reported substance use in the past 30-days. The substance use profile includes: alcohol (65.2%); marijuana (34.8%); crack cocaine (30.0%); amphetamines (28.4%); heroin (24.0%); and cocaine (20.2%). Among participants who reported substance use in the past 30-days, 15.7% reported IDU.

Substance use was significantly associated with IPV and OV. Specifically, alcohol or marijuana use meant a participant was nearly twice as likely to be a victim of IPV ($OR = 1.85$; $CI = 1.02-3.36$, $p < .05$), and the use of other drugs (i.e., crack cocaine, cocaine, amphetamines, and heroin) revealed similar results ($OR = 1.95$; $CI = 1.19-3.18$, $p < .05$). Injection drug use was also significantly associated with IPV ($OR = 1.75$; $CI = 1.05-2.94$, $p < .05$). Other violence (OV) was also associated with substance use; for instance, alcohol and marijuana use ($OR = 1.61$; $CI = 0.79-3.30$, $p < .05$), other drug use

(OR = 2.10; CI = 1.19-3.71, $p < .05$), and IDU (OR = 2.05; CI = 1.13-3.71, $p < .05$).

These results indicated that the risk of violence victimization, and subtypes of violence victimization (IPV vs. OV) is identifiable based on the type of substance used. Therefore, effective interventions must address the complexity of the drugs violence nexus, as well as the host of other non-substance-use-related associations of violence as identified in this article.

Systemic Violence among Illegal Economy Working Women

Surratt et al. (2004) examined how the subculture of violence impacts women who work as sex workers in Miami, Florida. This article utilized a community-based sample that was recruited by using targeted sampling techniques. Specifically, sex workers that were crack cocaine- and heroin-using individuals were recruited through street outreach and via an HIV-prevention research program. Participant interviews included standardized instruments that focused several personal histories, including: 1) drug- and sexual-related risk for HIV; 2) sex work; 3) violence; 4) childhood trauma; and 5) health status. Histories of childhood trauma (i.e. lifetime) and substance use (i.e., past month and past year) were the independent variables, and violent victimization(s) was the dependent variable.

The analyses included univariate and bivariate frequency, descriptive, and chi-square tests. The findings indicated that among this sample of sex workers, 75.4% were currently using alcohol, 57.8% were currently using marijuana, 38.4% were currently using cocaine, 74.4% were currently using crack cocaine, 19.4% were using heroin, and 13.8% were currently injecting drugs. Approximately half of the respondents reported physical (44.9%) and/or sexual (50.5%) abuse as children, while nearly 40% experienced

violence from clients in the prior year: 24.9% were beaten, 12.9% were raped, and 13.8% were threatened with weapons. Consistent relationships between historical and current victimization suggest that female sex workers experience a continuing cycle of violence throughout their lives.

Economic-Compulsive Violence among Justice-Involved Women

Oser et al. (2009) sought to examine the drugs/violence nexus among rural felony probationers (N = 800). Data for this study was obtained over a 3.5-year period where probationers were recruited by trained interviewers in probation offices in Appalachian Kentucky. Females were over-sampled at 30% to ensure adequate representation and to facilitate a sufficient sample size for data analyses. In this study, violence victimization was measured by either being “beaten up and/or someone using a knife or firing a gun at the participant.” Violent perpetration was measured by either the participant “beating someone else up and/or using a knife or gun on someone.” Independent variables included demographic characteristics (i.e., gender, marital status, age, and education), psychopharmacological measures (i.e., alcohol, cocaine/crack, and amphetamine/methamphetamine), economic compulsive measures (i.e., engaged in crime to pay for drug expenses, and number of lifetime arrests) and systemic measure (i.e., committed a weapons offense and ever sold or trafficked drugs in lifetime).

Two dependent variables were used, if the participant had been a victim of violent crime (1 = yes; 0 = no) or ever committed a violent crime (1 = yes; 0 = no). Analyses included tests of chi-square and one-way ANOVA to measure group differences, and a series of binary logistic regressions were used to determine the impact the independent variables had on being a victim of a violent crime. For group comparison, participants

were grouped in four groups based on the following: 1) never been involved in violent crime; 2) victim of a violent crime; 3) perpetrator of a violent crime; and 4) both victim and perpetrator of violent crime.

Bivariate results indicated that females comprised 63.8% of the violent victimization group, but only 27% of the violent perpetrator group ($\chi^2(3) = 66.57$; $p < .001$). Among the psychopharmacological measures, participants who were both a violent perpetrator and a victim were more likely to define themselves as an alcoholic ($\chi^2(3) = 27.16$, $p < .001$), to have used cocaine/crack ($\chi^2(3) = 47.79$, $p < .001$), and to have used any stimulant other than crack or cocaine ($\chi^2(3) = 56.74$, $p < .001$). Among the economic compulsive variables, an average of 12.7 lifetime arrests were found among participants who were both a perpetrator and a victim, compared to 4.6 in the neither group, 7.0 in the victim group, and 5.7 in the perpetrator group ($F(3) = 14.97$, $p < .001$). In addition, participants who identified as both a perpetrator and a victim in a violent crime were significantly more likely to have engaged in crime to pay for drugs and/or living expenses ($F(3) = 7.93$, $p < .001$). Among the systemic variables, participants who were both violent perpetrators and victims were most numerous among those who had ever committed a weapons offense ($\chi^2(3) = 36.56$, $p < .001$). Nearly 62% of the both group reported selling or trafficking drugs as compared to about two-thirds of the neither group (40.2%) ($\chi^2(3) = 34.68$, $p < .001$).

The full multivariate model results for violent perpetration included the demographic, psychopharmacological, economic compulsive, and systemic measures for violent perpetration. For females, those with high school diplomas or GEDS were less likely to be violent perpetrators (OR= 0.70; CI = 0.50-0.99, $p < .05$). Lifetime stimulant

use predicted an increased likelihood of having ever committed violent crime (O.R. = 1.60; CI = 1.09-2.37, $p < .05$). The number of lifetime arrests was positively correlated with having ever committed a violent crime across the lifespan (O.R. = 1.02; CI = 1.00-1.04, $p < .05$).

The full multivariate model results for violent victimization based on marital status coefficient remained stable across the four models with married participants being less likely to have been violently victimized in their lifetime. Participants who identified as alcoholics (O.R. = 1.86; CI = 1.11-3.09, $p < .05$) and those who reported having ever used stimulants other than crack or cocaine (O.R. = 1.91; CI = 1.30-2.80, $p < .01$) were nearly twice as likely to have been subjected to violent victimization. A positive significant association was found between criminal violent victimization and the number of times an individual was arrested (O.R. = 1.05; CI = .74-1.48, $p < .01$). These findings illuminate the unique components of rural violence. The multivariate analyses supported the economic compulsive model among both perpetration and victimization of violence.

Disparate fields of study (i.e., sociology; public health; social work; psychology; criminal justice) have provided evidence that women and men are involved in violent events at similar rates, and that drug use often plays a critical role in these experiences. For women, strong associations between drug use and violence have been found in recent years. The current literature indicates that opportunities for involvement in drug-related violence victimization occur within complex interactions between social and environmental contexts. For many women, violent victimization typically occurs within community settings or intimate relationships, and violent perpetrators are often known by the victim. These experiences often place them in medical (e.g., emergency room), SUD

treatment, and criminal justice (e.g., county jail) settings. Having said that, the magnitude of drug use and co-occurring problems is considerably greater among justice-involved women.

Although highly variable, the type of drugs used, and the severity of use were associated with experiences of violent victimization. Among female victims, there is support for the presence of psychopharmacological violence. Two drug classes were highly prevalent in their associations with psychopharmacological violent victimization – opioids (i.e., NMPO & heroin) and stimulants (i.e., methamphetamine/amphetamine and cocaine). Economic-compulsive and systemic violence among women is also supported by recent literature, albeit less so compared to psychopharmacological violence.

Although it is generally accepted that there is a relationship between drug use and violent victimization, the direction of this relationship is less clear. In general, the findings in the literature are mixed. There is evidence that drug use (El-Bassel et al., 2005; Testa et al., 2003) and alcohol use may precede abuse by an intimate partner, or a member of the community (Devries et al., 2014). In addition, curtailment of substance use has indicated a reduced risk of subsequent victimization (Cohen, Field, Campbell, & Hien, 2013). Conversely, there is evidence that experiencing IPV is related to later drug use (El-Bassel et al., 2005), or that violent victimization and substance use may have a bidirectional relationship. For example, a 2-year longitudinal study utilizing a nationally representative cohort of women found that following a physical or sexual assault, women's alcohol and drug use increased, including among women with no previous substance use and no prior victimization history. Moreover, women's substance use was

associated with an increased risk of experiencing a subsequent physical or sexual assault (Kilpatrick et al., 1997).

Collectively, despite a high quantity of recent research investigating drug use and violence among women, few studies have directly applied Goldstein's (1985) conceptual framework to a rural vulnerable population (i.e., justice-involved women). Moreover, no studies to date have investigated how subtypes (i.e., psychopharmacological, economic-compulsive, and systemic) of drug-related violence may be associated with behavioral health risk factors. It is important to examine justice-involved women from Kentucky because compared to U.S. rates, the region of Appalachian Kentucky has high rates of past-month illicit drug use (excluding cannabis) and high rates of incidents related to poor behavioral health and infectious disease (SAMHSA, 2014).

Current Study

The current study will analyze existing data from a cohort of justice-involved women from jails located in central Appalachia Kentucky. The substance misuse and violence relationship among rural justice-involved women has largely been unexplored by the current literature. Although research investigating substance use and co-occurring mental health and infectious disease risk factors has been explored (Staton-Tindall, 2015a), it is unclear how the types of violent victimization experiences may shape these risk factors. A fuller understanding the relationship between substance use and violence, and how this relationship extends to a host of mental health and behavioral risk factors for infectious disease may illuminate specific intervention points that could translate to policy- and clinical-level action for rural justice-involved women. In addition, this proposed study could inform Goldstein's (1985) theoretical framework by providing

novel drugs/violence nexus data related to justice-involved women, and by postulating how behavioral health may be impacted by each theoretical domain – a concept that has largely been unexplored within this theoretical framework (Goldstein, 1998).

This study will utilize deductive methods to test Goldstein's (1985) tripartite conceptual framework to extend previous research and to evaluate this framework according to a unique and vulnerable population. The focus of Goldstein's (1985) tripartite conceptual framework will be placed on investigating how the current sample is grouped (i.e., psychopharmacologic group; economic compulsive group; or systemic group), and how these groupings are associated with selected health-related outcomes. Three research questions will be explored in this study.

Research Questions and Hypotheses

Research Question 1: Can distinct drugs/violence nexus groups be predicted based on psychopharmacological factors, economic compulsive factors, and systemic factors among a sample of rural justice-involved women?

Ha¹: There will be significant predictors of group membership across the three predicted drugs/violence nexus groups and a greater prevalence of participants will be observed in the psychopharmacologic group.

Research Question 2: What are the associations between mental health symptomology and the predicted groups (i.e., psychopharmacologic; economic-compulsive; systemic) groups?

Hb¹: Among each of the predicted groups, there will be a greater number of significant associations between mental health symptomology and the psychopharmacologic group.

Research Question 3: What are the associations between behavioral risk factors for infectious disease and the predicted groups?

Hc¹: Among each of the predicted groups, there will be a greater number of risk factors among the psychopharmacologic group, given that this grouping entails participants directly administering drug use, thus increasing the likelihood of risk for infectious disease.

Chapter III: Methods

Data Source

Data for this study was obtained from a longitudinal project (National Institute on Drug Abuse, [NIDA] 1R01-DA033866) called the Women's Intervention to Stop HIV/Hepatitis C (WISH). This project focused on high-risk drug use and risky sexual practices among a randomly selected group of rural incarcerated women located in Appalachian jails. To enroll in this study, participants had to meet the following eligibility criteria: 1) National Institute on Drug Abuse (NIDA, 2010) modified Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) scores of four or greater indicating the need for substance abuse intervention; 2) engaged in at least one high-risk sexual practice in the 3-months prior to incarceration; 3) resided in designated Appalachian county before incarceration; and 4) indicated a voluntary willingness to participate in the study. The WISH study has been approved by the University of Kentucky Institutional Review Board. Due to concerns regarding protecting the identities of vulnerable participants, a federal certificate of confidentiality was obtained to further ensure that privacy standards were upheld.

Procedures

All study recruitment and data collection procedures were approved by the university institutional review board and protected under a federal Certificate of Confidentiality. Drug-using women were recruited from three rural jail facilities located in Appalachian counties. The jails were similar regarding size, female populations and availability of programming and resources. Consent for participation in the project was provided by all participants before study screening procedures. During the 32-month

study recruitment, 688 women were randomly selected from the target jails for study screening.

Study screening took place in a large group room in the jail and included measures to assess substance abuse (NM-ASSIST; NIDA, 2009), risky sexual practices (Wechsberg, Craddock, & Hubbard, 1998), and voluntary willingness to participate. Following the screening session, eligible women (n = 440) were invited to participate in a more in-depth baseline interview within a period of 2 weeks to assess their substance abuse history, risky sexual practices, history of substance abuse treatment, attitudes toward the health care system and overall health. During the 2-week period between the time of study screening and in-depth interviews, 40 women were released early. Interviews were conducted with 400 women by female research staff from the local Appalachian area, who were trained on human subjects protections and jail facility policies and procedures prior to study implementation. Participants were paid \$25 for the baseline interview.

Measures

The current study proposes a quantitative design to examine theoretical factors associated with substance use and violence based on the Goldstein (1985) tripartite conceptual framework, to predict group membership within these theoretical concepts, and to test for associations between the predicted groups and mental and physical health factors. The Global Appraisal of Individual Need–Intake version (GAIN) is a standardized instrument package administered for research purposes only, and intended to support clinical decision-making for potential diagnoses, placement, treatment planning, and service use (Dennis, Titus, White, Unsicker, & Hodgkins, 2003). This

study used select subsections of the GAIN for measurement purposes, and specific descriptions of those measures are described in the following sections. The GAIN-SPS has been found to be highly reliable with adolescents and adults, with alphas ranging from .80 to .90. Cronbach's alpha for the current study is .89.

To measure substance use, this study used the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) (Humeniuk et al., 2008). This interview-based instrument was developed by the World Health Organization (WHO) to screen across substances. It consists of 8 questions that aid in identifying the level of substance use-related risk to help guide intervention. Among the current sample, the Cronbach's alpha for the ASSIST measure was .81. Each of the measures included in the multivariate models are presented in Table 1.

Demographics

Demographic variables to be included will be age, marital status, education, income, children status, housing, violence victimization, and drug use history. Age was measured as an interval measure by number of years. Marital status was measured categorically by asking the participants if they were currently with a partner (1 = Yes; 0 = No). Education was measured continuously as the highest level of education attainment. Income was measured continuously in dollars by asking, "During the six-months before incarceration, what was your total income from all sources including work, family/friends, government support, etc.?" Participants children status was measured dichotomously (1 = Yes; 0 = No). Employment was measured nominally by asking participants to report their last job prior to incarceration, values included; 1 = professional & technical; 2 = manager and administer; 3 = sales; 4 = clerical or office work; 5 = craft

and kindred; 6 = operative; 7 = transportation equipment operative; 8 = nonfarm laborer; private household worker; 9 = private household worker; 10 = service worker; 11 = farmer and farm manager; 12 = farm laborer; 13 = military service; 14 = fast food industry; 15 = construction; 16 other. Housing was measured continuously by asking “Number of days in the 6-months before incarceration were you homeless or had to stay with someone else to avoid being homeless?” Chronic pain was measure by asking, “Does participant have any chronic physical pain that has lasted longer than 3-months (0 = No; 1 = Yes)?”

Psychopharmacologic Variables

The psychopharmacologic variables were measured by using five continuous substance use variables. These variables were taken from the NIDA-Modified Alcohol, Smoking and Substance Involvement Test (ASSIST) (Humeniuk et al., 2008). Drug use that was included in this study included prescription opioids, prescription stimulants, prescription sedatives, heroin, methamphetamine and cocaine. The ASSIST scoring range is as follows: 0-3 = low risk; 4-27 moderate risk; and 27+ high risk.

Participants were asked about their lifetime and past 3-months drug use prior to incarceration. Questions 1 to 7 ask about drug use and related problems. Question 1 asks about which substances have ever been used in the participant’s lifetime. Question 2 asks about the frequency of substance use in the past 3-months to give an indication of the substances that are most relevant to current health status and use patterns. Question 3 asks about the frequency of experiencing a strong desire or urge to use each substance in the past 3-months. Question 4 asks about the frequency of health, social, legal or financial problems related to substance use in the past 3-months. Question 5 asks about

the frequency with which each substance has interfered with personal responsibilities in the past 3-months. Question 6 asks if anyone has ever expressed concern about the participant's substance use in their lifetime, and how recently that occurred. Question 8 concerns IDU and asks whether the participant had ever injected any drug (Humeniuk et al., 2008).

Economic-Compulsive Variables

The economic-compulsive component was measured using one continuous variable and one dichotomous variable that targeted the extent to which drug-related illegal activity occurred because of economic necessity. Participants were asked, "How many days in the past 3-months prior to incarceration they engaged in illegal activities for profit?" In addition, participants were asked, "In the past year, did you ever have sex with a partner in exchange for money or drugs (1 = Yes; 0 = No)?"

Systemic Variables

The systemic domain was measured using two ordinal variables that targeted the social and transactional elements of illegal activity that can have limited social control mechanisms. First, participants were asked, "How often a friend traded, sold, or dealt drugs in the 6-months prior to their arrest date (1 = Never; 2 = Sometimes; 3 = Often)?" Second, participants were asked, "How often a friend did other things against the law in the 6-months prior to their arrest date (1 = Never; 2 = Sometimes; 3 = Often)?"

Grouping Variable

Violence victimization were used as the grouping variable in the discriminant function analyses. To measure violence victimization participants were asked, "If anyone

had ever hurt them by striking or beating them to the point they had bruises, cuts, or broken bones (1 = Yes; 0 = No)?”

Risk Behaviors for Infectious Disease

Two dichotomous variables and one continuous variable were selected to measure participant’s risk factors for acquiring or diffusing an infectious disease. These measures were operationalized using questions from the GAIN-Risk Behaviors Screener (RBSr). Specifically, participants were asked about their sexual history while under the influence of alcohol or drugs, their history of sharing needles, and by who initiated them to IDU. To measure past 12-months condom use during intercourse with male partners, participants were asked, “Did you use a male condom in the past 12-months prior to your incarceration (1 = Yes; 0 = No)?” To measure initiation to IDU, participants were asked, “Boyfriend/male lover: Who shot up with the first-time injecting (0 = No; 1 = Yes). To measure history of syringe sharing behavior, participants were asked “How many people did you share needles within the past year?”

Mental Health Symptomology Variables

Four dichotomous variables were selected to measure participant’s mental health symptomology. Mental health was measured using the GAIN-Internalizing Disorders Screener (IDSr). This screening tool is meant to identify “significant” mental health problems, as defined by problems that last for two or more weeks, that are recurring, that keeps the participant from meeting their responsibilities, or that makes the participant feel like they cannot go on (Dennis, et al., 2003).

The measurements included in this section were conceptual indicators for symptomology of the following: 1) Depression; 2) Anxiety; 3) Suicidal Ideation; and 4)

Psychosis. Participants were asked the following questions: 1) “In the past 12-months, have you had significant problems with feeling trapped, lonely, sad, blue, depressed, or hopeless about the future (1 = Yes; 0 = No)?”; 2) “In the past 12 months, have you had significant problems with feeling very anxious, nervous, tense, scared, panicked or like something bad was going to happen (1 = Yes; 0 = No)?” 3) “In the past 12 months, have you thought about ending your life or committing suicide (1 = Yes; 0 = No)?”; 4) “In the past 12 months, have you had significant problems with seeing or hearing things that no one else could see or hear or feeling that someone else could read or control your thoughts (1 = Yes; 0 = No)?”

Table 1: Variables Used in Multivariate Analyses

<u>Psychopharmacologic</u>	<u>Measurement Temporality</u>	<u>Measurement Type</u>	<u>Values</u>
Prescription Opioid	Past 3- Months/Lifetime	Continuous	
Prescription Stimulant	Past 3- Months/Lifetime	Continuous	
Prescription Sedative	Past 3- Months/Lifetime	Continuous	
Heroin	Past 3- Months/Lifetime	Continuous	
Methamphetamine	Past 3- Months/Lifetime	Continuous	
Cocaine	Past 3- Months/Lifetime	Continuous	
<u>Economic-Compulsive</u>			
Illegal Activities for Profit	Past 3-Months	Continuous	
Trade Sex for Drugs/Money	Past 12-Months	Dichotomous	0 = No; 1 = Yes
<u>Systemic</u>			
Friend Dealt Drugs	Past 6-Months	Ordinal	1 = Never; 2 = Sometimes; 3 = Often
Friend Other Illegal Activity	Past 6-Months	Ordinal	1 = Never; 2 = Sometimes; 3 = Often
<u>Grouping Variable</u>			
Violent Victimization	Lifetime	Dichotomous	0 = No; 1 = Yes
<u>Risk Factors for Infectious Disease</u>			
Used Male Condom	Past 12-Months	Dichotomous	0 = No; 1 = Yes
IDU Initiation	Lifetime	Dichotomous	0 = No; 1 = Yes
Syringe Sharing	Past 12-Months	Continuous	
<u>Mental Health Symptomology</u>			
Depression	Past 12-Months	Dichotomous	0 = No; 1 = Yes
Anxiety	Past 12-Months	Dichotomous	0 = No; 1 = Yes
Suicide Ideation	Past 12-Months	Dichotomous	0 = No; 1 = Yes
Psychosis	Past 12-Months	Dichotomous	0 = No; 1 = Yes

Analytic Plan

Demographic characteristics were presented using descriptive and frequency analyses. Theoretical groups were examined by conducting a series of multivariate analyses that included discriminant function analyses and binary logistic regression

analyses. The discriminant function analyses were performed to determine if the predictor variables could differentiate the sample based on membership to the psychopharmacologic model, the economic-compulsive model, or the systemic model. This analytical step allows for an examination of the sensitivity for each discriminant function analysis in accurately predicting the theoretical models (Poulsen & French, 2008).

In addition, a series of binary logistic regressions were conducted with the same predictor variables. This analytical step allows for an examination of the specificity of each discriminant function analysis, by identifying which predictors were the strongest associates of each theoretical model (Poulson & French, 2008). The second and third research questions were examined by conducting a series of binary logistic regression analyses. The theoretical models (i.e., psychopharmacologic, economic compulsive, and systemic) functioned as outcomes for the behavioral risk factors of infectious disease contraction and mental health risk factor predictor variables. Analyses were conducted using SAS version 9.4 and SPSS version 25.

Chapter IV: Results

Demographics

Among the overall sample (N = 400), there were 87 participants who were predicted to more than one group following the discriminant function analyses. To mitigate concerns of shared variance, these participants (n = 87) were removed from subsequent multivariate analyses; however, they were included in the demographic characteristics. Participants were on average 32.8 years old, had an 11th grade education, were homeless 13.5 days in the year prior to incarceration, and over the 6-months prior to incarceration the reported income was \$8,467. Most participants were White (98.1%), had children (86.8%), and had a history of violence victimization (64.5%) (see Table 2).

Table 2: Demographic Characteristics (N=400)

	<u>Mean (SD)%</u>	<u>Range</u>
Age	32.8 (8.2)	18-61
Race		
% White	98.1%	
Married	32.0%	
Education	11th grade	
All Past 6-Month Income	\$8,467 (\$18,558)	
Children	86.8	
Homelessness	13.5 days (42.3)	0-180
Violence Victimization	64.5%	
<u>Psychopharmacologic Variables</u>		
Cannabis SI Score	12.2 (11.9)	0-39
Cocaine SI Score	8.4 (11.9)	0-39
Heroin SI Score	9.2 (14.2)	0-39
Methamphetamine SI Score	15.4 (15.3)	0-39

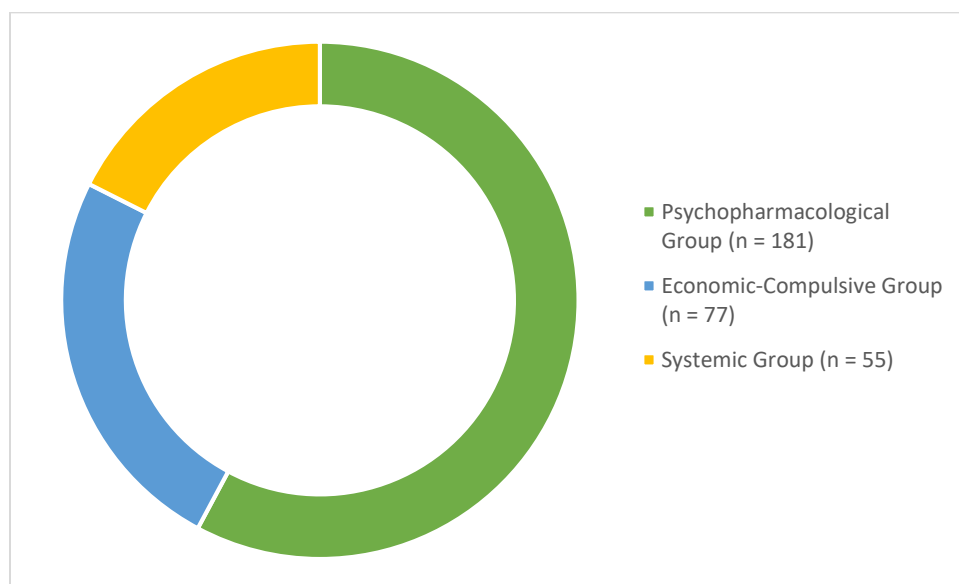
Table 2 (continued)

Prescription Opioid SI Score	27.8 (13.8)	0-39
Prescription Sedative SI Score	19.9 (14.8)	0-39
Prescription Stimulant SI Score	6.7 (10.8)	0-39
<u>Economic-Compulsive Variables</u>		
Days of Illegal Activities for Profit	77.4 (83.5)	0-180
Trade Sex for Drugs/Money	77.8%	
<u>Systemic Variables</u>		
Friend Dealt Drugs		
Never	14.0%	
Sometimes	25.8%	
Often	60.2%	
Friend Other Illegal Activity		
Never	11.3%	
Sometimes	30.6%	
Often	58.4%	
<u>Mental Health Symptomology</u>		
Depression	61.3%	
Anxiety	59.8%	
Suicidal Ideation	10.8%	
Psychosis	22.3%	
<u>Infectious Disease Risk Factors</u>		
Number of People Shared Syringes Past 12-m	3.3 (6.45)	50
No Condom Use	68.0%	
IDU Initiated by Male Partner	34.8%	

Research Question 1

A series of discriminant function analyses were conducted to test the extent to which predictor variables could predict the psychopharmacologic group, the economic-compulsive group, and the systemic group relative to violence victimization. Values for

sensitivity, specificity, positive and negative predictive power are presented in Table 3. The data yielded three significant discriminant models. The correlations between each of the predictor variables for the three discriminant models are displayed in Table 3. A subsample ($n = 77$) of participants exhibited considerable overlap in their predicted group membership; therefore, they were removed to mitigate sampling error from the subsequent analyses. A breakdown of the predicted groupings is presented in Figure 2.



Note. Results from the discriminant function analyses
Figure 2: Drugs/Violence nexus predicted groups (N=313).

Confirming hypothesis 1, the psychopharmacologic model ($n = 181$) indicated a strong discriminatory ability (Klecka, Iversen, & Klecka, 1980) and had the greatest proportion of the total sample. Overall, the psychopharmacologic model correctly classified 87.5% of the sample and was statistically significant (Wilk's Lambda = .389, $F = 3.94$, $p < 0.001$). Among the three discriminant models, the psychopharmacologic model was indicated to have had the greatest discriminatory ability. Each of the three predictor variables were significant contributors to the model. The largest absolute

correlate in this model was the illicit use of prescription opioids (Canonical Correlation = 0.88).

The economic-compulsive model ($n = 77$) indicated a moderate discriminatory ability (Klecka, Iversen, & Klecka, 1980). Overall, the model correctly classified 79.8% of the sample and was statistically significant (Wilk's Lambda = .584, $F = 11.86$, $p < 0.001$). Both of the predictor variables included in the economic-compulsive model significantly contributed to the model. The largest absolute correlate in this model was the number of days a participant engaged in illegal activities for profit in the 3-months prior to incarceration (Canonical Correlation = 0.86). A strong positive correlation was observed between illegal activity for profit and violent victimization.

The systemic model ($n = 55$) indicated a moderate discriminatory ability (Klecka, Iversen, & Klecka, 1980). Overall, the model correctly classified 71.9% of the sample and was statistically significant (Wilk's Lambda = .492, $F = 6.59$, $p < 0.001$). Both of the predictor variables included in the system model significantly contributed to the model. The largest absolute statistically significant predictor in this model was demonstrated by how often the participant's friends traded, sold, or dealt drugs in the 6-months prior to their arrest date (Canonical Correlation = 0.96). A full display of the correlations between the remaining predicting variable and the discriminant function are in Table 3.

Table 3: Results from Discriminant Function Analyses

<u>Psychopharmacological Group</u>	<u>Standardized Canonical Coefficients</u>	<u>R-Square</u>	<u>F-Value</u>	<u>P>F</u>
Prescription Stimulant	0.356	0.019	7.86	0.105
Prescription Opioid	0.875	0.018	7.01	0.000
Prescription Sedative	0.711	0.013	5.01	0.025
Heroin	0.805	0.032	8.93	0.003
Methamphetamine	0.537	0.038	15.21	0.008
Cocaine	0.122	0.024	4.25	0.440
<u>Economic-Compulsive Group</u>				
Illegal activity for profit	0.861	0.043	17.35	0.001
Sex as currency	0.733	0.031	12.42	0.001
<u>Systemic Group</u>				
Friend's drug dealing	0.448	0.045	16.65	0.001
Friend's other illegal activity	0.638	0.049	18.28	0.001

Research Question 2

A series of binary logistic regression was conducted to examine if mental health symptomology was associated with the predicted groups (i.e., psychopharmacologic; economic-compulsive; systemic). As presented in Table 4, results of the binary logistic regression indicated that there was a significant association between mental health symptomology and psychopharmacologic violence ($\chi^2(5, 308)=22.33, p < .001$) and economic-compulsive violence ($\chi^2(5, 308)=37.67, p < .001$), but not for systemic violence ($\chi^2(5, 308)=11.76, p < .138$).

The variable with the strongest association with psychopharmacological violence (OR = 2.48; CI = 1.38-4.45, $p < .002$) was experiencing psychotic symptoms. In addition,

hypothesis 2 was not confirmed as economic-compulsive violence was associated with an equal number of mental health symptomology, including depression symptoms (OR = 1.80; CI = 1.10-3.03, $p < .027$) and suicidal ideation (OR = 1.45; CI = 1.27-3.01, $p < .032$) (see Table 4). There were no significant individual risk factors associated with the systemic group.

Table 4: Binary Logistic Regression Analyses Results for Mental Health Symptomology

<u>Psychopharmacological Group</u>	<u>B</u>	<u>OR</u>	<u>95% CI</u>
Depression	0.502	1.65	1.19-2.77*
Anxiety	-0.312	0.73	0.44-1.21
Suicidal Ideation	-0.353	0.70	0.34-1.45
Psychosis	0.908	2.48	1.38-4.45**
<u>Economic-Compulsive Group</u>			
Depression	0.589	1.80	1.10-3.04*
Anxiety	-0.191	0.86	0.50-1.36
Suicidal Ideation	0.371	1.45	1.27-3.01*
Psychosis	1.086	0.73	1.70-5.15
<u>Systemic Group</u>			
Depression	0.063	1.10	0.98-2.62
Anxiety	-0.450	0.97	0.64-1.80
Suicidal Ideation	0.043	1.04	0.51-2.14
Psychosis	0.534	1.71	0.99-2.95

Note. * $p < .05$; ** $p < .01$

Research Question 3

A series of binary logistic regression were conducted to examine if behavioral health risk factors for infectious disease were associated with a discriminant function analysis-defined model (i.e., psychopharmacologic; economic-compulsive; systemic). As presented in Table 5, results of the binary logistic regression indicated that there was a significant association between behavioral health risk factors for infectious disease and psychopharmacologic violence ($\chi^2(3, 310)=5.73$, $p < .05$) and economic-compulsive violence ($\chi^2(3, 310)=9.99$, $p < .007$). Hypothesis 3 was not confirmed as the

psychopharmacological model did not have the greatest number of significantly associated infectious disease risk factors.

Two variables were significantly associated with psychopharmacologic violence. The strongest association with psychopharmacologic violence was having a partner who initiated IDU (OR = 9.85; CI = 5.10-30.78, $p < .041$). The other significant association to the psychopharmacological group was not using a condom in the 12-months prior to incarceration (OR = 1.62; CI = 1.39-1.98, $p < .045$) (Table 5).

Two variables were significantly associated with economic-compulsive violence. The strongest association with economic-compulsive violence was the number of individuals that participants' shared needles with 12-months prior to incarceration (OR = 2.16; CI = 2.05-3.67, $p < .001$). This finding indicated that the risk of economic-compulsive violence increased by approximately twice as the number of times a participant shared a needle increased. There were no significant associations between infectious disease risk factors and the systemic group (Table 5).

Table 5: Binary Logistic Regression Analyses Results for Infectious Disease Risk Factors

<u>Psychopharmacological Participants</u>	<u>B</u>	<u>OR</u>	<u>95% CI</u>
Shared Needles	0.019	1.02	.97-1.08
No Condom	0.474	1.62	1.39-1.98*
Intro to IDU	2.287	9.85	5.10-30.78*
<u>Economic-Compulsive Participants</u>			
Shared Needles	0.445	2.16	2.05-3.67***
No Condom	0.409	1.51	1.06-2.40*
Intro to IDU	-1.456	0.23	.025-2.17
<u>Systemic Participants</u>			
Shared Needles	-0.069	0.93	.83-1.05
No Condom	0.201	1.78	1.69-3.62
Intro to IDU	-1.715	1.17	.69-1.98

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

Chapter V: Discussion

The findings of the current study provided partial support for the study hypotheses. To that end, the intent of this chapter is to detail the findings of the current study, to discuss policy and treatment implications, to provide guidance for future research, and to highlight the role of social workers in meeting the needs of justice-involved rural women. First, explanations of the current findings are provided and compared to past research. Second, implications and translational recommendations are summarized generally and from a social work perspective, taking account of both micro- and macro-level interventions. Third, limitations of the current study and areas for future research are presented. Fourth, a conclusory summary of the current study is provided.

This study examined the contributing factors that influenced the drugs/violence relationship among justice-involved women in Appalachia, and it explored the associations between the predicted drugs/violence groups and mental health symptomology and behavioral health risk factors. The theoretical framework proposed by Goldstein (1985) informed the conceptualization of the drugs/violence relationship types; specifically, psychopharmacologic violence, economic-compulsive violence and systemic violence. Goldstein's (1985) framework was supplemented by a feminist perspective (Chesney-Lind & Shelden, 2013) given the homogeneity of the current study sample and as a means toward explaining the findings and implications of this study. The statistically significant findings in this study build upon the existing literature base that has addressed justice-involved women (Chesney-Lind & Shelden, 2013; Fogel et al., 2014; Fogel, & Belyea, 1999; Oser et al., 2009), and the theoretically guided characteristics (Goldstein,

1985) of justice-involved women's experience of the relationship between drug use and violence.

The sociodemographic characteristics indicated that the current sample had structural and social determinants of health that are consistent with the Appalachian region in Kentucky (ARC, 2017). The economic inequality among justice-involved women in the current study were comparable to the majority of justice-involved populations (Deckard, 2017; Rabuy & Kopf, 2015). The majority of the current sample had approximately two children and on average had attained an eleventh-grade education. According to the ASSIST instrument (Humenuik et al., 2008), reported drug use of the current sample ranged from moderate to severe on each drug class. On average, NMUPO and prescription sedatives had the most severe use profiles. The drug use reported by the current sample is comparable with most justice-involved individuals, as evidenced by (Mumola & Karberg, 2006). Nearly two-thirds of the current sample reported violent victimization in the 12-months prior to their incarceration; national estimates for justice-involved women range between 50% to 98% (Beck, Berzofsky, Caspar, & Krebs, 2013).

Theoretical Relationship between Drug Use and Violence

This study was the first to use Goldstein's (1985) tripartite conceptual framework to examine how psychopharmacologic factors, economic-compulsive factors, and systemic factors predicted the drug use and violence relationships among justice-involved women. As noted, the majority (64.5%) of justice-involved women in this sample reported being a victim of violence in their lifetime. According to the Bureau of Justice Statistics (Bronson & Berzofsky, 2017), the majority of justice-involved women do not

typically have violent charges (less than 5,000) at the at the county- and national-level. Yet, most justice-involved women have been incarcerated on drug offenses.

Presently, there are 8,500 women in federal prison on drug charges, 24,700 in state prisons and 27,000 in local jails (Bronson & Berzofsky, 2017). This offender profile coupled with violent victimization histories provides some evidence for the drugs/violence relationship among justice-served women. A series of discriminant function analyses were conducted to determine if the drugs/violence relationship factors could discriminate between psychopharmacologic violence, economic-compulsive violence and systemic violence among rural justice-involved women. Overall, the findings in the current study indicated that each of the discriminant function analyses were statistically significant.

The current findings provided novel evidence which demonstrated that Goldstein's (1985) conceptual framework did have utility among a sample of rural justice-involved women. That is, among a unique subpopulation, the current findings indicate there is are direct relationships that demonstrated the impact of psychopharmacological, economic-compulsive, and systemic victimization. These findings could be helpful in providing a modified conceptual framework to explore linkages across a variety of victimization (e.g., domestic violence, sexual assault, stalking, or suicide) and rural venues (e.g., crisis center patients, medical care patients, substance use treatment clients, or individuals in juvenile detention).

Building evidence that is specific to rural communities is important, as Kuhns & Clodfelter (2009) note, most victimization studies rely on nationally representative samples that may not gather accurate information on the victim's drug use, or reliably

identify issues that were specific to unique at-risk populations. Further, the predicted groups were examined by using violence victimization as the primary discriminating variable, which largely contrasted with much of the male- and perpetration-focused development and subsequent testing of Goldstein's (1985) original framework. This study also was the first to provide evidence that unique health risk-factors were significantly associated to participants' specific drug-related violent victimization experiences. In other words, the findings of the current study propose of modified framework that can be used to guide future research examining drug use and violence victimization in rural communities.

Psychopharmacological Violence

The psychopharmacological group had the greatest number of participants compared to the other predicted drugs/violence groups. This suggests that the psychopharmacological drugs/violence relationship was the most prevalent to affect the current sample. Previous research has found similar results, where psychopharmacological violence was the most common context of drug-related violence (Oser et al., 2009). However, comparisons are difficult because past research has given minimal attention to violence victimization and no study has tested this framework exclusively on rural justice-involved women.

Yet, when comparing the current results to past research, the findings of this study may indicate that the pervasiveness of psychopharmacologic violence spans across the urban-to-rural divide, between men and women, and within the contexts of violence perpetration and victimization. Perhaps an explanation for the pervasiveness of this type of drug/violence relationship is based on the notion that the psychopharmacological

violence is distinct from the other two drugs/violence subtypes (Goldstein, 1985). That is, the psychopharmacologic violence designates that the risks for drug-related violent victimization exists mainly in the effects of the drugs, rather than within certain socio-economic contexts (i.e., economic-compulsive or systemic) (Goldstein 1985).

Compared to the other groups, the psychopharmacologic group also had the greatest discriminatory ability which indicated it was the most reliable model in predicting the drugs/violence relationship. In the specified discriminant function model for psychopharmacologic violence, women who reported NMUPO, heroin use, prescription sedative misuse, and methamphetamine use in the 12-months prior to incarceration were significantly discriminated between those with violent victimization histories and those who did not. NMUPO and heroin use had the strongest correlation to violence victimization, and prescription sedative use followed closely behind. These findings contrast with much of Goldstein's (1985) conceptualization of psychopharmacological violence. Most of the significant correlates of the predicted psychopharmacological group typically produce an acute depression of cognitive and psychomotor functioning. Much of Goldstein's (1985) writing on psychopharmacological violence noted the profound effect that stimulant use had on violent behavior. Given these discrepancies, the current findings are important considerations for vulnerable rural women and for the perspective of survivors of violence rather than perpetrators of violence.

Framed in the context of Goldstein's (1985) tripartite conceptual framework, the finding relative to NMUPO and heroin use is counter to a substantial portion of literature involving the drugs/violence nexus. Past research has been largely conceptualized as the

perpetration of violent behavior (Boles & Miotto, 2003; Goldstein, 1985; 1998) or commitment of violent crime (Basile, 2005; Harrison & Schehr, 2005; Oser et al., 2009). NMUPO among the current sample suggests that Goldstein's framework could be adapted to the experiences of rural justice-involved women. To that end, this study provides evidence that prescription opioids and heroin may alter an individual's behavior in such a manner as to bring about that individual's violent victimization. Thus, future applications of Goldstein's (1985) framework with rural justice-involved women may consider the unique implications that NMUPO and heroin use have with violence victimization.

Although Goldstein's (1985) conceptual framework offers a robust explanation for the drugs/violence nexus, it may be limited in its applicability to describing experiences of victimization and NMUPO, prescription sedative use, and heroin use. The relationship between these drugs and violence may be explained in part by bodily pain; although, the type or severity of pain was not identified in the current study. In addition, if bodily pain was present, it may have been the result of past victimization. Past research has found that NPOUs were significantly more likely than nonusers to have a history of IPV, and more likely to experiences violent victimization from someone other than their intimate partner. An IPV event can also produce symptoms beyond the acute stage; such as residual symptoms, which include headaches, back pain, gynecological problems, abdominal problems, and chronic disease (Campbell et al., 2002; Coker et al., 2002; Wu, Huff, & Bhandari, 2010). Given these findings, and because this study could not directly ascertain the temporal events of the drugs/violence relationships, it is possible that the

results in the psychopharmacological group were indicative of a circular pattern of drug use, violence, and coping with the associated pain symptomology.

However, methamphetamine use was also significantly associated with psychopharmacological group membership. This finding was consistent with past research, as existing literature has continued to define and replicate the association of stimulant use and violent victimization (Boles & Miotto, 2003; Chermack et al., 2002; El-Bassel et al, 2005; Goldstein, 1998; Oser et al., 2009). Therefore, the current study confirms there was a psychopharmacologic link between stimulant (i.e., methamphetamine) use and drug-related violence for this sample of justice-involved rural women.

In general, stimulant use has been found to be associated with symptoms of psychosis such as delusions, hallucinations and paranoia (Harris & Batki, 2000), which in turn may make an individual more vulnerable to violent victimization. Another plausible explanation may be the complex interconnectedness between participants' substance use, their intimate partners' stimulant use, and the wider dynamics of power and control place them at a greater risk violent victimization (Gilchrist et al., 2019; Snell-Rood et al., 2016).

Economic-Compulsive Violence

There was statistically significant support for the relationship between economic-compulsive measure and violence victimization. The results from the current study indicated that both a history of illegal acts for profit and trading sex for drugs/money contributed to predicting economic contexts for violence victimization. Both factors included in the economic-compulsive model significantly discriminated between

predicted victims of violence to those who were not predicted to be victims of violence. On average, the participants who were predicted into the economic-compulsive group reported less income compared to the other two groups. Although this income disparity was not statistically significant, it may signify an economic gradient effect within a sample of predominantly low-income individuals. This economic gradient effect could partially explain why certain participants were predicted into the economic-compulsive group and their motivations for behavior that placed them at risk for infectious disease and mental health issues.

The number of days a participant engaged in illegal activity for profit was the strongest correlate to violence victimization, which is a finding that is corroborated by past research involving justice-involved individuals in rural Kentucky (Oser et al., 2009). Rural residents might have extensive histories of arrest and illegal activity because of their undertreated or untreated behavioral health concerns – including addiction – which may in turn impact employment (Browne et al., 2016; Conger, 1997; Victor et al., 2018; Warner & Leukefeld, 2001). To that end, in the current study sex work in exchange for money and drugs was also a strong correlate of violent victimization.

Women who engage in sex work are often vulnerable as they are positioned at the intersection between victimization and criminality (Shdaimah et al., 2013). Research on this topic has showed that many women who engage in sex work suffer from numerous chronic and acute behavioral health issues including victimization and trauma, substance misuse, mental health disorders, physical health disorders, and structural determinates of health (e.g., housing stability and transportation) (Chapkis, 2000; El-Bassel et al., 2001; Nussbaum, 2017; Wiechelt & Shdaimah, 2011). Collectively, the risky economic

situations identified in this study and others are often drug-related, and can lead to victimization (e.g., being a victim of assault during a sexual transaction). It is recommended that treatment and policy efforts aimed at improving drug use- and violence-related outcomes ought to consider the interconnectedness of both issues as they pertain to social and economic determinants of health (Dasgupta, Beletsky, & Ciccarone, 2018).

The economic-compulsive model findings may be suggestive of the previously mentioned economic distress that has affected many rural regions and especially rural Kentucky (ARC, 2017). The Appalachian region of Kentucky has been beleaguered by a lack of employment opportunities and static economic growth. In comparison to U.S. national averages, Appalachian Kentuckians are at an educational disadvantage as they are less likely to have a high school degree (74.1% to 80.4%) or a degree in higher education (17.1% to 24.1%). This comports with the current study sample as they on average had slightly less than a high school degree.

Moreover, in Appalachia Kentucky household incomes are more likely to fall below the poverty line (14.9% to 12.5%) (ARC, 2017). The current sample were found to have similar economic hardship, and consequentially, this may have tilted them toward economically based crimes. For justice-involved rural women, not only did their economic hardships perhaps orient them to criminal behavior, but it was also found to place them at a greater risk for violence victimization, as evidenced by the proportion of the sample that were predicted in the economic-compulsive group.

Using a gender-responsive perspective, the dynamics of an abusive intimate relationship may provide another explanation for the predicted economic-compulsive

group. It is crucial that SUD treatment providers understand that abusive partners often actively destabilize a victim's personal agency and the resources that may influence whether they utilize treatment. For instance, the abuser may use a victim's addiction as a means of control by isolating them from sources of support and by using the stigma of addiction to undermine the victim's credibility. The range of drug use as a means of control extends to a victim's ability to access their own or other's economic support and employment opportunities (Matjasko, Niolon, & Valle, 2013). This scenario would plausibly place a victim in precarious economic standing, so higher risk (i.e., sex work and other illegal activity for profit) and often illegal means of subsidizing their own livelihood and ability to avoid a potentially traumatic withdrawal may be engaged (Shdaimah, & Wiechelt, 2013).

Systemic Violence

Overall, the systemic model was significant, and it produced a strong significant correlation – the number of times a participant's friend sold or diverted drugs – in predicting drug-related violence. Although past research examining rural probationers has failed to find any significant associations between drug use and systemic violence (Oser et al., 2009), the current findings were congruent with drug diversion within rural social and kinship networks and the role opioids play within the socio-economic context of the region. The availability of prescription opioids has increased in the majority of regions in the U.S. over the past two decades, and there is evidence suggesting it has had a greater increase in rural areas (McDonald, Carlson, & Izrael, 2012). Sales data of prescription medication indicate that states with large rural populations (e.g., Kentucky) are among the highest for opioid analgesic prescriptions (McDonald et al., 2012).

Specifically, opioid analgesics are often prescribed for pain that is a consequence of heavy labor, such as mining. In addition, qualitative research from Appalachian Kentucky has described opioid use undergirds the work-life functionality of the region (Leukefeld, Walker, Havens, Leedham, & Tolbert, 2007). Given the higher density of opioid prescribing in rural areas (McDonald et al., 2012), past research has suggested that opioids are diverted within family and kinship networks (Green, Serrano, Licari, & Budman, 2009; Inciardi, Surratt, Cicero, Kurtz, Martin, & Parrino, 2009), in part so that individuals can maintain long periods of manual labor (Leukefeld et al., 2007). However, most individuals working in the Appalachian coal industry and heavy labor jobs have traditionally been men (ARC, 2017). It may be that economic hardship has strained not only the predominantly male workers themselves, but also those in the broader social network (e.g., wives, partners, sisters, daughters, etc.). This could in-turn increase the risk for illicit drug use and diversion in an area with a high concentration of opioid prescribing (Jonas, Young, Oser, & Leukefeld, 2012).

This systemic environment could then pose a risk, as it has been well evidenced that geographical context shapes drug use (Galea, Ahern, & Vlahov, 2003; Nandi et al., 2010), including factors of poverty and unemployment. Because drug markets in rural areas are predominately organized by close kinship and social networks, the diffusion of NMPO occurs at a greater rate than is does in urban regions (Keyes et al., 2014). Despite the limited economic capital in Appalachia Kentucky, there is evidence that indicates the use and diffusion of OxyContin has been significantly associated with increased social capital in rural areas (Jonas et al., 2012).

That is, distribution networks of NMPOs is integrating into the social fabric that has been established not by informal transactions in urban areas, but by individuals that often have close relationships, familial ties, or intimate relationships. These broad social networks with close personal ties that facilitate NMPO diffusion have been described as providing an increase in social capital in the community; ergo, an increase in status and power. It is then plausible to postulate that women may be more vulnerable in these transactions, especially if the distributor is an intimate partner, given the higher rates of IPV among rural women (Peek-Asa, Wallis, Harland, Beyer, Dickey, & Saftlas, 2011). As a result, rural systemic violence victimization may be described as a recursive pattern of IPV and self-medication, where the medication is provided by the perpetrator or a close acquaintance. This hypothesis is supported by the past research that found that female probationers who were NMPOs were significantly more likely than nonusers to have experienced IPV (Hall, Golder, Higgins, & Logan, 2016; Wu et al., 2010).

Compared to the psychopharmacological and the economic-compulsive groups, this group had the fewest number of predicted participants ($n = 55$). This may be due to a lack of conceptual development in Goldstein's (1985) conceptual framework around rural drug markets, and perhaps due to imprecise measurement operationalization in the current study due to the use of secondary data. These results are not entirely surprising given the nuanced differences between urban drug markets – in which the Goldstein's (1985) framework was developed – and rural drug markets. Much of Goldstein's (1985) systemic case for drug-related violence was predicated on territorial disputes, retribution for a variety of reasons (e.g., death of a gang member or selling low-quality drugs), and the elimination of confidential informants. Although there is some evidence of rural

gangs and gang members (Evans, Fitzgerald, Weigel, & Chvilicek, 1999; Swetnam & Pope, 2001), there is little support for widespread gang-related drug markets in rural areas such as Appalachian Kentucky.

Taken together, the findings relative to the systemic group may provide the greatest evidence for the incongruence between Goldstein's (1985) conceptual framework as it is defined, and how it is portrayed in the lives of rural women. Rural drug-market systems do appear to function in a similar fashion to urban drug-market systems in that the distributors possesses a fundamental power differential to the recipient. However, the nature of these interactions potentially poses contrasts in that urban drug-market systems are largely managed by gangs, whereas rural drug-market systems are predominantly interwoven into kinship and social relationships in the community. In other words, rural drug-markets may be aptly described as less centralized than drug-markets that are dominated by gangs and gang violence. This rural drug-market configuration then may offer a new perspective of systemic violence, one that is not centralized by gang violence and turf wars, but by violence that occurs within the context of known personal/intimate relationships – of which justice-involved women are particularly vulnerable (Hall et al., 2016; Oser et al., 2009).

This may indicate that rural drug markets are not necessarily fringe sectors of the community controlled by large organizations (e.g., gangs), but rather interwoven not only into the community but also within familial and social networks that are both formal and informal. And for women, this may mean navigating complex personal and intimate relationships that transcend the traditional, and often superficial relationships within an urban drug market; although, this study failed to determine the validity of such a claim.

Future research should continue to explore the systemic nature of rural drug markets and how their dyadic properties might place justice-involved women at a risk for violent victimization.

Findings among Mental Health and Infectious Disease Factors

Mental disorders and infectious diseases are more common in justice-involved individuals than they are among the general population (Fazel & Baillageon, 2011). These high rates of behavioral health concerns may be connected to the nature of their lives, which for many included violence, substance use, and high-risk sexual activity. These issues are compounded for many justice-involved women in Appalachian jails, as drug use is prevalent and IDU is the preferred route of administration, service availability is limited, and there is evidence to suggest women in this region are apathetic to the health risks associated with IDU (Staton-Tindall et al., 2015b). Outside of the substantial health-risks associated with IDU, the social aspects of power and control that are related to IDU place many women in a position of greater vulnerability. Compared to men who inject drugs, women are more likely to be introduced to IDU by an intimate partner, a dealer, or another family member (Tompkins, Sheard, Wright, Jones, & Howes, 2006).

Many individuals with mental illness cycle through jails on a continual basis. Estimates reveal that individuals with severe mental illness are admitted to jails at about 8-times the rates that they are admitted to psychiatric centers (Ditton, 1999). Evidence indicates that jail-based women have greater prevalence of severe mental illness and significantly greater rates for major depression (Sacks, 2004). In addition, women who are detained in jails have high rates of co-occurring substance use and mental illness (Sacks, 2004). In addition, several studies have indicated the relationships between drug

use and IPV, and the intersecting factors of depression, PTSD, and intimate partners' drug use (Rivera, Phillips, Warshaw, & Lyon, 2015). This study has attempted to move this literature forward by investigating how behavioral health risk factors may be associated with specific drugs/violence relationships.

Mental Health Symptomology

Among justice-involved women, several studies have evidenced high rates of mental health problems (Sacks, 2004). Findings from the current study indicate that rates of mental health problems are relatively high compared to other samples. Specifically, about 61% of women in this sample reported symptoms of major depression, which is higher than in other studies of justice-involved women (15-25%) (Teplin, Abram, & McClelland, 1997). Rates for reported anxiety symptoms were also high among the current sample at approximately 59%, as other studies have reported anxiety levels at around 18.5% (Binswanger, Merrill, Krueger, White, Booth, & Elmore, 2010). In addition, prevalence for symptoms of psychotic illness were notably higher in the current sample at nearly 22%, compared to 3.9% nationally (Fazel, Hayes, Bartellas, Clerici, & Trestman, 2016). However, prevalence of suicidal ideation was lower at about 10% compared to other jail-based estimates, which indicated prevalence at approximately 16% (Schaefer, Esposito-Smythers, & Tangney, 2016).

The binary logistic regression analyses produced several statistically significant associations between mental health symptomology and the psychopharmacological and economic-compulsive violence. The findings indicated that endorsement of symptoms of depression and of psychosis were both significantly associated with increased odds of psychopharmacological violence and economic-compulsive violence. In addition,

suicidal ideation was significantly associated with an increased odds of economic-compulsive violence.

The findings relevant to depression and psychotic symptomology are consistent with past research involving justice-involved women (Staton-Tindall et al., 2015b). Evidence also suggests that IPV, drug use, and mental health conditions are interconnected and complex (Connelly, Hazen, Baker-Ericzen, Landsverk, & Horwitz, 2013; Golder, Connell, & Sullivan, 2012; Jaquier, Flanagan, & Sullivan, 2015; Peters, Khondkaryan, & Sullivan, 2012). There is also evidence that indicates that depression may have a mediating effect on the relationship between substance use and IPV. For instance, among a nationally representative sample of women, it was discovered that women who had experienced IPV and depressive symptoms were more likely to have more severe substance use (La Flair, Bradshaw, Storr, Green, Alvanzo, Crum, 2012). Another study found that women who reported moderate to severe depressive symptoms were about 8-times more likely to report both violent victimization and substance-related problems (Paranjape, Heron, Thompson, Bethea, Wallace, & Kaslow, 2007).

Taken together, the current findings and past research suggest that drug use, violence victimization, and depression may have cumulative effects. Women in the current sample were predicted in the psychopharmacological due to the likelihood that their experience of drug-related violence was best explained by the effects of the drugs on the consumer (Goldstein, 1985). For example, participants may have used drugs to mitigate their mental health distress related to depression and psychosis; although, drug use has been found to longitudinally intensify mental health issues (Sullivan & Holt,

2008), and according to the psychopharmacological group, also increase their risk of violent victimization (Goldstein, 1985; 2003).

The rate of psychosis symptomology (22.3%) was notably higher in the current sample compared to many nationally (Lamb & Weinberger, 1998) and internationally (Fazel & Seewald, 2012) prevalence rates. Not only was prevalence for psychosis symptomology higher in the current sample, but it was the strongest mental health association, as it increased the odds of psychopharmacological violence by 2.48 times. A recent systematic review found that criminal victimization of persons with severe mental illness ranged from 2.3 to 140 times higher than reported in the general population (Maniglio, 2009; Swartz & Bhattacharya, 2017).

This prevalence may be partially explained by the limited provider resources available to individuals with psychotic illness in Kentucky's Appalachian region, who may in-turn be placed in county jails (Moody, Satterwhite, & Bickel, 2017). That is, in Appalachia Kentucky accessing treatment is difficult for many, and especially so for those with severe mental illness concerns. Mental health treatment access in rural Kentucky is often prohibited by travel distances with sparse public transportation resources, costs for the uninsured, and simply fewer specialized mental health providers (Moody et al., 2017). In addition, as demonstrated in the current study and others, women with psychotic symptomology often have low social functioning, have difficulties consistently securing housing and employment, and have comorbid SUD that increase the risk of victimization (Fazel, Långström, Hjern, Grann, & Lichtenstein, 2009; Latalova, Kamaradova, & Prasko, 2014).

To date, this study is the first to examine the association between suicidal ideation with Goldstein's (1985) conceptual framework. Those in the economic-compulsive group were significantly associated with about a 1.5 greater odds of reporting suicidal ideation. Among jail inmates, suicidal ideation often precedes suicidal behavior and has been strongly correlated with completed suicide (Schaefer et al., 2016). From a sociodemographic perspective, white female jail inmates have been found to report suicidal ideation and attempt suicide at higher rates than black and male inmates (Charles, Abram, McClalland, & Teplin, 2003; Schaefer et al., 2016).

Importantly, the current results should be contextualized within the economic-compulsive group of drug-related violence. It may be that a greater dissatisfaction with life emerges from the conditions of working in an illegal economy in which sex is exchanged for drugs and money, and coercion and victimization is common. There is evidence to support this claim, as female sex workers who experienced sexual coercion and had issues related to substance use were more likely to report suicidal ideation (Hong, Li, Fang, & Zhao, 2006; Ling, Wong, Holroyd, & Gray, 2007). However, much of this research has been conducted outside of the U.S. and is difficult to generalize to a unique rural subpopulation, such as justice-involved women in Appalachia Kentucky. There is less evidence to point to women who sell drugs for profit and an association to suicidal ideation; therefore, perhaps this finding is better explained from the economic conditions that drive these behaviors, and not the behaviors in-and-of-themselves.

The distressed economic conditions that span nearly all the Appalachian Kentucky region may be a key factor in the association between suicidal ideation and

economic-compulsive violence. Previous studies that deployed interview and survey data from diverse cohorts have found financial distress as a contributing factor to suicidal ideation and behavior (Duberstein, Conwell, Conner, Eberly, & Caine, 2004; Gertner, Rotter, & Shafer, 2019; Hempstead, & Phillips, 2015; Zhang, Conwell, Zhou, & Jiang, 2004). A recent study found that marginal (i.e., ~\$1.00) increases in state's minimum wage policy was associated with a 1.9% decrease in annual suicide rates (Gertner et al., 2019). Advancements in economic policy and furthering economic development for justice-involved women may be a critical step in improving the mental health concerns among the current sample.

Although, long-term improvements to the financial security and the Appalachian labor markets – both of which have deteriorated over the past few generations – will be needed to sustain suicide ideation and other mental health and drug use concerns (Case & Deaton, 2017). Improving behavioral health treatment resources that are accessible is critical to curbing the mental health concerns previously mentioned. Justice-involved women with comorbid disorders are significantly more likely to have multiple problems in terms of employment, family relations, and health. In addition, they are at greater risk for unsuccessful treatment, recidivism, homelessness, violence victimization, and suicidal ideation/behavior when compared to those without this combination of disorders (Schaefer et al., 2016).

From a clinical perspective, evidence suggests that screening instruments in jail settings is an effective method of identifying high-risk individuals, employing safety planning, and coordinating appropriate care to mitigate the risk of escalating suicidal ideation or behavior. However, identifying those at the greatest risk is difficult, and the

current screening instruments and clinical contacts may not fully capture individual risk factors (Hayes, 2010). Therefore, continued research is needed to better identify those at risk for suicide among jail-based populations. Since suicidal ideation is strongly associated with, and often precedes suicidal behavior, this study explored how suicidal ideation might be associated with constructs of drug-related violence.

Those who are white, female, and who report violence victimization in association to their role in illegal drug markets and sex work may be at the greatest risk. Given the novel findings offered by the current study, and their potential for clinical implications, the generalizability of these results should be placed within a specific context. That is, the measurement of suicidal ideation in this study could not contain the nature of the suicidal thoughts. And, measures for the frequency and intensity of suicidal thinking were not captured. Finally, the current sample is unique to many of jail populations in that they were predominately white and rural, and generalizing clinical implications should only be considered in these contexts.

Risk Factors for Infectious Disease

The results of the current sample are in some ways congruent with the existing literature base. This study found that several significant associations between risk factors for infectious disease and each of the drugs/violence groups. As compared to the other predicted theoretical groups, the greatest number of associations of infectious disease risk factors was found with the psychopharmacological group. The most robust association was having a boyfriend/male partner introduce IDU to the participant. Among the participants who were introduced to IDU by a boyfriend/male partner, their odds of experiencing psychopharmacological violence were approximately 9-times greater than

for those who were not introduced in IDU in such a manner. This finding indicates that there may be a strong connection between social and structural violence, power relations within intimate relationships, and how these elements shape rural justice-served women's risk environment.

The role of violence, specifically violence perpetrated by an intimate partner, has been found to be a factor that might increase the risk of infectious disease (e.g., HCV) (Bourgois, Prince, & Moss, 2004). Compared to men, women who inject drugs have been reliably shown to be at greater risk for sharing injection equipment (e.g., syringes, cotton), and to be more reliant on male injection partners for both drugs and injection equipment (Frajzyngier, Neaigus, Gyarmathy, Miller, & Friedman, 2007). In addition, numerous studies have found that women are more likely to be second to inject when women are injecting drugs with a male partner (Bennett, Vellmann, Barter, Bradbury, 2000; Frajzyngier et al., 2007; Shaw, Shah, Jolly, & Wylie, 2007).

The current findings suggest a positive, and strong association with injection partnerships and drug-related victimization. Furthermore, this study also found a positive association related to condom use and psychopharmacological violence. Participants were nearly twice more likely to forget to use a condom because of the affects of their drug use. These finds build on current literature that has investigated injection partnerships and sexual relationships, and on the theoretical understanding of Goldstein's (1985) conceptual framework. As observed in the current sample, the increased odds of psychopharmacological violence due to injection initiation and a sexual relationship might be explained by resource dependence and power imbalances.

Participants who may have been dependent on their intimate partner for drugs or injection materials and may have also experienced restricted control over their own injecting behavior (Lazuardi et al., 2012; Morris et al., 2014). The formation of this type of high-risk dyad might be constructed based on coercive control and violence; however, feminist scholars (Nussbaum, 1995; Nussbaum, 1999) and researchers (Bourgois et al., 2004; Harvey, Bird, Galavotti, Duncan, & Greenberg, 2002; Pulerwitz, Amaro, De Jong, Gortmaker, & Rudd, 2002) have noted that inertness and the denial of autonomy can be reinforced by traditional gender-roles. Therefore, the inertness (Nussbaum, 1995) of a participant may be compounded by the effects of drug use and violence, leading to a passive role in the injection process, but the origins of this passivity might be best described by cultural gender norms.

It is important to note that this study was unable to directly evaluate if relationship power or cultural gender norms in shaping injecting practices. Further, although the initiation of IDU does place an individual at higher risk for infectious disease contraction and transmission (Van Handel et al., 2016), this study was unable to determine the sequencing of injection behavior or if contaminated syringes were used. However, the current data did demonstrate that risk profiles differ in terms of the drugs/violence relationship, where the psychopharmacologic group showed unique risk in terms of injecting behavior for rural justice-involved women.

Additionally, women in the current sample may have viewed their initiation to and continuation of IDU as a “reward” and “cost” dilemma (De et al., 2009; Hahn, Evans, Davidson, Lum, & Page, 2010; Morris et al., 2014). In this scenario, the “reward” is an increased closeness to her partner, extended trust within the relationship, and

mitigating of future violent events. The potential “cost” would then entail HCV transmission and a greater dependence on a male partner for drugs and injection equipment. The possible “costs” mentioned have been found to be more likely discarded within cohabitating sexual relationships (Rhodes & Quirk, 1999), which was evidenced in the current study when considering the findings related to condom use.

The economic-compulsive group was also statistically significantly associated with an infectious disease risk factor. That is, each additional time a participant shared syringes, their increased risk of economic-compulsive violence nearly doubled. Victims’ of economic-compulsive violence are commonly individuals who reside in the same community as their perpetrator, and often the victims are engaged in illegal activity themselves (e.g., (Goldstein, 2003). Within this context, drug users and distributors as well as sex workers are common targets of economic-compulsive violence (Goldstein, 2003).

The current findings appear to align with the contemporary understanding of how macro- and micro-level environment factors impact economic autonomy, substance use, syringe access, gender-power imbalances, and violence. That is, a statistically significant factor in predicting the economic-compulsive group included sex work in exchange for drugs and money. In general, sex work is framed within a patriarchal hierarchy, by way of gender-power imbalances, gender-based violence, and by policy measures that favor punitive measures that are linked to increased risk for infectious disease (Shannon et al., 2015).

Relative to the economic-compulsive group, distressed economic conditions undergird many women’s entry into sex work and the risk conditions associated with

sharing syringes (Reed, Gupta, Biradavolu, Devireddy, & Blankenship, 2010). In other words, an economic vulnerability diminished participants' negotiating power, which resulted in statistically significant greater risk for unprotected sex and sharing syringes – both of which investigated in this study and both are risk factors for HCV (Lelutiu-Weinberger et al., 2009).

Limited negotiating leverage and the desire to mitigate drug withdrawal symptoms may mean that participants' most viable capital option was sex work. And, as mentioned, the gender-based inequalities that marked these exchanges may have also required that women were not first to inject and were subjected to use contaminated syringes. In addition, it is important to note the economic burden of dual roles (e.g., financially support children or other family members) that were faced by participants who were mothers, which was most of the sample.

These factors mediate HCV vulnerability by reducing participants access to condoms, sterile injection equipment, and HCV prevention and treatment. Structural intervention strategies that modify the physical risk environment, which may reduce participants' vulnerability to HCV infection, such as the provision of childcare at harm reduction programs and gender-specific – perhaps women-only – drug treatment programs (Rhodes & Treloar, 2008). Therefore, programs aimed at economic development in Kentucky's Appalachian region ought to consider how gender-based economic inequalities intersect with women's social- and health-based issues.

Among a community-based sample in Appalachian Kentucky, syringe sharing was estimated at 10.5% for receptive sharing and 26.3% for distributive sharing (Havens, Walker, & Leukefeld, 2007). A subsequent study reported prevalence of 16.7% for

receptive and distributive sharing combined (Young, Jonas, Mullins, Halgin, & Havens, 2013). Another study estimated receptive syringe sharing was higher among HCV-positive participants (30.2%) compared to HCV-negative participants (15.2%) (Havens, Lofwall, Frost, Oser, Leukefeld, & Crosby, 2013). This region continues to be at high-risk for HCV/HIV rapid outbreak (Van Handel et al., 2016), and rural justice-involved women, such as those included in this study, may be particularly vulnerable to this potential outbreak.

Since 2015, Kentucky legislature has progressed from considering syringe service programs (SSP) illegal, to having approximately twenty-five operational SSPs (Bixler et al., 2018). Although the level of implementation, accessibility, and public support are mixed, Kentucky has considerably expanded its SSPs, where by 2017 it is estimated that 31 counties and 8,078 persons had operational SSPs (two offering mobile services) (Bixler et al., 2018). Among the 54 Kentucky counties that were vulnerable to rapid HIV/HCV outbreak (Van Handel et al., 2016) – many of which are in Appalachia – 39% had SSPs in operation (Bixler et al., 2018). Nearly all (83%) of Kentucky's SSPs offer infectious disease (i.e., HIV; HCV; STI) screenings, and all offer linkages to treatment services.

These are promising steps forward; however, critical services for rural justice-involved women are underdeveloped. For instance, family planning (58%), pregnancy testing (63%), and prenatal services (83%) are not comprehensively offered (Bixler et al., 2018), which may be especially critical as Kentucky and other states substantially criminalize women's reproductive rights. In addition, only 25% of SSPs offer housing assistance, transportation services, food assistance, while 42% offer health insurance

enrollment (Bixler et al., 2018). If these programs continue to evolve and are funded appropriately, Kentucky's lawmakers should consider the unique needs of their justice-involved women, as there is an opportunity for the expansion of these programs that integrate the health, social, and economic needs of justice-involved women.

Recommendations for Substance Use Disorder Treatment Providers

It is imperative to recognize that most women do recover from abuse and prove extraordinary resilience in the face of substantial barriers related to enduring violent victimization. In addition,, most women who use drugs do so without developing a SUD, and among those who do, many have not been a victim of violence. Survivors may pursue professional aid to address substance use problems that interfere with daily life or contribute to mental or physical health concerns. Evidence has indicated there are trauma-specific interventions that are effective in addressing a range of trauma-related mental health and co-occurring conditions (Dass-Brailsford & Myrick, 2010; Fowler & Faulkner, 2011; Macy & Goodbourn, 2012). Without addressing the specific needs of survivors who are also dealing with an abusive partner, SUD treatment may not be accessible or effective or may even place survivors at greater risk for harm.

These interconnecting issues are best addressed through care that is coordinated and implemented in a manner that is responsive to gender-specific perspective (Bennett & O'Brien, 2010; Schumacher & Holt, 2012). Considering Appalachian Kentucky, gender-responsive peer supports should ideally be familiar with the cultural norms and the needs of women that are unique to the region. Currently, there are two gender-responsive trauma-informed SUD treatment programs that have been rigorously assessed that offer effectiveness: Women's Integrated Treatment (Covington, Burke, Keaton, &

Norcott, 2008) and Seeking Safety (Najavits, 2007). Yet, studies on the effectiveness of alterations for justice-involved women are still needed. A recent systematic review of trauma-focused interventions for IPV survivors (Warshaw, Sullivan & Rivera, 2013) identified only one that was developed specifically for survivors dealing with a substance use disorder: The Relapse Prevention and Relationship Safety (Gilbert et al., 2006) (RPRS) exhibited potential in addressing women's substance abuse and violent victimization (Gilbert et al., 2006).

Moreover, challenges related to treatment engagement and attendance may present if participants are experiencing ongoing victimization. This same point could also apply if violent victimization is occurring outside of an intimate relationship, where a chaotic and high-risk environment would pose barriers to treatment utilization (Victor et al., 2018). It is vital that SUD treatment providers understand that abusive partners often actively destabilize a survivor's efforts toward recovery, by means of isolation from sources of support, and use a survivor's dependence on substances as a way of coercive control. The implications of substance use coercion may extend to an individual's ability to access economic support, employment, or social support. This is in addition to the stigma that many people experience regarding substance use, as well as trauma-related feelings that may emerge as a result of being victimized and controlled (Warshaw & Brashler, 2009).

Treatment Issues Specific to Jails

Most jurisdictions have drug treatment courts in place to divert offenders prior to trial or be placed in following a conviction (Marlowe, 2003). Following the sentence, jail-based treatment interventions should be explored, as they are available and there is

evidence of promising outcomes (Lutgen, 2018). In addition, pre-trial options related to jail diversion should be strongly considered as should linkages to reentry services should the individual serve a period of incarceration. For vulnerable women with complex histories of drug use and violence victimization several options should be explored by correctional facilities. These options may include residential treatment, outpatient and intensive outpatient treatment, medication-assisted treatment, and therapeutic communities (TC) (Belenko, Hiller, & Hamilton, 2013). Therapeutic communities offer peer-led recovery that can be summarized as social, emotional, and practical support from individuals with a shared history (Andreas, Ja, & Wilson, 2010; Solomon, 2004).

In studies that investigated TCs effectiveness compared to control conditions (e.g., case management, traditional outpatient substance use treatment, substance use education, traditional mental health treatment) there was variation in effectiveness. Compared to traditional treatments, there is evidence that TCs have had similar and significantly better substance use outcomes (Greenwood, Woods, Guydish, & Bein, 2001) criminal justice involvement outcomes (Welsh, 2007), employment outcomes (French, Sacks, De Leon, Staines, & McKendrick, 1999) and mental health outcomes (French et al., 1999; Leon, Sacks, Staines, McKendrick, 2000).

Therapeutic communities services may offer a different option for state correctional systems and the courts, and for those clients who fail to connect with formal outpatient, intensive outpatient, or short-term residential treatment. Further, by being free from treatment facility licensure, accreditation standards, and medical-model treatment approaches, the recovery model is potentially far less costly than traditional treatment⁵⁰. Vulnerable populations in medically underserved areas, such as the current sample, may

find TCs as an increasingly resourceful option amidst rising substance-related problems and declining resources to deal with the problem.

Compared to prisons, jails have frequent turnover and shorter average stays making them a significant potential intervention point for treatment. Therefore, some of the most viable jail-based treatment options are Screening, Brief Intervention, and Referral to Treatment (SBIRT) interventions (Chandler, Fletcher, Volkow, 2009). Many of SBIRTs incorporate the Transtheoretical Model of Change and Motivational Interviewing (MI). These interventions are effective because they are adaptive to the needs of the clients, they enhance communication and engagement, and they provide a low-demand way to explore the major experiences that require clinical focus, and because they provide ways to navigate client's ambivalence (Miller & Rollnick, 2009; Wahab, 2006).

Evidence from recent studies indicate that there are promising SBIRT models for justice-involved women. For instance, the Jail In-Reach Intervention uses evidence-based screening instruments to identify individuals with severe SUD (Begun, Rose, LeBel, 2011). Begun and colleagues (2011) recently tested the effectiveness of the Jail In-Reach Intervention using a randomized controlled trial (RTC) research design with a sample of incarcerated women. The intervention group included MI with feedback on participant's drug use, and a timeline follow-back interview. The control group received the standard jail protocol, which included a resource folder with information on the available community-based treatment. At the 12-month follow-up, the intervention group reported significantly lower drug and alcohol use; yet, regardless of study condition, participants

who used the community folder were three times more likely to utilize community-based treatment (Begun et al., 2011).

The aforementioned study is one of many that has indicated that linking jail inmates to treatment at community reentry is vital to improving post-release outcomes (Oser et al., 2009; Peyton, 2001; Staton-Tindall et al., 2011a; Staton-Tindall, Duvall, McNees, Walker, & Leukefeld, 2011). Providing a continuum of care for justice-involved individuals is a key element to reducing substance use and engaging in substance use treatment. In addition, given the linkages found in the study between drug use and violence victimization, reductions in substance use could aid in also reducing outcomes related to violence.

Considering economic-compulsive and systemic violence, drug treatment interventions may also reduce the threat of victimization by improving employability, stabilizing familial and social supports, and mitigating the involvement in high-risk situations (e.g., sex work). In turn, many of these improved outcomes have also been found to reducing recidivism, by addressing the root causes that significantly propel the cyclical nature of arrest and incarceration (Staton-Tindall et al., 2011a).

Many interventions have shown effective outcomes and have been increasingly accepted by correctional- and policy-based decision-makers. Among the most effective interventions for jail-based drug treatment – especially the treatment of opioids – is medication-assisted therapy (MAT). This is an evidence-based practice for jail-based drug treatment with highly efficacious and effective outcomes (Amato, Davoli, Perucci, Ferri, Faggiano, & Mattick, 2005; Egli, Pina, Skovbo-Christensen, & Aebi, 2009;

Westerberg, McCrady, Owens, & Guerin, 2016; Lee et al., 2012) and with costs comparable with traditional treatments (Horn, Mamun, McCrady, French, 2018).

For instance, a clinical trial data show MAT that is initiated during jail incarceration can improve community-based MAT utilization and outcomes for opioid-dependent individuals (Magura, Lee, Hershberger, Joseph, Marsch, Shropshire, & Rosenblum, 2009). Magura and colleagues (2009) randomly assigned opioid-dependent individuals to either buprenorphine or methadone. The buprenorphine group was significantly to continue MAT in the community upon reentry, but at the 3-month follow-up both groups were similar in terms of their self-reported criminal-involvement and substance use. In the same study, the methadone group appeared to be dose-responsive, as those who had higher doses in jail had significant increases in seeking treatment at reentry (Magura et al., 2009).

Another study using justice-involved Appalachian women has examined how both the licit and illicit patterns of buprenorphine use post-release from jail, and how this use correlated with contacts with health services and recidivism (Surratt, Staton, Leukefeld, Oser, & Webster, 2018). This study found that only 5.2% of the sample had received buprenorphine uptake through medical channels and 23.0% reported diverted buprenorphine use (Surratt et al., 2018). There were no reported re-arrests among those who reported licit buprenorphine use. However, drug use frequency and severity, including illicit buprenorphine use, were independently associated with re-arrest at the 3-month follow-up period. In addition, the strongest indicator of avoiding re-arrest was having a regular source of health care.

The authors note that a continuum of care from a health care professional(s) provides a therapeutic benefit for behavioral health issues, pain, and other physical health concerns for justice-involved Appalachian women (Surratt et al., 2018). It is difficult to neglect the promising evidence for MAT services for an underserved population in Appalachia, in accordance with consistent health care available, but it is not entirely clear whether health care access improves access to MAT. Nonetheless, these findings point to the underdevelopment of MAT interventions in rural areas, whilst also providing evidence of MAT's effectiveness in curbing re-arrest and substance use for a unique population group. Although the relationship between MAT and violence was not directly examined in the current study, it may be plausible to reason that greater MAT access through formal channels could mitigate threats of drug-related violence for the current sample.

Increasing access to rural justice-involved Appalachian women may require a greater integration of MAT into a suite of health care settings, including rural health centers, primary care, and federally qualified health centers (Surratt et al., 2018). This expansion of MAT may prove difficult, as many correctional staff and policymakers harbor negative views of this treatment on the grounds that users are substituting one addiction for another (Friedmann et al., 2012; McMillan & Lapham, 2005).

Nearly 83% of jails provide some type of MAT, yet much of the time access is limited to specialized needs such as detoxification for pregnant women or for those already on methadone maintenance at the time of arrest. Compared to jail settings, drug courts (37.5%) and probation and parole agencies (17.0%) lag further behind in their MAT implementation (Friedmann et al., 2012). Moreover, nearly half of all drug courts

of policies that forbid the use of this evidence-based practice (Matusow et al., 2013). The resistance to MAT stems from several concerns; including, local regulations, inadequate funding, diversion concerns, and institutional philosophy that is grounded on abstinence-based treatment (Matusow et al., 2013).

The delivery of effective drug treatment to justice-involved Appalachian women can be considerably more challenging than in typical community settings. Efforts in research have established consensus and a set of principles for providing effective treatment for justice-involved persons (Chandler et al, 2009). These principles integrate the unique characteristics of the justice-involved populations that can critically complicate effective treatment. These include high rates of psychological conditions, cognitive deficits, risk-taking, and criminal thinking patterns and moral competencies.

For justice-involved Appalachian women, the risk–needs–responsivity (RNR) principle has been shown to be more effective and it may provide a useful therapeutic tool (Smith, Gendreau, & Swartz, 2009). Included in the RNR framework, evidence-based principles for effective treatment should incorporate 1) comprehensive actuarial assessment of static and dynamic risk factors with periodic reassessment; 2) prioritizing treatment resources for higher-risk offenders; 3) targeting interventions for criminogenic needs, such as criminal thinking and errors in judgment; and 4) provide treatment that is responsive to Appalachian women’s temperament, learning style, motivation, culture, and gender-specific needs (Taxman & Belenko, 2011).

In addition to the principles outlined above, NIDA has developed a set of treatment principles as they apply to criminal justice populations. This set of principles ostensibly amounts to a reflection of what addiction science experts point to as evidence-

based practices and principles (NIDA, 2006). In concert with the principles noted above, NIDA recommends that treatment for justice-involved populations should include: 1) be of sufficient length, especially for those with co-occurring mental health disorders and other social and health problems, such as the current sample; 2) increase motivation and build skills for resisting drug use and criminal behavior; 3) include on-going monitoring through urine testing, and use of structured rewards and sanctions to manage behavior; 4) involve collaboration and communication between treatment clinicians and CJS staff to monitor client progress; 5) provide continuity of care as offenders move through the CJS and back to the community; 6) integrate treatment for offenders with co-occurring mental health disorders; and 7) use MAT where clinically appropriate, with careful attention to monitoring adherence.

The continued expansion and implementation of these guidelines should continue in rural Appalachia given the documented needs of an underserved and vulnerable population with complex needs. Although many of the treatment guidelines have evidenced effectiveness in curbing substance use and criminal behaviors, they do not directly address the risk for drug-related violence. Engagement in effective and culturally competent treatment may in theory reduce the risk of drug-related violence, but there must also be consideration as to how past and current victimization may interfere with the treatment process. Therefore, it is important to highlight the importance of screening for psychological distress, trauma symptoms and drug-related violence among justice-involved Appalachian women.

A recent systematic review recognized five evidence-supported screening tools for psychological distress among justice-involved individuals (Martin, Colman, Simpson,

& McKenzie, 2013). Screening, for psychological distress among women involved in the criminal justice system may improve the overall health of women, make for a more successful return to the community, and reduce recidivism. Additionally, given the evidence that SUD is greater among justice-involved women compared to men (Fazel & Hayes, 2017), and the unique risks for drug-related victimization and health risk-factors, it is critical that rural criminal justice systems incorporate gender-specialized screened, and addiction and general health services.

Recommendations for Research

With the current study included, the existing body of research in this area has predominately focused on establishing statistical relationships between drug use and violence, and the direction(s) of this phenomena. Although recently there has been more research conducted on rural populations, much of this literature has focused on individuals in urban settings. Due to this geographical and cultural imbalance in study, there are still problems with the operationalization and measurement of terms, which can adversely affect the implications of the research. The following section will provide recommendations aimed at ways in which future research might be more valid, comprehensive, and reflective of the issues relevant to rural justice-involved women.

Future studies should aim to improve measurement of violence victimization, and make distinctions between IPV, that with which occurs within familial or intimate relationships, and community-based violence. The use of and further development of standardized measures for IPV is encouraged, as there are several instruments that have been found effective when used separately or in conjunction (Adams, Sullivan, Bybee, & Greeson, 2008; Beeble, Bybee, & Sullivan, 2007; Coker, Pope, Smith, Sanderson, &

Hussey, 2001). These instruments have been found to accurately measure the non-physical aspects of IPV, such as coercion related to mental health and substance use.

Having said that, there is still a great need to continue researching the phenomenology of rural drug-related violence for justice-involved women, as it related to measurement, typology, culture, and causal inferences. Although the current study has identified several novel findings related to drug-related violence, it is still unclear how these findings demarcate community-based victimization to IPV, and the applications of these findings to Goldstein's (1985) conceptual framework are still underdeveloped. That is, the Goldstein (1985) is a useful research tool for conceptualization purposes, but its application and operationalizability may be limited by its scope (e.g., no control for traumatic childhood experiences), and its development concerning cultural (e.g., rural populations) and gender (e.g., perspective of victimization) idiosyncrasies.

In addition, future research is needed to enhance the understanding of organizational and implementation science related to evidence-based treatment for rural justice-involved women (Taxman & Belenko, 2012). Implementation science is an emerging field that seeks to understand pertinent factors that facilitate successful and sustained application of evidence-based practice in various settings. Future research should aim to guide this line of research as rural jails and rural justice-involved women are concerned.

Future research should also consider investigating the numerous linkage points along the sequential intercept map (Willison, McCoy, Vasquez-Noriega, Regional, 2018) and how to best integrate intervention for rural women along this continuum. Reducing gaps in treatment access is particularly important given the disjointed nature of the

criminal justice system and the numerous treatment needs of rural justice-involved women; including, limited and disparate service availability, and the issues of rurality (e.g., long travel distances and poor public transit). A further breakdown of the needs for future research are displayed in Figure 3.

Topic Areas	Specific Inquiries
Jail-Based Treatment Research	Outcomes of jail-based treatment
	Effectiveness comparisons between brief, short-term, and long-term interventions
	Predictors of treatment outcomes
	Implementation of aftercare
Structural & Social Determinants of Jail-Based Services	Accessibility of MAT
	Barriers to treatment (e.g., cost, stigma, power & control)
	Trust and community involvement
Measurement	Drug use coercion and access to law enforcement
	Primary data collection with the purpose of investigating drugs/violence nexus
	Improve data coordination between health and criminal justice professionals
	Temporal ordering of drug use and violent victimization
Violence Victimization	Increase attention to drug-related violence as it related to infectious diseases
	The role of antecedents such as trauma and structural violence on women's use of drugs and criminality
	Emphasis on intimate injection partnerships, high-risk injecting & victimization
Population Factors	Effects of dual roles (e.g., mother, wife, partner, caretaker) on parenting, drug use and criminal behavior
	Impacts of poverty and marginalization on drug use and criminality
	Women's role within rural illicit drug markets

Figure 3: Recommendations for research with rural justice-involved women.

Role of Social Workers

Social workers are well positioned to fulfill a robust role as interventionists and policy-makers on behalf of the vulnerable population group of justice-involved women. The results of the current study are reflective of one of the profession's current Grand Challenges: The Smart Decarceration Initiative (SDI) (Herbert-Williams, 2016). To date, many of the SDI recommendations have been developed around policy- and macro-level innovations (Epperson & Pettus-Davis, 2016). These recommendations aimed to build social capacity and reduce incarceration rates for vulnerable populations. Specifically, Epperson and Pettus-Davis (2016) four recommendations for the SDI were as follows: 1) use incarceration primarily for incapacitation of the most dangerous; 2) make reduction of disparities a key outcome in decarceration efforts; 3) remove civil and legal exclusions; and 4) reallocate resources to community-based supports. Regarding rural justice-involved women, social workers that are framing policy and community-based interventions should target reductions in outcomes related to economic and behavioral-health disparities (including violent victimization).

Social workers can also facilitate evidence-based practices for individual-level interventions for justice-involved women. As licensed practitioners, social workers are vital to the treatment of SUD approaches; such as, reentry services, outpatient, intensive outpatient, inpatient, residential, and jail-based brief interventions (Kouyoumdjian et al., 2015; Riekman, Kovas, Cassidy, & McCarty, 2011). Social work also has a long history in issues related to child welfare services. Most children with incarcerated mothers have elevated levels of behavioral health issues and greater disruption given the experience of multiple placements (Seymour, 2017).

Social workers must continue to meet the clinical and social needs of these children and their mothers, provide care that encourages reunification, and advocate against the termination of parental rights due to issues related to SUD. The issues that are relevant to child welfare concerns and justice-involved women stem from a mother's removal from society. To that end, diverting offenders from incarceration and toward community services could also alleviate Kentucky's overburdened child welfare and criminal justice systems.

In Kentucky, an effective and cost-effective tool for diverting individuals from the criminal justice system to treatment systems is the Alternative Sentencing Worker Program (ASWP). Following arrest, a defendant might receive a screening, brief intervention and referral to treatment (Babor, McRee, Kassebaum, Grimaldi, Ahmed, & Bray, 2007), or be diverted to community treatment under pretrial supervision conditions (Belenko, 1999) as an alternative sentencing (Farabee & Leukefeld, 2001). Unlike many uniform referral services that are provided to justice-involved populations, the ASWP works directly with clients to develop a plan that meets the client's needs and introduces this report for the Court's approval.

Alternative Sentencing workers also work closely with Kentucky communities to forge working relationships to enhance cooperation with Court officials, and to best allocate the appropriate resources to clients. As of 2016, all eight of Kentucky's Alternative Sentencing workers held master's degrees in social work. In addition, the ASWP integrates Motivational Interviewing techniques to facilitate client's change processes and their participation in the program. Motivational Interviewing is an evidence-based practice that has strong evidence of support for the services offered by

the ASWP and within criminal justice settings more generally (Carroll et al., 2006; Miller & Rollnick, 2002; Vader, Walters, Prabhu, Houck, & Field, 2010).

Limitations

Several limitations must be mentioned. This was a cross-sectional study that examined correlational effects; therefore, it was unable to determine causation. This study utilized an analysis of extant data, so the use of proxy measures was used as a necessity, and the definition of variables was not as precise as it may have been with a primary data source. Due to this limitation, unexplained variance may exist that was not captured by the selected variables. Future research should incorporate multiple data sources (e.g., correctional intake data; public health data; police records) to operationalize variables specific to the drugs/violence nexus and to establish temporal ordering. In addition, although efforts were located measurements that encompassed similar timeframes, temporal ordering of drugs/violence events remained unknown.

For instance, it is unclear if acute drug use directly preceded violent victimization, nor was it clear how traumatic antecedents in childhood and adolescents may have contributed to substance use later in life, and thus, to victimization in adulthood. Additionally, this study makes many conceptual references to gender as a term that identifies the relative needs of individuals who are biologically female. It is unclear whether any of the women in this study identify as a gender outside of the one they were designated at birth, and in many cases the use of gender could be more accurately described as sex. The use of gender in this context was applied so it would be consistent with the references made to the works in the humanities and to evidence-based treatments that identify as “gender-responsive.” Although this study was the first to examine the

drugs/violence nexus exclusively among rural justice-involved women, the current findings limited potential generalizations beyond the current sample or drug-involved rural justice-involved women.

Conclusions

Among rural justice-involved women, drugs and violent victimization were shown to be significantly connected in three possible ways (i.e., psychopharmacologically, economic-compulsively, and systemically). The discriminant function analyses indicated that these relationships had varied prevalence, as the psychopharmacological group was the most supported, followed by economic-compulsive group, and the systemic group, respectively. These different forms of drug-related violent victimization were shown to be substantiated by numerous classes of drugs, different structural and economic contexts, and different social contexts.

Given these findings, the phenomena of drug-related violence victimization among rural women was mixed in its congruence with the original formulation of the drugs/violence nexus (Goldstein 1985; 2003). For instance, the psychopharmacological was highly prevalent and the use of methamphetamine contributed significantly to experience of violent victimization. Yet, most drug classes that predicted membership in the psychopharmacological group were sedative in nature, which contrasts to Goldstein's (1985) conceptualization that is heavily influenced by stimulant use. Further, economic-compulsive factors, such as selling drugs and sex work in exchange for drugs and money, also significantly contributed to predicting membership in the economic-compulsive group. This study also found support for a conceptual basis of the systemic group,

although this group had the least number of predicated participants included in the model, and there was no statistical support for the systemic group in subsequent analyses.

To the latter finding, this study also contributed noteworthy considerations for how the Goldstein (1985) conceptual framework may be adapted by a greater focus on victimization and the gender-specific experiences of rural women. For example, Goldstein (2003) noted that per his research in New York City, is that the area of systemic violence dominates much of the violence directed at drug users. This assertion is not supported from the perspective of the current study. The data suggests that the systemic group was the least influential among drug-using rural women.

The systemic group the least prevalent per the discriminant function analyses it did not have any significant associations to the mental health factors nor the risk factors for infectious disease. Future research involving rural justice-involved women must evaluate drug-related violence on a spectrum based on how coercive control specifically relates to psychopharmacological and economic-compulsive violence, and to continue to explore ways to operationalize systemic violence in rural areas where gang involvement is limited, if not non-existent in certain areas.

Following the construction of the three drugs/violence groups, this study was able to identify several significant mental health concerns and infectious disease risk factors that were associated with the psychopharmacological and economic-compulsive groups. The initiation of injection behavior was strongly associated with psychopharmacological violence. Risky sexual behavior and symptomology consistent with depression and psychosis were also significantly associated with psychopharmacological violence. More research is needed to better understand how these factors may be interrelated. Depression

and suicidal ideation were significantly associated with economic-compulsive violence which may highlight the complex intersection between economic distress, drug use, structural and interpersonal trauma, and power and control. The original Goldstein (1985) conceptual framework and subsequent reviews (Goldstein, 2003) are relatively silent on how these conceptual factors may map onto behavioral health concerns.

To that end, this study has presented novel data that future studies can build upon in better understanding how specific drug-related violence situations might have unique behavioral health risks. Although this study is not conclusive, this research might be useful in developing screening and assessment instruments in crisis centers and correctional settings. For instance, there is now evidence that rural women who present with economic-compulsive violence histories may be more likely to report suicidal ideation, and that psychopharmacological violence histories may be indicative coercive injection behavior. Social workers and other practitioners, along with policymakers, must continue to develop coordinated and integrated interventions that are gender-responsive, trauma informed, culturally attuned to the needs of justice-involved rural women. Lastly, practitioners and researchers must deliberate factors outside the individual-level that will improve policy and practice and ultimately promote the decriminalization of drug use and the diversion of vulnerable women from jails to treatment centers and outpatient care.

REFERENCES

- Adams, A. E., Sullivan, C. M., Bybee, D., & Greeson, M. R. (2008). Development of the scale of economic abuse. *Violence Against Women*, 14(5), 563–588.
doi:10.1177/1077801208315529
- Afifi, T. O., Henriksen, C. A., Asmundson, G. J., & Sareen, J. (2012). Victimization and perpetration of intimate partner violence and substance use disorders in a nationally representative sample. *The Journal of nervous and mental disease*, 200(8), 684-691.
- Alexander, M. (2011). The new Jim crow. *Ohio St. J. Crim. L.*, 9, 7.
- Amato, L., Davoli, M., Perucci, C. A., Ferri, M., Faggiano, F., & Mattick, R. P. (2005). An overview of systematic reviews of the effectiveness of opiate maintenance therapies: available evidence to inform clinical practice and research. *Journal of substance abuse treatment*, 28(4), 321-329.
- Andreas D, Ja DY, Wilson S, (2010). Peers reach out supporting peers to embrace recovery (PROSPER): a center for substance abuse treatment recovery community services program. *Alcoholism Treatment Quarterly*. 8;28(3):326-38.
- Appalachian Regional Commission. (2017). Moving Appalachia forward: Appalachian regional commission strategic plan 2011–2016, 2010.
- Ashenberg Straussner, S. L., & Brown, S. (2002). The handbook of addiction treatment for women. *San Francisco: Jossey-Bass*.
- Babor, T. F., McRee, B. G., Kassebaum, P. A., Grimaldi, P. L., Ahmed, K., & Bray, J. (2007). Screening, Brief Intervention, and Referral to Treatment (SBIRT) toward a public health approach to the management of substance abuse. *Substance abuse*, 28(3), 7-30.
- Back, S. E., Payne, R. L., Wahlquist, A. H., Carter, R. E., Stroud, Z., Haynes, L., ... & Ling, W. (2011). Comparative profiles of men and women with opioid dependence: results from a national multisite effectiveness trial. *The American journal of drug and alcohol abuse*, 37(5), 313-323.
- Basile, V.D., 2005. Getting serious about corrections. *Fed. Probation*, 69, p.29.
- Beardsley, K., Wish, E. D., Fitzelle, D. B., O'Grady, K., & Arria, A. M. (2003). Distance traveled to outpatient drug treatment and client retention. *Journal of Substance Abuse Treatment*, 25(4), 279-285.
- Beck, A.J., Berzofsky, M., Caspar, R. & Krebs, C. (2013). Sexual Victimization in Prisons and Jails Reported by Inmates, 2011–12. U.S. Department of Justice. Bureau of Justice Statistics. Retrieved from: <http://www.bjs.gov/content/pub/pdf/svpjri1112.pdf>
- Becker, K. D., Stuewig, J., McCloskey, L. A. (2010). Traumatic stress symptoms of women exposed to different forms of childhood victimization and intimate partner violence. *Journal of Interpersonal Violence*, 25(9), 1699-1715.
- Beeble, M. L., Bybee, D., & Sullivan, C. M. (2007). Abusive men's use of children to control their partners and ex-partners. *European Psychologist*, 12(1), 54–61.
doi:10.1027/1016-9040.12.1.54
- Begun, A. L., Rose, S. J., & LeBel, T. P. (2011). Intervening with women in jail around alcohol and substance abuse during preparation for community reentry. *Alcoholism Treatment Quarterly*, 29(4), 453-478.

- Belenko, S. (2006). Assessing released inmates for substance-abuse-related service needs. *Crime & Delinquency*, 52(1), 94-113.
- Belenko, S. (1999). The challenges of integrating drug treatment into the criminal justice process. *Alb. L. Rev.*, 63, 833.
- Beletsky, L., & Davis, C. S. (2017). Today's fentanyl crisis: Prohibition's Iron Law, revisited. *International Journal of Drug Policy*, 46, 156-159.
- Binswanger, I. A., Merrill, J. O., Krueger, P. M., White, M. C., Booth, R. E., & Elmore, J. G. (2010). Gender differences in chronic medical, psychiatric, and substance-dependence disorders among jail inmates. *American journal of public health*, 100(3), 476-482.
- Bixler, D., Corby-Lee, G., Proescholdbell, S., Ramirez, T., Kilkenny, M. E., LaRocco, M., ... & Asher, A. (2018). Access to Syringe Services Programs—Kentucky, North Carolina, and West Virginia, 2013–2017. *Morbidity and Mortality Weekly Report*, 67(18), 529.
- Boles, S. M., & Miotto, K. (2003). Substance abuse and violence: A review of the literature. *Aggression and violent behavior*, 8(2), 155-174.
- Borders, T. F. (2018). Portraying a More Complete Picture of Illicit Drug Use Epidemiology and Policy for Rural America: A Competing Viewpoint to the CDC's MMWR Report. *The Journal of Rural Health*, 34(1), 3-5.
- Borak, J., Salipante-Zaidel, C., Slade, M. D., & Fields, C. A. (2012). Mortality disparities in Appalachia: reassessment of major risk factors. *Journal of occupational and environmental medicine*, 54(2), 146-156.
- Bourgois, P., Prince, B., & Moss, A. (2004). The everyday violence of hepatitis C among young women who inject drugs in San Francisco. *Human organization*, 63(3), 253.
- Brady, K. T., McCauley, J. L., & Back, S. E. (2015). Prescription opioid misuse, abuse, and treatment in the United States: an update. *American Journal of Psychiatry*, 173(1), 18-26.
- Brinley, L., Curtis, L., Hardin, J., Hassel, H., Meyer, A., Stidham, J., & Thompson, J. (2018). Making the Transition: An Assessment of Distressed and Non-distressed Counties in Eastern Kentucky.
- Bronson, J., & Berzofsky, M. (2017). Indicators of mental health problems reported by prisoners and jail inmates, 2011–12. Bureau of Justice Statistics, 1-16.
- Brooks, J. H., & Reddon, J. R. (1996). Serum testosterone in violent and nonviolent young offenders. *Journal of clinical psychology*, 52(4), 475-483.
- Browne, T., Priester, M. A., Clone, S., Iachini, A., DeHart, D., & Hock, R. (2016). Barriers and facilitators to substance use treatment in the rural south: A qualitative study. *The Journal of Rural Health*, 32(1), 92-101.
- Busch-Armendariz, N. B., DiNitto, D. M., Bell, H., & Bohman, T. (2010). Sexual assault perpetrators' alcohol and drug use: the likelihood of concurrent violence and post-sexual assault outcomes for women victims. *Journal of psychoactive drugs*, 42(3), 393-399.
- Burkhart, K. W. (1973). *Women in prison*. Doubleday.
- Case, A., & Deaton, A. (2017). Mortality and morbidity in the 21st century. *Brookings papers on economic activity*, 2017, 397.

- Campbell, J., Jones, A. S., Dienemann, J., Kub, J., Schollenberger, J., O'campo, P., ... & Wynne, C. (2002). Intimate partner violence and physical health consequences. *Archives of internal medicine*, 162(10), 1157-1163.
- Carroll, K. M., Ball, S. A., Nich, C., Martino, S., Frankforter, T. L., Farentinos, C., ... & Woody, G.E. (2006). Motivational interviewing to improve treatment engagement and outcome in individuals seeking treatment for substance abuse: A multisite effectiveness study. *Drug and Alcohol Dependence*, 81(3), 301-312.
- Centers for Disease Control and Prevention, & National Center for Health Statistics. (2018). Provisional drug overdose death counts. *Vital Statistics Rapid Release*, 8, 15-18.
- Chesney-Lind, M., & Rodriguez, N. (1983). Women under lock and key: A view from the inside. *The prison journal*, 63(2), 47-65.
- Chandler, R. K., Fletcher, B. W., & Volkow, N. D. (2009). Treating drug abuse and addiction in the criminal justice system: improving public health and safety. *Jama*, 301(2), 183-190.
- Chapkis W (2000) Power and control in the commercial sex trade. In: Weitzer R (ed.) *Sex for Sale*. NY: Routledge, pp. 181-202.
- Charles, D. R., Abram, K. M., McClelland, G. M., & Teplin, L. A. (2003). Suicidal ideation and behavior among women in jail. *Journal of Contemporary Criminal Justice*, 19(1), 65-81.
- Ciccarone, D. (2017). Fentanyl in the US heroin supply: a rapidly changing risk environment. *International Journal of Drug Policy*, 46, 107-111.
- Cicero, T. J., Ellis, M. S., Surratt, H. L., & Kurtz, S. P. (2014). The changing face of heroin use in the United States: a retrospective analysis of the past 50 years. *JAMA psychiatry*, 71(7), 821-826.
- Chesney-Lind, M., & Shelden, R. G. (2013). *Girls, delinquency, and juvenile justice*. John Wiley & Sons.
- Chermack, S. T., & Blow, F. C. (2002). Violence among individuals in substance abuse treatment: The role of alcohol and cocaine consumption. *Drug and Alcohol Dependence*, 66(1), 29-37. doi:10.1016/S0376-8716(01)00180-6
- Chou, R., Turner, J. A., Devine, E. B., Hansen, R. N., Sullivan, S. D., Blazina, I., ... & Deyo, R. A. (2015). The effectiveness and risks of long-term opioid therapy for chronic pain: a systematic review for a National Institutes of Health Pathways to Prevention Workshop. *Annals of internal medicine*, 162(4), 276-286.
- Christian, W. J., Hopenhayn, C., Christian, A. M. Y., McIntosh, D., & Koch, A. (2010). Viral hepatitis and injection drug use in Appalachian Kentucky: a survey of rural health department clients. *Public health reports*, 125(1), 121-128.
- Cohen, J. B., Dickow, A., Horner, K., Zweben, J. E., Balabis, J., Vandersloot, D., Reiber, C. (2003). Abuse and violence history of men and women in treatment for methamphetamine dependence. *American Journal of Addictions*, 12, 377-385.
- Connelly, C. D., Hazen, A. L., Baker-Ericzén, M. J., Landsverk, J., & Horwitz, S. M. (2013). Is screening for depression in the perinatal period enough? The co-occurrence of depression, substance abuse, and intimate partner violence in culturally diverse pregnant women. *Journal of Women's Health*, 22(10), 844-852. doi:10.1089/jwh.2012.4121.

- Coker, A. L., Davis, K. E., Arias, I., Desai, S., Sanderson, M., Brandt, H. M., & Smith, P. H. (2002). Physical and mental health effects of intimate partner violence for men and women. *American journal of preventive medicine*, 23(4), 260-268.
- Coker, A. L., Pope, B. O., Smith, P. H., Sanderson, M., & Hussey, J. R. (2001). Assessment of clinical partner violence screening tools. *Journal of the American Medical Women's Association*, 56, 19–23
- Conger, R. D. (1997). The special nature of rural America. *Rural substance abuse: State of knowledge and issues*, 37-52.
- Cook, P. J., Kang, S., Braga, A. A., Ludwig, J., & O'Brien, M. E. (2015). An experimental evaluation of a comprehensive employment-oriented prisoner re-entry program. *Journal of Quantitative Criminology*, 31(3), 355-382.
- Covington, S. S., Burke, C., Keaton, S., & Norcott, C. (2008). Evaluation of a trauma-informed and gender-responsive intervention for women in drug treatment. *Journal of Psychoactive Drugs*, Suppl 5 (November), 387–398. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/19248396>
- Dasgupta, N., Beletsky, L., & Ciccarone, D. (2018). Opioid crisis: no easy fix to its social and economic determinants. *American journal of public health*, 108(2), 182-186.
- Dasgupta, N., Creppage, K., Austin, A., Ringwalt, C., Sanford, C., & Proescholdbell, S. K. (2014). Observed transition from opioid analgesic deaths toward heroin. *Drug and alcohol dependence*, 145, 238-241.
- Dass-Brailsford, P., & Myrick, A. C. (2010). Psychological trauma and substance abuse: The need for an integrated approach. *Trauma, Violence & Abuse*, 11(4), 202–213. doi:10.1177/1524838010381252.
- Dart, R. C., Surratt, H. L., Cicero, T. J., Parrino, M. W., Severtson, S. G., Bucher-Bartelson, B., & Green, J. L. (2015). Trends in opioid analgesic abuse and mortality in the United States. *New England Journal of Medicine*, 372(3), 241-248.
- De, P., Cox, J., Boivin, J. F., Platt, R. W., Jolly, A. M., & Alexander, P. E. (2009). HIV and HCV discordant injecting partners and their association to drug equipment sharing. *Scandinavian journal of infectious diseases*, 41(3), 206-214.
- Delia Deckard, N. (2017). Prison, coerced demand, and the importance of incarcerated bodies in late capitalism. *Social Currents*, 4(1), 3-12.
- Dennis, M. L., Titus, J. C., White, M. K., Unsicker, J. I., & Hodgkins, D. (2003). Global appraisal of individual needs: Administration guide for the GAIN and related measures. *Bloomington, IL: Chestnut Health Systems*.
- Devries, K. M., Child, J. C., Bacchus, L. J., et al. (2014). Intimate partner violence victimization and alcohol consumption in women: A systematic review and meta-analysis. *Addiction*, 109(3), 379–391. doi:10.1111/add.12393
- Ditton, P. M. (1999). Special report: Mental health and treatment of inmates and probationers. *Washington, DC: US Department of Justice, Bureau of Justice Statistics*.
- Dowell, D., Haegerich, T. M., & Chou, R. (2016). CDC guideline for prescribing opioids for chronic pain—United States, 2016. *Jama*, 315(15), 1624-1645.
- Duberstein, Paul R., Yeates Conwell, Kathleen R. Conner, S. Eberly, and Eric D. Caine. "Suicide at 50 years of age and older: perceived physical illness, family discord and financial strain." *Psychological Medicine* 34, no. 1 (2004): 137-146.

- Duke, A. A., Bègue, L., Bell, R., & Eisenlohr-Moul, T. (2013). Revisiting the serotonin–aggression relation in humans: A meta-analysis. *Psychological bulletin*, 139(5), 1148.
- Egli, N., Pina, M., Skovbo Christensen, P., Aebi, M. F., & Killias, M. (2009). Effects of drug substitution programs on offending among drug-addicts (No. Campbell Systematic Reviews 2009: 3). The Campbell Collaboration.
- El-Bassel, N., Gilbert, L., Wu, E., Go, H., & Hill, J. (2005). Relationship between drug abuse and intimate partner violence: a longitudinal study among women receiving methadone. *American journal of public health*, 95(3), 465-470.
- Epperson, M., & Pettus-Davis, C. (2016). Policy recommendations for meeting the Grand Challenge to Promote Smart Decarceration (Grand Challenges for Social Work Initiative Policy Brief No. 9). Cleveland, OH: *American Academy of Social Work & Social Welfare*. Retrieved May 22, 2019.
- Evans, E., Kelleghan, A., Li, L., Min, J., Huang, D., Urada, D., ... & Nosyk, B. (2015). Gender differences in mortality among treated opioid dependent patients. *Drug and alcohol dependence*, 155, 228-235.
- Fagan, J. (1990). Intoxication and aggression. *Crime and justice*, 13, 241-320.
- Farabee, D. & Leukefeld, C.G. (2001). Recovery and the criminal justice system. In F.M. Tims, C.G. Leukefeld, & J.J. Platt (Eds), *Relapse and Recovery in Addictions*, 40-59. New Haven, CN: Yale University Press.
- Fazel, S., & Seewald, K. (2012). Severe mental illness in 33 588 prisoners worldwide: systematic review and meta-regression analysis. *The British Journal of Psychiatry*, 200(5), 364-373.
- Fazel, S., & Baillargeon, J. (2011). The health of prisoners. *The Lancet*, 377(9769), 956-965.
- Fazel, S., Långström, N., Hjern, A., Grann, M., & Lichtenstein, P. (2009). Schizophrenia, substance abuse, and violent crime. *Jama*, 301(19), 2016-2023.
- Ferris, R. (2017). A Data-Based Discriminant Model to Predict Educational Attainment in Central Appalachia.
- Fiene, J. I. (2002). Gender, class, and self-image. In P. J. Obermiller & M. E. Maloney (Eds.). *Appalachia: Social context past and present* (pp. 71–91). Dubuque, IA: Kendall/Hunt.
- Fogel, C. I., Gelaude, D. J., Carry, M., Herbst, J. H., Parker, S., Scheyette, A., & Neevel, A. (2014). Context of risk for HIV and sexually transmitted infections among incarcerated women in the south: individual, interpersonal, and societal factors. *Women & health*, 54(8), 694-711.
- Fogel, C. I., & Belyea, M. (1999). The lives of incarcerated women: violence, substance abuse, and at risk for HIV. *Journal of the Association of Nurses in AIDS Care*, 10(6), 66-74.
- Fowler, D. N., & Faulkner, M. (2011). Interventions targeting substance abuse among women survivors of intimate partner abuse: A meta-analysis. *Journal of Substance Abuse Treatment*, 41(4), 386–398. doi:10.1016/j.jsat.2011.06.001
- Friedmann, P. D., Hoskinson Jr, R., Gordon, M., Schwartz, R., Kinlock, T., Knight, K., ... & O'Connell, D. J. (2012). Medication-assisted treatment in criminal justice agencies affiliated with the criminal justice-drug abuse treatment studies (CJ-DATS): availability, barriers, and intentions. *Substance Abuse*, 33(1), 9-18.

- Frajzyngier, V., Neaigus, A., Gyarmathy, V. A., Miller, M., & Friedman, S. R. (2007). Gender differences in injection risk behaviors at the first injection episode. *Drug and Alcohol Dependence*, 89(2-3), 145-152.
- French, M. T., Sacks, S., De Leon, G., Staines, G., & McKendrick, K. (1999). Modified therapeutic community for mentally ill chemical abusers: Outcomes and costs. *Evaluation & the Health Professions*, 22(1), 60-85.
- Frye, V., Blaney, S., Cerdá, M., Vlahov, D., Galea, S., & Ompad, D. C. (2014). Neighborhood characteristics and sexual intimate partner violence against women among low-income, drug-involved New York City residents: Results from the IMPACT studies. *Violence Against Women*, 20(7), 799-824. doi:10.1177/1077801214543501
- Galea, S., Ahern, J., & Vlahov, D. (2003). Contextual determinants of drug use risk behavior: a theoretic framework. *Journal of Urban Health*, 80(3), iii50-iii58.
- Gertner, A. K., Rotter, J. S., & Shafer, P. R. (2019). Association between state minimum wages and suicide rates in the US. *American Journal of Preventive Medicine*.
- Gilbert, L., El-Bassel, N., Chang, M., Wu, E., & Roy, L. (2012). Substance use and partner violence among urban women seeking emergency care. *Psychology of Addictive Behaviors*, 26(2), 226-235. doi:10.1037/a0025869
- Gilbert, L., El-Bassel, N., Manuel, J., Wu, E., Go, H., Golder, S., Seewald, R., Sanders, G. (2006). An integrated relapse prevention and relationship safety intervention for women on methadone: Testing short-term effects on intimate partner violence and substance use. *Violence and Victims*, 21(5), 657-672.
- Gilchrist, G., Dennis, F., Radcliffe, P., Henderson, J., Howard, L. M., & Gadd, D. (2019). The interplay between substance use and intimate partner violence perpetration: A meta-ethnography. *International Journal of Drug Policy*, 65, 8-23.
- Gilfus, M. E. (1993). From victims to survivors to offenders: Women's routes of entry and immersion into street crime. *Women & Criminal Justice*, 4(1), 63-89.
- Glaze, L. E., & Parks, E. (2011). Correctional populations in the United States, 2011. *Population*, 6(7), 8.
- Goldstein, P. J., Brownstein, H. H., & Ryan, P. J. (1992). Drug-related homicide in New York: 1984 and 1988. *Crime & Delinquency*, 38(4), 459-476.
- Goldstein, P. J. (1998). Drugs, violence, and federal funding: a research odyssey. *Substance use & misuse*, 33(9), 1915-1936.
- Goldstein, P. J., Brownstein, H. H., Ryan, P. J., & Bellucci, P. A. (1989). Crack and homicide in New York City, 1988: A conceptually based event analysis. *Contemp. Drug Probs.*, 16, 651.
- Goldstein, P. J. (1985). The drugs/violence nexus: A tripartite conceptual framework. *Journal of drug issues*, 15(4), 493-506.
- Golder, S., Connell, C. M., & Sullivan, T. P. (2012). Psychological distress and substance use among community-recruited women currently victimized by intimate partners: A latent class analysis and examination of between-class differences. *Violence Against Women*, 18(8), 934-957. doi:10.1177/1077801212456991
- Green, T. C., Serrano, J. M. G., Licari, A., Budman, S. H., & Butler, S. F. (2009). Women who abuse prescription opioids: Findings from the Addiction Severity Index-Multimedia Version® Connect prescription opioid database. *Drug and alcohol dependence*, 103(1-2), 65-73.

- Greenfield, S. F., Back, S. E., Lawson, K., & Brady, K. T. (2010). Substance abuse in women. *Psychiatric Clinics*, 33(2), 339-355.
- Greenwood, G. L., Woods, W. J., Gudyish, J., & Bein, E. (2001). Relapse outcomes in a randomized trial of residential and day drug abuse treatment. *Journal of Substance Abuse Treatment*, 20(1), 15-23.
- Haffajee, R. L., Jena, A. B., & Weiner, S. G. (2015). Mandatory use of prescription drug monitoring programs. *JAMA*, 313(9), 891-892.
- Hahn, J. A., Evans, J. L., Davidson, P. J., Lum, P. J., & Page, K. (2010). Hepatitis C virus risk behaviors within the partnerships of young injecting drug users. *Addiction*, 105(7), 1254-1264.
- Hall, M. T., Golder, S., Higgins, G. E., & Logan, T. K. (2016). Nonmedical prescription opioid use among victimized women on probation and parole. *Addictive behaviors*, 53, 113-119.
- Harris, D., & Batki, S. L. (2000). Stimulant psychosis: symptom profile and acute clinical course. *The American journal on addictions*, 9(1), 28-37.
- Havens, J. R., Lofwall, M. R., Frost, S. D., Oser, C. B., Leukefeld, C. G., & Crosby, R. A. (2013). Individual and network factors associated with prevalent hepatitis C infection among rural Appalachian injection drug users. *American journal of public health*, 103(1), e44-e52.
- Havens, J. R., Walker, R., & Leukefeld, C. G. (2007). Prevalence of opioid analgesic injection among rural nonmedical opioid analgesic users. *Drug and Alcohol Dependence*, 87(1), 98-102.
- Hayes, L. M. (2012). National study of jail suicide: 20 years later. *Journal of Correctional Health Care*, 18(3), 233-245.
- Hempstead, K. A., & Phillips, J. A. (2015). Rising suicide among adults aged 40–64 years: the role of job and financial circumstances. *American journal of preventive medicine*, 48(5), 491-500.
- Higley, J. D., & Linnoila, M. (1997). Low central nervous system serotonergic activity is traitlike and correlates with impulsive behavior. *Annals of the New York Academy of Sciences*, 836(1), 39-56.
- Hiller, M. L., Knight, K., & Simpson, D. D. (2006). Recidivism following mandated residential substance abuse treatment for felony probationers. *The Prison Journal*, 86(2), 230-241.
- Hong, Y., Li, X., Fang, X., & Zhao, R. (2007). Correlates of suicidal ideation and attempt among female sex workers in China. *Health care for women international*, 28(5), 490-505.
- Horn, B. P., Li, X., Mamun, S., McCrady, B., & French, M. T. (2018). The economic costs of jail-based methadone maintenance treatment. *The American journal of drug and alcohol abuse*, 44(6), 611-618.
- Humeniuk RE, Ali RA, Babor TF, Farrell M, Formigoni ML, Jittiwutikarn J, Boerngen de Larcercda R, Ling W, Marsden J, Monteiro M, Nhiwhatiwa S, Pal H, Poznyak V & Simon S (2008). Validation of the Alcohol Smoking and Substance Involvement Screening Test (ASSIST). *Addiction* 103(6): 1039-1047
- Hwang, C. S., Chang, H. Y., & Alexander, G. C. (2015). Impact of abuse-deterrent OxyContin on prescription opioid utilization. *Pharmacoepidemiology and drug safety*, 24(2), 197-204.

- Jaquier, V., Flanagan, J. C., & Sullivan, T. P. (2015). Anxiety and posttraumatic stress symptom pathways to substance use problems among community women experiencing intimate partner violence. *Anxiety, Stress & Coping: An International Journal*, 28(4), 445-455.
- Inciardi, J. A., Surratt, H. L., Cicero, T. J., Kurtz, S. P., Martin, S. S., & Parrino, M. W. (2009). The “black box” of prescription drug diversion. *Journal of addictive diseases*, 28(4), 332-347.
- Jackson, A., & Shannon, L. (2012). Examining barriers to and motivations for substance abuse treatment among pregnant women: Does urban-rural residence matter? *Women & health*, 52(6), 570-586.
- Jonas, A. B., Young, A. M., Oser, C. B., Leukefeld, C. G., & Havens, J. R. (2012). OxyContin® as currency: OxyContin® use and increased social capital among rural Appalachian drug users. *Social science & medicine*, 74(10), 1602-1609.
- Keyes, K. M., Cerdá, M., Brady, J. E., Havens, J. R., & Galea, S. (2014). Understanding the rural–urban differences in nonmedical prescription opioid use and abuse in the United States. *American journal of public health*, 104(2), e52-e59.
- Kilpatrick, D. G., Acierno, R., Resnick, H. S., Saunders, B. E., & Best, C. L. (1997). A 2-year longitudinal analysis of the relationships between violent assault and substance use in women. *Journal of Consulting and Clinical Psychology*, 65(5), 834-847. doi:<http://dx.doi.org/10.1037/0022-006X.65.5.834>
- Klecka, W. R., Iversen, G. R., & Klecka, W. R. (1980). *Discriminant analysis* (Vol. 19). Sage.
- Koh, H. (2015). Community approaches to the opioid crisis. *Jama*, 314(14), 1437-1438.
- Kolodny, A., Courtwright, D. T., Hwang, C.S., Kreiner, P., Eadie, J.L., Clark, T.W., Alexander, C.G. (2015). The Prescription Opioid and Heroin Crisis: A Public Health Approach to an Epidemic of Addiction. *Annual Review of Public Health*, 2015 36:1, 559-574.
- Kouyoumdjian, F. G., McIsaac, K. E., Liauw, J., Green, S., Karachiwalla, F., Siu, W., ... & Korchinski, M. (2015). A systematic review of randomized controlled trials of interventions to improve the health of persons during imprisonment and in the year after release. *American Journal of Public Health*, 105(4), e13-e33.
- Kramer, T. L., Borders, T. F., Tripathi, S., Lynch, C., Leukefeld, C., Falck, R. S., ... & Booth, B. M. (2012). Physical victimization of rural methamphetamine and cocaine users. *Violence and victims*, 27(1), 109.
- Kuhns, J. B., & Clodfelter, T. A. (2009). Illicit drug-related psychopharmacological violence: The current understanding within a causal context. *Aggression and violent behavior*, 14(1), 69-78.
- Kyes, R. C., Botchin, M. B., Kaplan, J. R., Manuck, S. B., & Mann, J. J. (1995). Aggression and brain serotonergic responsivity: response to slides in male macaques. *Physiology & behavior*, 57(2), 205-208.
- La Flair, L. N., Bradshaw, C. P., Storr, C. L., Green, K. M., Alvanzo, A. A. H., & Crum, R. M. (2012). Intimate partner violence and patterns of alcohol abuse and dependence criteria among women. *Journal of Studies on Alcohol and Drugs*, 73(3), 351–360.
- Lamb, H. R., & Weinberger, L. E. (1998). Persons with severe mental illness in jails and prisons: A review. *Psychiatric services*, 49(4), 483-492.

- Ling, D. C., Wong, W. C., Holroyd, E. A., & Gray, S. A. (2007). Silent killers of the night: an exploration of psychological health and suicidality among female street sex workers. *Journal of Sex & Marital Therapy*, 33(4), 281-299.
- Lee, J. D., Grossman, E., Truncali, A., Rotrosen, J., Rosenblum, A., Magura, S., & Gourevitch, M. N. (2012). Buprenorphine-naloxone maintenance following release from jail. *Substance Abuse*, 33(1), 40-47.
- Lee, H. Y., Ju, E., & Lightfoot, E. B. (2010). The role of substance use by both perpetrators and victims in intimate partner violence outcomes. *Journal of Social Work Practice in the Addictions*, 10(1), 3-24.
- Lelutiu-Weinberger, C., Pouget, E. R., Des Jarlais, D. D., Cooper, H. L., Scheinmann, R., Stern, R., ... Hagan, H. (2009). A meta-analysis of the hepatitis C virus distribution in diverse racial/ethnic drug injector groups. *Social science & medicine* (1982), 68(3), 579-590. doi:10.1016/j.socscimed.2008.10.011
- Leon, G. D., Sacks, S., Staines, G., & McKendrick, K. (2000). Modified therapeutic community for homeless mentally ill chemical abusers: treatment outcomes. *The American journal of drug and alcohol abuse*, 26(3), 461-480.
- Lutgen, L. L. (2018). Assessing the Outcomes of a Jail-based Substance Abuse Treatment Program: A Quasi-experimental Approach. City University of New York.
- MacCoun, R., Kilmer, B., & Reuter, P. (2003). Research on drugs-crime linkages: The next generation. *Toward a drugs and crime research agenda for the 21st century*, 65-95.
- Macy, R. J., & Goodbourn, M. (2012). Promoting successful collaborations between domestic violence and substance abuse treatment service sectors: A review of the literature. *Trauma, Violence & Abuse*, 13(4), 234-51. doi:10.1177/1524838012455874.
- Magura, S., Lee, J. D., Hershberger, J., Joseph, H., Marsch, L., Shropshire, C., & Rosenblum, A. (2009). Buprenorphine and methadone maintenance in jail and post-release: a randomized clinical trial. *Drug and alcohol dependence*, 99(1-3), 222-230.
- Maniglio, R. (2009). Severe mental illness and criminal victimization: a systematic review. *Acta Psychiatrica Scandinavica*, 119(3), 180-191.
- Massoglia, M. (2008). Incarceration as exposure: the prison, infectious disease, and other stress-related illnesses. *Journal of health and social behavior*, 49(1), 56-71.
- Marlowe, D. B. (2003). Integrating substance abuse treatment and criminal justice supervision. *Science & practice perspectives*, 2(1), 4.
- Marmot, M., & Allen, J. J. (2014). Social determinants of health equity.
- Marmot, M. G., & Bell, R. (2009). Action on health disparities in the United States: commission on social determinants of health. *Jama*, 301(11), 1169-1171.
- Martin, M. S., Colman, I., Simpson, A. I., & McKenzie, K. (2013). Mental health screening tools in correctional institutions: a systematic review. *BMC psychiatry*, 13(1), 275.
- Matjasko, J. L., Niolon, P. H., & Valle, L. A. (2013). The role of economic factors and economic support in preventing and escaping from intimate partner violence. *Journal of Policy Analysis and Management*, 32(1), 122-128.

- Matusow, H., Dickman, S. L., Rich, J. D., Fong, C., Dumont, D. M., Hardin, C., ... & Rosenblum, A. (2013). Medication assisted treatment in US drug courts: Results from a nationwide survey of availability, barriers and attitudes. *Journal of substance abuse treatment*, 44(5), 473-480.
- McCoy, H. V., Messiah, S. E., & Yu, Z. (2001). Perpetrators, victims, and observers of violence: Chronic and non-chronic drug users. *Journal of Interpersonal Violence*, 16(9), 890-909.
- McDonald, D. C., Carlson, K., & Izrael, D. (2012). Geographic variation in opioid prescribing in the US. *The journal of Pain*, 13(10), 988-996.
- McHugh, R. K., DeVito, E. E., Dodd, D., Carroll, K. M., Potter, J. S., Greenfield, S. F., ... & Weiss, R. D. (2013). Gender differences in a clinical trial for prescription opioid dependence. *Journal of substance abuse treatment*, 45(1), 38-43.
- McMillan, G. P., & Lapham, S. C. (2005). Staff perspectives on methadone maintenance therapy (MMT) in a large southwestern jail. *Addiction Research & Theory*, 13(1), 53-63.
- Miewald, C. E., & McCann, E. J. (2004). Gender struggle, scale, and the production of place in Appalachia coalfields. *Environment and Planning*, 36, 1045–1064. DOI:10.1068/a35230.
- Miller, W.R. & Rollnick, S. (2009). Ten things motivational interviewing is not. *Behavioral and Cognitive Psychology*, 37, 129-140.
- Miller, W.R. & Rollnick, S. (2002). *Motivational Interviewing: Preparing People to Change*, Second Edition. New York, NY: Guilford Press.
- Moloney, K. P., van den Bergh, B. J., & Moller, L. F. (2009). Women in prison: The central issues of gender characteristics and trauma history. *Public health*, 123(6), 426-430.
- Moody, L., Satterwhite, E., & Bickel, W. K. (2017). Substance Use in Rural Central Appalachia: Current Status and Treatment Considerations. *Rural mental health*, 41(2), 123–135. doi:10.1037/rmh0000064
- Moon, A. (2017). Gender Differences in Populations with Substance Use Disorders: A Review of the Literature.
- Mumola, C. J., & Karberg, J. C. (2006). *Drug use and dependence, state and federal prisoners, 2004* (pp. 1-12). Washington, DC: US Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.
- Nandi, A., Glass, T. A., Cole, S. R., Chu, H., Galea, S., Celentano, D. D., ... & Mehta, S. H. (2010). Neighborhood poverty and injection cessation in a sample of injection drug users. *American Journal of Epidemiology*, 171(4), 391-398.
- Najavits, L. M. (2007). Seeking Safety: An evidence-based model for substance abuse and trauma/PTSD. In K. A. Witkiewitz & G. A. Marlatt (Eds.), *Therapist's Guide to Evidence Based Relapse Prevention: Practical Resources for the Mental Health Professional* (pp. 141–167). San Diego: Elsevier Press
- Nussbaum, M. C. (2017). "Whether from Reason or Prejudice": Taking Money for Bodily Services. In *Gender and Rights* (pp. 451-482). Routledge.
- Nussbaum, Martha, (1995). "Objectification", *Philosophy and Public Affairs*, 24(4): 249–291.
- Nussbaum, Martha, (1999). *Sex and Social Justice*, Oxford: Oxford University Press.

- Oser, C. B., Mooney, J. L., Staton-Tindall, M., & Leukefeld, C. G. (2009). The drugs—violence nexus among rural felony probationers. *Journal of interpersonal violence*, 24(8), 1285-1303.
- Oser, C. B., Biebel, E. P., Havens, J. R., Staton-Tindall, M., Knudsen, H. K., Mooney, J. L., & Leukefeld, C. G. (2009). Inmate Prerelease Assessment (IPASS) aftercare placement recommendation as a predictor of rural inmate's 12-step attendance and treatment entry postrelease. *Journal of offender rehabilitation*, 48(8), 725-743.
- Paranjape, A., Heron, S., Thompson, M., Bethea, K., Wallace, T., & Kaslow, N. (2007). Are alcohol problems linked with an increase in depressive symptoms in abused, inner-city African American women? *Women's Health Issues: Official Publication of the Jacobs Institute of Women's Health*, 17(1), 37-43. doi:10.1016/j.whi.2006.08.004
- Paulozzi, L. J., & Xi, Y. (2008). Recent changes in drug poisoning mortality in the United States by urban–rural status and by drug type. *Pharmacoepidemiology and drug safety*, 17(10), 997-1005.
- Peek-Asa, C., Wallis, A., Harland, K., Beyer, K., Dickey, P., & Saftlas, A. (2011). Rural disparity in domestic violence prevalence and access to resources. *Journal of women's health*, 20(11), 1743-1749.
- Perazzo, J., Reyes, D., & Webel, A. (2017). A systematic review of health literacy interventions for people living with HIV, AIDS and Behavior, 21(3), 812–821. <http://doi.org/10.1007/s10461-016-1329-6>.
- Peters, E. N., Khondkaryan, E., & Sullivan, T. P. (2012). Associations between expectancies of alcohol and drug use, severity of partner violence, and posttraumatic stress among women. *Journal of Interpersonal Violence*, 27(11), 2108–27. doi:10.1177/0886260511432151.
- Peyton, E. (2001). *TASC in the 21st century: A guide for practitioners and policymakers*. Washington, DC: National TASC.
- Pollard, K., & Jacobsen, L. A. (2015). *The Appalachian region: A data overview from the 2009–2013 American Community Survey*. Washington, DC: Appalachian Regional Commission. Retrieved from http://www.arc.gov/assets/research_reports/DataOverviewfrom2008-2012ACS.pdf
- Pullen, E., & Oser, C. (2014). Barriers to substance abuse treatment in rural and urban communities: Counselor perspectives. *Substance use & misuse*, 49(7), 891-901.
- Reifler, L. M., Droz, D., Bailey, J. E., Schnoll, S. H., Fant, R., Dart, R. C., & Bucher Bartelson, B. (2012). Do prescription monitoring programs impact state trends in opioid abuse/misuse? *Pain Medicine*, 13(3), 434-442.
- Renzetti, C. M., & Goodstein, L. (2000). *Women, crime, and criminal justice: Original Feminist Readings*.
- Rhodes, T., & Treloar, C. (2008). The social production of hepatitis C risk among injecting drug users: a qualitative synthesis. *Addiction*, 103(10), 1593-1603.
- Rieckmann, T. R., Kovas, A. E., Cassidy, E. F., & McCarty, D. (2011). Employing policy and purchasing levers to increase the use of evidence-based practices in community-based substance abuse treatment settings: Reports from single state authorities. *Evaluation and Program Planning*, 34(4), 366-374.

- Rivera, E. A., Phillips, H., Warshaw, C., Lyon, E., Bland, P. J., Kaewken, O. (2015). An applied research paper on the relationship between intimate partner violence and substance use. Chicago, IL: National Center on Domestic Violence, Trauma & Mental Health.
- Robbins, T. W., & Dalley, J. W. (2017). Impulsivity, risky choice, and impulse control disorders: Animal models. In *Decision Neuroscience* (pp. 81-93).
- Sacks, J. Y. (2004). Women with co-occurring substance use and mental disorders (COD) in the criminal justice system: a research review. *Behavioral Sciences & the Law*, 22(4), 449-466.
- Schaefer, K. E., Esposito-Smythers, C., & Tangney, J. P. (2016). Suicidal ideation in a United States jail: Demographic and psychiatric correlates. *The journal of forensic psychiatry & psychology*, 27(5), 698–704.
doi:10.1080/14789949.2016.1193886
- Schneider, R., Burnette, M. L., Ilgen, M. A., & Timko, C. (2009). Prevalence and correlates of intimate partner violence victimization among men and women entering substance use disorder treatment. *Violence and Victims*, 24(6), 744-756.
doi:10.1891/0886-6708.24.6.744.
- Schumacher, J. A. & Holt, D. J. (2012). Domestic violence shelter residents' substance abuse treatment needs and options. *Aggression and Violent Behavior*, 17, 188-197.
- Schumm, J. A., O'Farrell, T. J., Murphy, C. M., Murphy, M., & Muchowski, P. (2011). Test of a conceptual model of partner aggression among women entering substance use disorder treatment. *Journal of studies on alcohol and drugs*, 72(6), 933-942.
- Seymour, C. (2017). Introduction: Children with Parents in Prison: Child Welfare Policy, Program, and Practice Issues. In *Children with Parents in Prison* (pp. 1-26). Routledge.
- Shannon, K., Strathdee, S. A., Goldenberg, S. M., Duff, P., Mwangi, P., Rusakova, M., ... & Boily, M. C. (2015). Global epidemiology of HIV among female sex workers: influence of structural determinants. *The Lancet*, 385(9962), 55-71.
- Shannon, L. M., Havens, J. R., & Hays, L. (2010). Examining differences in substance use among rural and urban pregnant women. *The American Journal on Addictions*, 19(6), 467-473.
- Shannon, L. M., Havens, J. R., Mateyoke-Scrivner, A., & Walker, R. (2009). Contextual differences in substance use for rural Appalachian treatment-seeking women. *The American journal of drug and alcohol abuse*, 35(2), 59-62.
- Shaw, S. Y., Shah, L., Jolly, A. M., & Wylie, J. L. (2007). Determinants of injection drug user (IDU) syringe sharing: the relationship between availability of syringes and risk network member characteristics in Winnipeg, Canada. *Addiction*, 102(10), 1626-1635.
- Shdaimah, C. S., & Wiechelt, S. A. (2013). Crime and compassion: Women in prostitution at the intersection of criminality and victimization. *International review of victimology*, 19(1), 23-35.
- Sheehan, C. M., Rogers, R. G., Williams, G. I., & Boardman, J. D. (2013). Gender differences in the presence of drugs in violent deaths. *Addiction*, 108(3), 547-555.
doi:10.1111/j.1360-0443.2012.04098.x

- Siever, L. J. (2008). Neurobiology of aggression and violence. *American Journal of Psychiatry*, 165(4), 429-442.
- Slavova, S., Costich, J., Bunn, T., Luu, H., Singleton, M., Hargrove, S., Triplett, J., Quesinberry, D., Ralston, W., Ingram, V. (2017). Heroin and Fentanyl Overdoses in Kentucky: Epidemiology and Surveillance. *International Journal of Drug Policy*.
- Small, J., Curran, G. M., & Booth, B. (2010). Barriers and facilitators for alcohol treatment for women: Are there more or less for rural women? *Journal of Substance Abuse Treatment*, 39(1), 1-13.
- Smith, P., Gendreau, P., & Swartz, K. (2009). Validating the principles of effective intervention: A systematic review of the contributions of meta-analysis in the field of corrections. *Victims and Offenders*, 4(2), 148-169.
- Snell-Rood, C., Staton-Tindall, M., & Victor, G. (2016). Incarcerated women's relationship-based strategies to avoid drug use after community re-entry. *Women & health*, 56(7), 843-858.
- Solomon P, (2004). Peer support/peer provided services underlying processes, benefits, and critical ingredients. *Psychiatric rehabilitation journal*. 27(4):392.
- Staton-Tindall, M., Harp, K. L., Minieri, A., Oser, C., Webster, J. M., Havens, J., & Leukefeld, C. (2015a). An exploratory study of mental health and HIV risk behavior among drug-using rural women in jail. *Psychiatric rehabilitation journal*, 38(1), 45.
- Staton-Tindall, M., Webster, J. M., Oser, C. B., Havens, J. R., & Leukefeld, C. G. (2015b). Drug use, Hepatitis C, and service availability: Perspectives of incarcerated rural women. *Social Work in Public Health*, 30, 385–396. DOI: 10.1080/19371918.2015.1021024.
- Staton-Tindall, M., McNees, E., Leukefeld, C., Walker, R., Oser, C., Duvall, J., ... & Pangburn, K. (2011). Treatment utilization among metropolitan and nonmetropolitan participants of corrections-based substance abuse programs reentering the community. *Journal of Social Service Research*, 37(4), 379-389.
- Staton-Tindall, M., Duvall, J., McNees, E., Walker, R., & Leukefeld, C. (2011). Outcomes following prison and jail-based treatment among women residing in metro and non-metro communities following release. *Journal of Drug Issues*, 41(2), 197-215.
- Staton-Tindall, M., Duvall, J. L., Leukefeld, C., & Oser, C. B. (2007). Health, mental health, substance use, and service utilization among rural and urban incarcerated women. *Women's Health Issues*, 17(4), 183-192.
- Stuart, G. L., Temple, J. R., Follansbee, K. W., Bucossi, M. M., Hellmuth, J. C., & Moore, T. M. (2008). The role of drug use in a conceptual model of intimate partner violence in men and women arrested for domestic violence. *Psychology of Addictive Behaviors*, 22(1), 12.
- Substance Abuse and Mental Health Services Administration. Behavioral Health Barometer: United States, Volume 4: Indicators as measured through the 2015 National Survey on Drug Use and Health and National Survey of Substance Abuse Treatment Services. HHS Publication No. SMA–17–BaroUS–16. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2017.

- Substance Abuse and Mental Health Services Administration. (2014). Center for behavioral health statistics and quality. In the NSDUH report: substance use and mental health estimates from the 2013 national survey on drug use and health: overview of findings.
- Sullivan, T. P., & Holt, L. J. (2008). PTSD symptom clusters are differentially related to substance use among community women exposed to intimate partner violence. *Journal of Traumatic Stress*, 21(2), 173–80. doi:10.1002/jts.20318
- Surratt, H. L., Inciardi, J. A., Kurtz, S. P., & Kiley, M. C. (2004). Sex Work and Drug Use in a Subculture of Violence. *Crime & Delinquency*, 50(1), 43-59. doi:10.1177/0011128703258875
- Surratt, H. L., Staton, M., Leukefeld, C. G., Oser, C. B., & Webster, J. M. (2018). Patterns of buprenorphine use and risk for re-arrest among highly vulnerable opioid-involved women released from jails in rural Appalachia. *Journal of addictive diseases*, 1-4.
- Swartz, M. S., & Bhattacharya, S. (2017). Victimization of persons with severe mental illness: a pressing global health problem. *World psychiatry : official journal of the World Psychiatric Association (WPA)*, 16(1), 26–27. doi:10.1002/wps.20393
- Swetnam, J., & Pope, J. (2001). Gangs and gang activity in a non-metropolitan community: The perceptions of students, teachers, and police officers. *Social Behavior and Personality: an international journal*, 29(2), 197-207.
- Taxman, F. S., & Belenko, S. (2011). Implementing evidence-based practices in community corrections and addiction treatment. *Springer Science & Business Media*.
- Teplin, Linda A., Karen M. Abram, and Gary M. McClelland. "Mentally disordered women in jail: Who receives services?." *American Journal of Public Health* 87.4 (1997): 604-609.
- Testa, M., Livingston, J. A., & Leonard, K. E. (2003). Women's substance use and experiences of intimate partner violence: A longitudinal investigation among a community sample. *Addictive Behaviors*, 28(9), 1649–1664. doi:10.1016/j.addbeh.2003.08.040
- Tompkins, D. A., Hobelmann, J. G., & Compton, P. (2017). Providing chronic pain management in the “Fifth Vital Sign” Era: Historical and treatment perspectives on a modern-day medical dilemma. *Drug and alcohol dependence*, 173, S11-S21.
- Tompkins, C. N., Sheard, L., Wright, N. M., Jones, L., & Howes, N. (2006). Exchange, deceit, risk and harm: the consequences for women of receiving injections from other drug users. *Drugs: education, prevention and policy*, 13(3), 281-297.
- Tuchman, E. (2010). Women and addiction: the importance of gender issues in substance abuse research. *Journal of addictive diseases*, 29(2), 127-138.
- United States of America. (2006). Principles of Drug Abuse Treatment for Criminal Justice Populations: A Research Based Guide.
- Vader, A.M., Walters, S.T., Prabhu, G.C., Houck, J.M. & Field, C.A. (2010). The language of motivational interviewing and feedback: counselor language, client language, and client drinking outcomes. *Psychology of Addictive Behavior*, 24(2), 190-197.

- Van Handel, M. M., Rose, C. E., Hallisey, E. J., Kolling, J. L., Zibbell, J. E., Lewis, B., Brooks, J. T. (2016). County-level Vulnerability Assessment for Rapid Dissemination of HIV or HCV Infections among Persons who Inject Drugs, United States. *Journal of Acquired Immune.*
- Van Zee, A. (2009). The promotion and marketing of oxycontin: commercial triumph, public health tragedy. *American journal of public health*, 99(2), 221-227.
- Varga, L. M., & Surratt, H. L. (2014). Predicting health care utilization in marginalized populations: Black, female, street-based sex workers. *Women's Health Issues*, 24(3), e335-e343.
- Victor, G., Kheibari, A., Staton, M., & Oser, C. (2018). Appalachian Women's Use of Substance Abuse Treatment: Examining the Behavioral Model for Vulnerable Populations. *Journal of Social Work Practice in the Addictions*, 18(2), 192-213.
- Victor, G. A., Walker, R., Cole, J., & Logan, T. K. (2017). Opioid analgesics and heroin: Examining drug misuse trends among a sample of drug treatment clients in Kentucky. *International Journal of Drug Policy*, 46, 1-6.
- Wahab, S. (2006). Motivational interviewing holds potential for practice with survivors of domestic violence. *Arete*, 29: 11-22.
- Warner, B. D., & Leukefeld, C. G. (2001). Rural-urban differences in substance use and treatment utilization among prisoners. *The American Journal of Drug and Alcohol Abuse*, 27(2), 265-280.
- Warshaw, C., Sullivan, C. M., & Rivera, E. A. (2013). A Systematic Review of Trauma-Focused Interventions for Domestic Violence Survivors Abstract (pp. 1–27).
- Warshaw, C., Brashler, P. & Gill, J. (2009). Mental health consequences of intimate partner violence. In C. Mitchell and D. Anglin (Eds.), *Intimate Partner Violence: A Health Based Perspective*. New York: Oxford University Press.
- Wechsberg, W. M., Craddock, S. G., & Hubbard, R. L. (1998). How are women who enter substance abuse treatment different than men?: A gender comparison from the Drug Abuse Treatment Outcome Study (DATOS). *Drugs & Society*, 13(1-2), 97-115.
- Welsh WN (2007). A multisite evaluation of prison-based therapeutic community drug treatment. *Criminal Justice and Behavior*, 34(11):1481-98.
- Weiner, M. D., Sussman, S., Sun, P., & Dent, C. (2005). Explaining the link between violence perpetration, victimization and drug use. *Addictive Behaviors*, 30(6), 1261-1266.
- Weir, B. W., Bard, R. S., O'Brien, K., Casciato, C. J., & Stark, M. J. (2008). Violence against women with HIV risk and recent criminal justice system involvement: Prevalence, correlates, and recommendations for intervention. *Violence Against Women*, 14(8), 944-960.
- Westerberg, V. S., McCrady, B. S., Owens, M., & Guerin, P. (2016). Community-based methadone maintenance in a large detention center is associated with decreases in inmate recidivism. *Journal of substance abuse treatment*, 70, 1-6.
- Wexler, L., Robbennolt, J. K., & Murphy, C. (2019). # MeToo, Time's up, and Theories of Justice. *U. Ill. L. Rev.*, 45.
- Wiechelt, S. A., & Shdaimah, C. S. (2011). Trauma and substance abuse among women in prostitution: Implications for a specialized diversion program. *Journal of Forensic Social Work*, 1(2), 159-184.

- Willison, J. B., McCoy, E. F., Vasquez-Noriega, C., & Reginal, T. (2018). Using the Sequential Intercept Model to Guide Local Reform.
- Wixson, S. E., Blumenschein, K., Goodin, A. J., Talbert, J., & Freeman, P. R. (2015). Prescription drug monitoring program utilization in Kentucky community pharmacies. *Pharmacy practice*, 13(2).
- Wu, V., Huff, H., & Bhandari, M. (2010). Pattern of physical injury associated with intimate partner violence in women presenting to the emergency department: a systematic review and meta-analysis. *Trauma, Violence, & Abuse*, 11(2), 71-82.
- Young, A. M., Jonas, A. B., Mullins, U. L., Halgin, D. S., & Havens, J. R. (2013). Network structure and the risk for HIV transmission among rural drug users. *AIDS and Behavior*, 17(7), 2341-2351.
- Young, A. M., & Havens, J. R. (2012). Transition from first illicit drug use to first injection drug use among rural Appalachian drug users: a cross-sectional comparison and retrospective survival analysis. *Addiction*, 107(3), 587-596.
- Young, A. M., Havens, J. R., & Leukefeld, C. G. (2010). Route of administration for illicit prescription opioids: a comparison of rural and urban drug users. *Harm reduction journal*, 7(1), 24.
- Zibbell, J. E., Iqbal, K., Patel, R. C., Suryaprasad, A., Sanders, K. J., Moore-Moravian, L., ... & Holtzman, D. (2015). Increases in hepatitis C virus infection related to injection drug use among persons aged ≤ 30 years-Kentucky, Tennessee, Virginia, and West Virginia, 2006-2012. *MMWR. Morbidity and mortality weekly report*, 64(17), 453-458.
- Zhang, J., Conwell, Y., Zhou, L., & Jiang, C. (2004). Culture, risk factors and suicide in rural China: a psychological autopsy case control study. *Acta Psychiatrica Scandinavica*, 110(6), 430-437.

VITA

Grant Victor III, M.S.W.

EDUCATION

Wright State University, Dayton, Ohio 2011
B.S. Psychology

University of Kentucky, Lexington, Kentucky 2013
Master of Social Work

PEER-REVIEWED PUBLICATIONS

Bunting, A. M., **Victor, G.**, Pike, E., Staton, M., Winston, E., & Pangburn, K. (2019). The Impact of Policy Changes on Heroin and Nonmedical Prescription Opioid Use Among an Incarcerated Population in Kentucky, 2008 to 2016. *Criminal Justice Policy Review*. <https://doi.org/10.1177/0887403419838029>

Kheibari, A., **Victor, G.**, Gutti, S.S., Gutti, S.N., Rao, S., Kitzman, P., Dignan, M. (2018) Smoking and Stroke in Appalachian Kentucky. *Journal of Neurology and Neurobiology*, 1(1), 1-4. doi:10.31487/j.NNB.2018.10.006

Walker, R., Clark, J., Monahan, E., Shechet, A., Kheibari, A., **Victor, G.** (2018). Developmental impairments in moral competence as mitigation in capital cases. *Journal of Behavioral Science and Law*, 36(4). doi:10.1002/bsl.2353

Victor, G., Kheibari, A., Staton-Tindall, M., Oser, C. (2017). Examining Appalachian women's utilization of substance abuse treatment: An application of Vulnerable Behavioral Model for Health Services. *Journal of Social Work Practice in the Addictions*, 18 (2). doi:10.1080/1533256X.2018.1450264

Victor, G. A., Walker, R., Cole, J., & Logan, T. K. (2017). Opioid analgesics and heroin: Examining drug misuse trends among a sample of drug treatment clients in Kentucky. *International Journal of Drug Policy*, 461-6. doi:10.1016/j.drugpo.2017.01.008

Snell-Rood, C., Staton-Tindall, M., & **Victor, G.** (2016). Incarcerated women's relationship-based strategies to avoid drug use after community re-entry. *Women & Health*, 56(7), 843-858. doi:10.1080/03630242.2015.1118732

OTHER ARTICLES

Victor, G. (2017). A Flower in the Weeds: Medical Marijuana as Morality Policy. *Drug Policy Alliance*.

Victor, G. (2016). Bring criminal justice reform to a vote. *Courier-Journal*
Retrieved from: <http://www.courier-journal.com/story/opinion/2016/03/29/comment-bring-criminal-justice-reform-vote/82393006/>

Victor, G. (2016). Bring criminal justice reform to a vote. *White House Criminal Justice Update: Criminal Justice in the news*.

GRANTS & FUNDING AWARDS

Ongoing Grants

1. University of Kentucky Pilot Grant Research Award Victor (PI) 5/1/2018-5/1/2019
Examining the lived experiences of the opioid crisis: A phenomenological approach to understanding heroin-initiation among opioid analgesic misusers
Role: Principal Investigator

2. COPS-AHTF-APPLICATION-2017 Kentucky State Police (PI) 01/01/2018-01/01/2020
COPS Anti-Heroin Task Force Program
Role: Consultant

3. COPS-CAMP-APPLICATION-2017 Kentucky State Police (PI) 01/01/2018-01/01/2020
COPS Anti-Methamphetamine Task Force Program
Role: Consultant

Completed Grants

4. HRSA-D04RH28376: Montgomery County Health Department (PI)
05/01/2015-04/01/2018
Rural Health Care Services Outreach Program
Role: Program Evaluator

5. NIH-R01 DA033866: Staton (PI)

07/15/2012-06/30/2017

Brief intervention for drug-using rural women at high-risk for HIV/HCV

Role: Research Associate

Other funding awards

2019 Travel Award (\$1,000) – College of Social Work, University of Kentucky

2019 Travel Award (\$500) – College for Problems on Drug Dependence, Annual Meeting

2018 Travel Award (\$1,000) – College of Social Work, University of Kentucky

2017 Travel Award (\$500) – Department of Behavioral Science, College of Medicine, University of Kentucky

2017 Travel Award (\$500) – Joshua Neimark Travel Award, American Association for the Advancement of Science

2017 Travel Award (\$500) – University of Kentucky Graduate School Travel Award

2016 Travel award (\$500) – College of Social Work, University of Kentucky

2015 Travel award (\$500) – College of Social Work, University of Kentucky

PEER-REVIEWED PRESENTATIONS & INVITED TALKS

- Kentucky Youth Advocates: Policy Perspectives on Children and Incarcerated Parents, Louisville, KY, October 12, 2018.
- Presenter: *21st Century drugs: Examining synthetic cannabinoid use among adolescents in drug treatment programs in Kentucky*, Society for Social Work Research, January 19, 2018, Washington D. C.
- Presenter: *A statewide alternative sentencing program: Description, outcomes, and return on investment*, National Organization of Forensic Social Work Annual Conference, June 14, 2018, New Orleans, LA.
- Co-Presenter: *Existential terror, social injustice and the death penalty*, Paper Presentation, American Society of Criminology Annual Meeting, November 16, 2017, Philadelphia, PA.
- Guest Lecture: Law 813: Capital Punishment, University of Kentucky College of Law.

- Presenter: *Applying the Behavioral Model for Vulnerable Populations: Correlates of substance use treatment utilization among Appalachian women*, College on Problems of Drug Dependence, June 13, 2017, Montreal, Quebec.
- Presenter: *Opioid analgesics and heroin: Examining drug abuse trends among drug treatment clients in Kentucky*, American Association for the Advancement of Science (Journal of Science), February 18, 2017, Boston, MA.

***Awarded Best Student Poster**

- Presenter: *Opioid analgesics and heroin: Examining drug abuse trends among drug treatment clients in Kentucky*, American Association of Behavioral Social Science, February 26, 2017, Las Vegas, NV.
- Presenter: *Examining independent correlates of injection drug use among incarcerated rural women*, National Organization of Forensic Social Work, June 16, 2016, New Orleans, LA.
- Co-Presenter: *The role of Terror Management Theory and social injustice in capital punishment*, National Organization of Forensic Social Work, June 17, 2016, New Orleans, LA.
- Co-Presenter: *The Resilient Social Worker and Spiritual Assessment*, National Association of Social Workers, Kentucky Chapter, Annual Meeting, August 28, 2014, Lexington, KY.

PROFESSIONAL EXPERIENCE

2016-PRESENT

Research Assistant, Center for Transformative Learning, Assessment Team
University of Kentucky, Lexington, KY.

2015-PRESENT

Capital Punishment Mitigation Specialist & Case Review Participant
Louisville KY, Frankfort, KY, & Lexington KY.

2015-2019

Program Evaluator and Grant Writing Officer
CHES Solutions Group, Inc., Lexington, KY.

2014-2017

Teaching Assistant, College of Social Work
University of Kentucky, Lexington, KY.

2012-2014

WISH Project, Lexington, KY

Research Assistant, College of Social Work

2011-2013

KVC, Lexington, KY

Trauma Child Support worker

2011

Better Way Counseling, Paris, KY

Practicum Student

SERVICE AND PROFESSIONAL DEVELOPMENT

University Service

2017

Students for Sensible Drug Policy: Campaign for Medical Amnesty on Campus

2016

Students for Sensible Drug Policy: Petition Drop to Senator McConnell

2015-Present

Student's for Sensible Drug Policy at the University of Kentucky

President & UK Chapter Founder

Undergraduate Student Retention Committee, Lexington, Kentucky

University of Kentucky, College of Social Work

2011-2013

KASWE Planning Committee, Lexington, Kentucky

University of Kentucky

2007-2010

Psychology Club, Dayton, Ohio

Treasurer

Service to the Profession

Journal Peer Reviewer: *The American Journal on Addictions; International Journal of Offender Therapy; Comparative Criminology; Drug and Alcohol Dependence*

Mitigation in Capital Cases

2016 - 2017

Law 813: Capital Punishment, University of Kentucky College of Law (audited)

2015-Present

Capital Trial Defense Team Case Reviews: Kentucky' Department of Public Advocacy.

Capital Defense 101: Department of Public Advocacy, Frankfort, Kentucky. April 2016-Present.

2013-2014

University of Kentucky: Preparing Future Faculty

2013

KVC/Diversion and FPP Service Training

2012

KVC/Trauma Systems Training

Motivational Interviewing Fidelity Training