2019

Survey of U.S. Undergraduate Self-Reported Opioid Diversion and Heroin use, Motives, Sources, and Collective Efficacy as Mediating Factors

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Abstract

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by

Mark F. Plaushin

MDiv, DeSales School of Theology, 1989

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Policy and Administration (Emergency Management)

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February 2019

Abstract

Epic morbidity and mortality, and intractability make prescription opioid diversion a wicked problem. Meanwhile, college undergraduates are vulnerable to opioid misuse and its consequences. The purpose of this quantitative study was to assess U.S. undergraduate students' opioid misuse and the relationship between mediating factors. The study's theoretical framework rested on Wakeland's et al. opioid system model and Shaw and McKay's social disorganization theory. This study bridged the gap, measuring collective efficacy and testing its relationship to undergraduate decisions to regulate misuse. Thus, research questions focused on gauging the problem's scope and assessing relationships between factors that drive or potentially regulate diversion. The Campus Opioid Diversion Survey, designed for this study, was administered to a nonrandom, undergraduate survey panel (N = 434), revealing past year opioid misuse at 6.9% and heroin use at 2.9%. While a chi-square test revealed no significant relationship between motives and sources for misuse, significant relationships were found between filling a prescription for opioids and misuse, between opioid and heroin use, and between observing the negative consequences of misuse and social action. An independent samples *t*-test showed a significant relationship between collective efficacy and social action. Findings show campus diversion remains an emerging health and safety issue, but that collective efficacy indicates a capacity for regulation. Anticipating misuse, public safety stakeholders should complement responses to diversion schemes with continuous assessment, communications that empower student-citizens, and focused promotion of social cohesion that will fuel mitigation via social action aimed at social change.

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Dedication

To mom, dad, family, friends, and my brothers and sisters who also support and defend…

Acknowledgments

Thank you to Mark Stallo, Ph.D., Richard Worch, Jr., Ph.D., and Olivia Yu, Ph.D. who served on my committee. To friends and family, who supported me during the lows and highs. To the members of my peer review panel: Tammy Carter-Tenaglia, Mike Cram, John Fisher, John Grogan, Joe Kane, Al Lamperti, Bill Lorman, Bob Mulligan, Joe Nines, Bob Ryan, and Susie Thornton. Their patient effort helped me focus on what was important and their attention to detail and enthusiasm were undiminished over the long haul. To my formal and informal consultants, who relieved me of many worries. To my Oblate confrères and the Veterans Administration, who stepped in when others faltered. Last, I acknowledge my indebtedness to the scholar-practioners who appear in cites and References. They have always seemed as conversation partners.

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Chapter 1: Introduction to the Study

Introduction

Wicked problems are public policy issues that stymie public policy leaders, because they are "complex, intractable, open-ended, unpredictable" (Head & Alford, 2017, p. 397). Spurred by a robust, coast-to-coast prescription diversion economy, few public safety issues can be thus better described than the U.S. opioid epidemic. Because college campus communities host a population of young men and women whose dynamic transition into adulthood is weighted by the chores and hopes intrinsic to "self-definition and identity" (Hiester, Nordstrom, & Swenson, 2009, p. 521), drug use on campus is more than an academic concern and highlights campus prescription opioid diversion within the larger prescription diversion dilemma. Several factors affect the intransigence of campus diversion schemes.

Unlike street drugs (Schedule I), prescription opioids (Schedule II) have legitimate clinical uses, and therefore their manufacture and distribution are of substantial economic interest to legitimate and illegitimate pharmaceutical entrepreneurs (Holloway & Bennett, 2012; Mazumdar, Mcrae, & Mofizul Islam, 2015). Second, undergraduates are part of an age cohort that is susceptible to misusing alcohol or other drugs (Arria et al., 2008; Arria, Caldeira, Vincent, O'Grady, & Wish, 2008; Brandt, Taverna, & Hallock, 2014; Daniulaityte, Faick, & Carlson, 2014; Substance Abuse and Mental Health Service's Administration [SAMHSA], 2016c; Tapscott & Schepis, 2013). Third, opioid misuse, woven into the personal dilemmas that set conditions for drug abuse or addiction, can be exacerbated by misconduct under the influence, concomitant with alcohol or other drug use, or as prequel to heroin use (Compton, Boyle, & Wargo, 2015; Ford, Sacra, &

Yohros, 2017; Inciardi, Surratt, Lugo, & Beard, 2009; Jones, 2013; Jones, Mack, & Paulozzi, 2013; Rudd, Aleshire, Zibbell, & Gladden, 2016). It follows that the distribution of these drugs comes with an accepted level of inherent risk (Carlisle-Maxwell, 2011; Reisman, Shenoy, Atherly, & Flowers, 2009; Soledad Cepeda, Fife, Chow, Mastrogiovanni, & Henderson, 2012; Van Zee, 2009).

In my assessment of opioid diversion among undergraduates on U.S. higher education campuses, I tapped the experience of a motivated, undergraduate sample to gauge the scope of misuse, assess the factors that mediate misuse, and estimate the potential of campus collective efficacy as regulating diversion. The intent was a fresh take on a wicked problem—expanding the knowledge base and increasing awareness of the social cohesion that can empower student-citizens to act on behalf of others affected by opioid misuse.

In this chapter, I present the scope of work, summarize the literature, explain the relationship between the proposed study and extant research, and then turn to the purpose of the study. After stating the research questions and hypotheses, I outline the project's theoretical framework. I then present an argument for the quantitative survey approach, and explain relevant definitions, prequel assumptions, and delimitations or limitations. In the final section, I detail the study's significance for public policy and safety praxis.

Background

Americans live in a pharmacological environment, with 4.1 billion retail prescriptions filled during 2017 (Henry J. Kaiser Family Foundation, 2019). Also, the growing phenomenon of polypharmacy was indicted in prescribing statistics for 2011 to 2014: 48.9% of the population took at least one prescribed drug during the last month,

23.1% took three or more, and more than one in 10 Americans (11.9%) used five or more prescriptions. (U.S. Department of Health and Human Services [HHS], 2016)

Drug diversion, understood as diverting prescription drugs from their intended purpose or manner of use, has received attention in the literature from health care or criminological researchers or commentators. Its socio-economic impact is woven into its implications for public health and safety (Centers for Disease Control and Prevention [CDC], 2018a, 2018b; Florence, Luo, Xu, & Zhou, 2013; Gilson & Kreis, 2009; Hansen, Oster, Edelsberg, Woody, & Sullivan, 2011; Heron, 2013; Inciardi & Cicero, 2009; U.S. Department of HHS, 2016; Voon & Kerr, 2013). The epidemic nature of opioid misuse has generated a robust response. Task forces have been formed, research undertaken, studies authorized, films filmed, and grants awarded. An abundance of empirical data, broadcast through both peer-reviewed and popular literature has raised awareness about the issue. In February 2019, Google returned 37,800,000 results for *opioid crisis*.

The national consensus is that prescription diversion poses economic, health, safety, or social risks for individuals, communities, and the nation (HHS 2016; Kirson et al., 2017; Ryan, 2018; Voon & Kerr, 2013). Based on trend analysis of aggregate data through 2014, Rudd, Aleshire, Zibbell, and Gladden (2016) concluded:

> Opioids, primarily prescription pain relievers and heroin, are the main drugs associated with overdose deaths. In 2014, opioids were involved in 28,647 deaths, or 61% of all drug overdose deaths; the rate of opioid overdoses has tripled since 2000. The 2014 data demonstrate that the United States' opioid overdose epidemic includes two distinct but interrelated trends: a 15-year increase in overdose deaths involving

> prescription opioid pain relievers and a recent surge in illicit opioid overdose deaths, driven largely by heroin. (para. 1)

Meanwhile, scholars and practioners have found college undergraduates fall within an age cohort vulnerable to substance misuse, including prescription opioid diversion (Arria et al., 2008; Arria, Caldeira, Vincent, O'Grady, et al., 2008; SAMHSA, 2016c).

Despite nationwide attention, diversion continues to manifest as a critical and persistent public safety issue for higher education communities (Lipari & Jean-Francois, 2016; McCabe, Teter, & Boyd, 2005; McCabe, Schulenberg, O'Malley, Patrick, & Kloska, 2013; McCabe, West, Teter, & Boyd, 2014; Zullig & Divin, 2012). The link between substance abuse and disorder or health issues that concern higher education public safety stakeholders has been investigated by researchers who consistently cited the injurious effects of opioid misuse on student-citizens and the school community, as well as the persistent threat such use presents to public well-being. (Arria, Caldeira, Vincent, et al., 2008; Arria, Garnier-Dykstra, Caldeira, Vincent, & O'Grady, 2011; Carlisle-Maxwell, 2011; National Institute on Drug Abuse [NIDA], 2011; Seth, Scholl, Rudd, & Bacon, 2018; Southern Illinois University Carbondale Core Institute, 2014; SAMHSA, 2014).

For one thing, college students are developmentally disposed to factors which may set conditions for alcohol or other drug misuse (Dennhardt & Murphy, 2013). Likewise, they may be more vulnerable to psychiatric conditions that facilitate addiction (Blanco et al., 2008) and suffer subsequent deterioration of mental or physical health (Arria et al., 2008; Arria, Caldeira, Vincent, et al., 2008; 2011; Carlisle-Maxwell, 2011; SAMHSA, 2014, 2016c, 2017). More recently, morbidity and mortality data indicate an

opioid misuse-to-heroin use trajectory (Compton, Boyle, & Wargo, 2015; Inciardi, et al., 2009; Jones, 2013; Jones et al., 2013; Rudd, Aleshire, Zibbell, & Gladden, 2016). Ultimately though, the effects of substance abuse are found in the reflection that abuse and associated acting-out may estrange participants or victims from the fullness and richness that should characterize their collegiate experience (American College Health Association, 2007). For these reasons, this project was an apt response to a wicked problem, made even more complicated by overlapping factors in the physical and moral domains. While like studies that applied disorganization theory to campus delinquency, it is original in its focus on collective efficacy as potentially mediating campus opioid misuse.

Inciardi, Surratt, Lugo, and Cicero's (2007) description is useful in understanding the diversion scheme's physical environment as consisting of times, places, and people tangled in its economic transactions:

> Prescription drug diversion involves the unlawful channeling of regulated pharmaceuticals from legal sources to the illicit marketplace, and can occur along all points in the drug delivery process—from the original manufacturing site, to the wholesale distributor, the physician's office, the retail pharmacy, or the patient. (p. 1)

But diversion also functions in a moral domain, which is characterized by the value perspectives of actors who make decisions to participate in, disregard, or regulate the diversion scheme. In developing a dynamic opioid system model, Wakeland, Nielsen, and Schmidt (2012) explained that "interactions among these actors result in chains of causal relationships and feedback loops in the [opioid] system" (p. 2).

With this model in mind, I have provided a bi-domain assessment of forensic indicators for diversion. I determined pervasiveness of diversion among undergraduates and tested possible links between several factors that mediate diversion. The effort to measure collective efficacy as mediating campus opioid diversion provides a useful look at how social ties or cohesion may increase the capacity of student-citizens for focused, actionable participation in re-solving the wicked problem of opioid misuse.

Problem Statement

Data have consistently revealed that undergraduates are part of an age cohort particularly susceptible to nonmedical opioid use or to suffer the unanticipated consequences of misuse (Arria et al., 2008; Arria, Caldeira, Vincent, et al., 2008; Arria, Garnier-Dykstra, et al., 2011; Carlisle-Maxwell, 2011; Compton & Volkow, 2006; Erinoff, Compton, & Volkow, 2004; Hamilton, 2009; Volkow, 2010; McCabe et al., 2014; SAMHSA, 2014, 2017; Zullig & Divin, 2012). In 2017, youth substance abuse trends demonstrated that illicit drug use was highest among college students (42%) and among all those ages 19 to 28 years (41%) (Schulenberg et al., 2018). Acknowledging that most youngsters have their first opportunity to experience a comprehensive range of drugs in college (Allen, 2013), opioid pain reliever diversion on campus requires special attention (Andes, Wyatt, Kiss, & Mucellin 2014).

In this study, I addressed the need to better understand the complexities of opioid diversion among U.S. undergraduates and factors that drive misuse or its regulation within the diversion economy's moral and physical domains. Although previous studies examined components of the moral domain relating to risk and protective factors (e.g.,

the mediating influence of peer or family approval, counter-drug abuse messaging, or religious beliefs), I considered collective efficacy as potentially regulating diversion.

Purpose of the Study

My intent in this study was a straight-forward description of opioid diversion and an assessment of factors mediating opioid misuse within the diversion economy's physical and moral domains. Using the Campus Opioid Diversion Survey (CODS), a web-based instrument I designed for this study, students self-reported their experience or observations of opioid diversion and assessed campus social ties or cohesion. Data from the survey enabled an examination of key relationships between mediating factors, including the relationship between campus collective efficacy and respondent-actors' decision to regulate diversion.

Variables included misusing opioids during the last 12 months (independent or dependent variable); having filled a prescription for opioids during the last 12 months (independent); having given, sold or traded opioids (dependent); motives for misusing opioids on the last occasion of misuse (independent); sources for opioids misused on the last occasion of misuse (dependent); heroin use during the last 12 months (dependent); observing disorder and attributing it to opioid misuse (independent); collective efficacy (dependent); and regulating opioid diversion (dependent or independent).

Besides describing the ambit of opioid diversion, the significance and strength of potential links between several mediating factors were explored: between having filled a prescription and later misusing opioids or heroin use; between sources and motives resourcing misuse; between observing disorder attributed to opioid misuse and regulating diversion; and between social efficacy and regulating diversion.

Research Questions and Hypotheses

This study's questions and hypotheses reflect Creswell's (2009) suggestion for quantitative projects that combine descriptive and inferential inquiry.

RQ1: How pervasive is opioid diversion among U.S. college undergraduates? Descriptive statistics were used to characterize the scope of diversion.

RQ2: What is the relationship between the motive undergraduates self-report for misusing opioids and their self-reported source for misuse?

I used the chi-square test for significance and Cramer's *V* for strength of association between misusing opioids (independent variable) and the source for the misused opioid (dependent variable).

$H_0$2: There is no significant relationship between the reason for an undergraduate's opioid misuse and the source for misuse.

H_A2: There is a significant relationship between the reason for an undergraduate's opioid misuse and the source for misuse.

RQ3: What is the relationship between having filled a prescription for opioids and misusing opioids?

I used the chi-square test for significance and Cramer's *V* for strength of association between having filled a prescription for opioids (independent variable) and misusing opioids (dependent variable).

$H_0$3: There is no significant relationship between having filled a prescription for opioids and misusing them.

H_A3: There is a significant relationship between having filled a prescription for opioids and misusing them.

RQ4: What is the relationship between self-reported opioid misuse and self-reported heroin misuse.

$H_0$4: There is no significant relationship between self-reported opioid misuse and self-reported heroin misuse.

I used the chi-square test for significance and Cramer's *V* for strength of association between opioid misuse (independent variable) and heroin use (dependent variable).

H_A4: There is a significant relationship between self-reported opioid misuse and self-reported heroin misuse.

RQ5: What is the relationship between attributing observed disorder to opioid misuse and regulating opioid misuse?

I used the chi-square test for significance and Cramer's *V* for strength of association between having observed disorder attributed to opioid misuse (independent variable) and regulating diversion (dependent variable).

$H_0$5: There is no significant relationship between attributing observed disorder to opioid misuse and regulating opioid misuse.

H_A5: There is a significant relationship between attributing observed disorder to opioid misuse and regulating opioid misuse.

RQ6: What is the relationship between campus social efficacy and regulating misuse?

The potential link between social efficacy on campus (dependent variable) and regulation (independent variable) was tested using an independent samples *t*-test.

$H_0$6: There is no significant relationship between campus social efficacy and regulating misuse.

H_A65: There is a significant relationship between campus social efficacy and regulating misuse.

Theoretical Foundation

This study's theoretical facets hinged on the premise that opioid diversion is an eco-social activity. The adverse effects of opioid misuse within the community and attributed incivilities or misbehavior are documented. Like any product that flows through the community's life blood, nonmedical opioid consumption is regulated by supply and demand. To flourish, it requires eco-social interface between actors who form a distributive system (Wakeland, et al., 2012; Wakeland et al., 2013). Therefore, Wakeland's et al., (2012, 2013) opioid system model and Shaw and McKay's disorganization theory, which explores the ecological, schematic, and dynamic nature of human community, disorder, or reordering provided the study's theoretical platform.

Disorganization theory was founded in research conducted by the Chicago school during the 1920s and 1930s and which sought to grasp the delinquency phenomenon in U.S. urban communities. Much early work focused on migrant or immigrant neighborhoods. In their study of Polish immigrant acculturation in U.S. urban centers, Thomas and Znaniecki (1920) defined *social disorganization* as the "decay of existing social rules of behavior and institution" (p. 165). Through the decades, social disorganization research and theory evolved into a more general enthusiasm for ecological approaches to urban sociological and criminological issues. Yet, despite many

reformulations, the theory still hinges on discerning the relationship between the community, its values, and individual criminality.

Social disorganization theory's algorithm proposes that impoverished neighborhoods tend toward heterogeneity triggered by high population turnover. Heterogeneity creates social instability, which in turn, enfeebles the neighborhood's social ties and disables social cohesion (Shaw & McKay, 1942/1969). Without robust social ties and cohesion, collective efficacy collapses, manifested in the inability of the "group to regulate its members according to desired principles—to realize collective, as opposed to forced, goals" (Sampson, Raudenbush, & Earls, 1997, p. 918). In other words, insufficient collective efficacy is signaled in the loss of the informal social controls needed to regulate unwanted behavior in the neighborhood, thus, yielding a higher crime rate (Cantillion, Davidson, & Schweitzer, 2002).

Although copious amounts of disorganization theory research keyed on the disorganizing process in poor neighborhoods, it was heterogeneity, not eco-social deprivation itself, that was seen to set conditions for disorganization (Shaw & McKay, 1942/1969; Bursik, 1988). Now, few communities are as heterogeneous as college campuses (Barton, Jensen, & Kaufman, 2010). With moves, transfers, dropouts, matriculation, or graduation, theoretically, a significant portion of the undergraduate population morphs each year.

However, the implications for the community's public policy and safety stakeholders are found in the potential role that collective efficacy can play in stemming crime or disorder, given the campus's population shifts. Cordner (1995), for example, in a seminal digest on community policing, argued that:

> Neighborhood-level norms and values should be added to the mix of legal, professional, and organizational considerations that influences decision-making about policies, programs, and resources at the executive level as well as enforcement-level decisions on the street. (p. 2)

The college campus, as a type of community, is energized by competing norms and values. The question was whether campus collective efficacy propelled student-citizens to social action—the regulation of opioid diversion.

Social disorganization theory suggests that a consistent and prevalent failure of individuals to support neighborhood-level norms and values through direct action contributes to community disorder. Conversely, the decision to act is an important step toward a safer and healthier community. The theory suggests that conditions that favor collective efficacy and the regulation of disorder are nourished through maturing social ties or cohesion. (Sampson et al., 1997)

Meanwhile, the evolution of opioid misuse, a segment of the larger prescription drug diversion issue, into a national, public policy and safety crisis was partly explained by Conrad (2005) as a byproduct of medicalization, understood as "defining a problem in medical terms, usually as an illness or disorder, or using a medical intervention to treat it" (p. 3). Forged under the pressure of "complex social forces," (p. 3) opioid misuse and its disordering effects on the community has become a significant social issue (McHugh, Nielsen, & Weiss, 2015; Phillips, 2013), warranting its designation as a wicked problem.

Conceptual Framework

In this study, I articulated the scope of campus opioid diversion in the physical and moral domains. CODS data helped assess the pervasiveness of diversion within the

undergraduate sample, helped demonstrate the importance of locating structures that shaped the diversion scheme, and contributed to a better understanding of the capacity of individual students to regulate diversion. Here, I provide a list of variables within the physical and moral domains and conceptualize collective efficacy.

Physical Domain

Variables within the physical domain that clarify transaction patterns traditionally associated with opioid misuse include: (a) having filled a prescription for painkillers, (b) personal misuse; or (c) giving opioids away, or trading, or selling them; (d) sources for opioids that are misused, and (e) heroin use.

Moral Domain

Variables within the moral domain variables that aid in understanding decision-making which rationalized misuse or inspired its regulation include: (a) motives for misusing opioids, (b) associating observed negative outcomes with opioid misuse, (c) collective efficacy, and (d) regulation.

Collective Efficacy

Collective efficacy served as a dependent variable at the interval level of measure. Respondents were asked to use a Likert scale ([5] strongly agree, [4] agree, [3] neither agree or disagree, [2] disagree, [1] strongly disagree) to indicate their level of agreement with eight statements indicating social cohesion or social ties. The average of the eight Likert values represented the participant's collective efficacy score. Students responded to the following eight cues:

- If I was concerned about my alcohol, opioid or other substance use I am confident that my school has staff available to help me.

- Students at my school are concerned about the negative impact opioid use has on other students.
- Students at my school help other students who struggle with opioid, alcohol, or other drug addictions.
- Students at my school are concerned for each other's health and welfare.
- Students at my school will report other students who are making too much noise to the Resident Advisor or other campus or local authorities.
- Students at my school will report other who are having a health emergency to the Resident Advisor or other campus or local authorities.
- Students at my school discussed the issue of opioid, alcohol, or other drug use.

Likert scales are often used to clarify respondent value perspectives in drug use research (Ashrafioun & Carels, 2014; Cantillion, et al., 2003; Lord, Brevard, & Budman, 2011; Moore, Burgard, Larson, & Ferm, 2014) or in research designed to gauge collective efficacy (Hipp, 2016; Jones & Adams, 2018; Xu, Fielder, & Flaming, 2005).

Regulation, meanwhile, refers to a social action aimed at mitigating unwanted behavior and which is theoretically empowered by collective efficacy (Sampson, et al., 1997). Given survey participants' age and assumed inexperience in treating community disorder among peers, social control options were limited to discussing another person's opioid misuse with a family member or friend, discussing it with a member of the school staff, discussing it with a professional who was external to the school community, or discussing it directly with the affected person, or in deciding to avoid an individual who misused opioids. Alternatively, the respondent could have reported taking no action.

Nature of the Study

I accumulated data from 434 U.S. undergraduates using a nonrandom survey panel. Although qualitative studies played a significant role in understanding opioid diversion and the factors that contribute to it (Daly, 2014), quantitative, cross-sectional or longitudinal, survey-based studies are more common in the literature. Taylor (1999) noted that surveys are a common and useful methodology used in policy driven studies of community disorder and that they are valuable tools for focusing on community "dynamics" and "capture residents' current views" (p. 82). Bynum (2001) recommended surveys as "a relatively low-cost option for obtaining problem-solving information" (p. 24) and indicated their usefulness for gathering data about "perceptions of the community" and "perceptions of and concerns about specific problems" (p. 25).

Web-based surveys are efficient, given temporal and economic limitations. Data are amenable to efficient organization and analysis and a survey also allows broad, anonymous participation—a prerequisite to candor in treating a topic with potential stigma (Fowler, 2009; Frankfort-Nachmias & Nachmias, 2008; Nardi, 2014; Rea & Parker, 2005).

A survey panel assured enough responses for useful analysis. CODS was hosted on the SG platform and undergraduate members of the SurveyGizmo (SG) panel were sent an email with a link to CODS by SG's panel services inviting their participation. When respondents submitted their survey, their data directly transferred to the SG platform for collation and analysis.

Key measures included: misusing prescribed opioids during the last 12 months (independent or dependent variable); having filled a prescription for opioids during the

last 12 months (independent); having given, sold or traded opioids (dependent); motives for misusing opioids on the last occasion of misuse (independent); sources for opioids misused on the last occasion of misuse (dependent); heroin use during the last 12 months (dependent); observing disorder and attributing it to opioid misuse (independent); collective efficacy (dependent); and regulating opioid diversion (dependent or independent).

Several factors that could mediate diversion were selected and the relationships between these factors were tested: between having filled a prescription and later misusing opioids or heroin use; between sources and motives resourcing misuse; between observing disorder attributed to opioid misuse and regulating diversion; and between social efficacy and regulating diversion.

Definitions

Collective efficacy: An independent variable, referring to "social cohesion among neighbors combined with their willingness to intervene on behalf of the common good" (Sampson, et al., 1997, p. 918). Collective efficacy is manifested in some level of expressed unity of purpose around an issue and social control actions intended to regulate unwanted behavior. Thus, it is "the capacity of a group to regulate its members according to desired principles—to realize collective, as opposed to forced goals" (Sampson et al., 1997, p. 918).

Disorder: An independent variable, referring to observed criminality, unwanted behavior, delinquency, or the like attributed to opioid misuse: poor decision-making, life-unmanageability, inappropriate behavior, risk-taking, misuse of other drugs, health issues, or negative relationship changes to pain reliver misuse.

Diversion: A dependent or categorical variable was defined as. Inciardi, Surratt, Lugo, & Cicero (2007) provided a useful working definition:

> Prescription drug diversion involves the unlawful channeling of regulated pharmaceuticals from legal sources to the illicit marketplace, and can occur along all points in the drug delivery process—from the original manufacturing site, to the wholesale distributor, the physician's office, the retail pharmacy, or the patient. (p. 1)

Diversion includes personal misuse as well as giving, selling, or trading prescription opioids to others.

Domain: Domains are distinguishing components within a system or construct. In this study, the physical domain is the corporeal sphere of action and the focus is on the elemental persons, places, and things that constitute opioid diversion or its regulation. The moral domain refers to the meta-physical array of value perspectives that shape decision-making, whether it is the rationale for misusing opioids or the social ties and social cohesion that stimulate collective efficacy. Following Brantingham and Brantingham's (2004) discussion of "routine activities and the rhythms of life" (p. 259) inherent in environmental criminology, deconstructing the diversion economy into domains simplifies the study given a phenomenon's "etiologically complex patterns of behaviors" (p. 260).

Filling a prescription for opioids: This independent variable refers to respondents self-reporting they filled a prescription for opioids prescribed for them by a clinician in the last 12 months.

Heroin use: A dependent variable referring to self-reported use of heroin during the last 12 months.

Motive for misuse: An independent variable, it is the respondent's rationale for using prescription opioids non-medically on the last occasion of misuse. Motives frequently ascribed for misuse are pain management or recreation (Benotsch et al., 2011; Daniulaityte et al., 2014; McCabe, Cranford, Boyd, & Teter, 2007).

Opioid misuse: This independent or dependent variable is defined as "using them without a prescription, or in some way other than was prescribed, or 'for the experience or feeling it causes'" (SAMHSA, 2017, Prescription drug misuse or abuse, overview). Misuse is a dependent variable in relation to having filled a prescription for opioids and an independent variable in relation to heroin use.

Regulation: This dependent variable is defined as mitigation of misuse or other socially undesirable conduct to achieve *collective* goals associated with community safety, security, or well-being (Sampson et al., 1997).

Social control: "The capacity of a group to regulate its members according to desired principles—to realize collective, as opposed to forced goals" (Sampson et al., 1997, p. 918). Within the context of collective efficacy such control is informally executed, as opposed to more formal controls applied by institutions such as law enforcement.

Social control action: Informal actions aimed at "preventing unwanted behavior" (Wickes, Hipp, Sargeant, & Mazerolle, 2017, p. 102) such as "banishment, humiliation," "gossip, scolding," expressions of "disapproval," or "mediation" (Black, 1984, p. 5).

Source for misuse: A dependent variable, this refers to the person from whom the respondent received the opioids used non-medically on the last occasion of misuse. Friends and family are common sources for misused opioids (Daniulaityte et al., 2014; Carlisle-Maxwell, 2011; Ford & Lacerenza, 2011; McCabe et al., 2007; Center for Behavioral Health Statistics and Quality [CBHSQ], 2018).

Assumptions

I conducted this study using a quantitative survey methodology with two assumptions. First, given the wealth of data about the prevalence of prescription opioid misuse within the undergraduate age cohort across the nation, I assumed that some number undergraduate panelists experienced or observed opioid misuse. Second, undergraduates would be willing to honestly self-report their experience or observations of opioid misuse and their value perspectives in an on-line survey if they were provided anonymity and privacy.

Scope and Delimitations

The analytical scope was limited to analyzing prescription opioid misuse and heroin use among undergraduates. Undergraduates are traditionally freshmen, sophomores, juniors, or seniors, or are comparably categorized. In this case, men and women who terminated or graduated from an undergraduate program within the last 12 months were included. Non-undergraduate students or undergraduates not yet age 17 were disqualified from participation.

Besides examining the scope of campus diversion, this study had a useful focus on campus collective efficacy, and thus yielded a fresh assessment of a wicked problem that has challenged public policy and safety practioners.

Limitations

Survey data may be subject to potential incompleteness, inaccuracies, or deceit (Nardi, 2014; Patton, 2015). Efforts to minimize these factors were important steps in survey development and effective use. This survey benefited from a rigorous development process that included piloting and oversight by a peer review panel consisting of educational, law enforcement, and social and health science practioners. Meanwhile, the use of a commercial panel secured full participation by respondents. Full, honest participation was encouraged by amplifying the contribution participants could make toward the health, safety, and well-being of their co-collegians.

A nonrandom sample was used based on logistical contingencies. Nonetheless, Uprichard (2013), in her discussion on social research design, noted that the decision to use a probability or non-probability sample is not as important as having clarity about why a particular sample was selected and whether the sample can "potentially be able to be used to know more about the particular part of the world that is implied in the research questions" (p. 5). Similarly, Schreuder, Gregoire, and Weyer (1999) suggested that any sample type can be useful when trying to grasp a problem's parameters. This study benefited from a rigorous validating process and its findings were consistent with other studies indicated in the literature.

Significance of the Study

Higher education community leaders and public safety stakeholders confront a complex and persistent threat in prescription opioid diversion. (Kenne, et al., 2017; Meshesha, Pickover, Teeters, & Murphy, 2017) While recognizing that recreational substance use is frequently associated with youth transition into adulthood, research also

shows that abuse's disheartening consequences often color the college experience for many students (Bachman, Wadsworth, O'Malley, Johnston, & Schulenberg, 2013). However, opioid misuse, as a category of all alcohol or other drug abuse, has been characterized as particularly lethal, has reached epidemic levels, and been implicated as prequel to heroin use. The common national experience, uneasiness, and subsequent discussion regarding prescription opioid misuse are well documented (Dennhardt & Murphy, 2013).

Researchers and practitioners have continued to engage the threat posed by diversion. This is evident in the myriad educational, public health, and enforcement initiatives that aim at preventing, responding to, or recovering from the impact of opioid misuse. But, accepting Rittel and Webber's (1973) conclusion that wicked problems cannot be solved, only re-solved, the significance of this study is discovered in highlighting the potential influence of collective efficacy for positive social change within the campus community.

Because adolescents or young adults are accomplishing unique and compelling developmental tasks and are assumed to be more likely to initiate drug use in school, public policy, health, and safety professionals have focused on "prevention, early intervention, and reduction of harms" as opposed to the "intensive treatment" strategies associated with older "dependent users" (Stockings et al., 2016, p. 280).

Because these strategies cultivate the moral imperative for a healthy lifestyle, they key on providing youngsters the information or skills needed to make better decisions about consuming drugs. The theory is that the more information the individual has, the more likely he or she will avoid misuse. However, few studies have focused on the

communal strength that may be found in campus social networks that may cause students to decide on positive social control actions, thus regulating diversion. The current study supports such a complementary approach. The study, like many previous studies, confirmed the known—undergraduates are diverting opioids. While it did not yield a panacea, the study demonstrated a potential relationship between collective efficacy and social change through regulation.

The study had the advantage of an eco-social perspective that incorporated both the physical and moral domains within the diversion scheme but expanded on the traditional treatment of risk and protective factors associated with opioid misuse. My analysis of the CODS data provided grounds for further research into campus collective efficacy and, by extension, the potential for student-initiated, positive social action to mitigate opioid misuse and related social disorganization.

In discerning collective efficacy within a community, social disorganization theorists estimate communal capacity to mitigate disorder to explain why neighborhood crime rates differ. These studies, the current study included, asked survey respondents to reveal the quality of social ties or social cohesion that fuel collective efficacy. Generally, such studies show a significant relationship between eco-social disadvantage and a diminished capacity for collective efficacy—bad things happen in bad neighborhoods. In this study I focused on gauging the campus community's capacity to effect social change.

Campus public policy or safety leadership teams seek to develop ever more effective strategies for mitigating opioid or other substance abuse by supporting healthy value perspectives shaping the undergraduate's decision-making about misusing opioids or taking a positive social action to regulate diversion. This study showed that the

stronger the social ties or cohesion (collective efficacy), the greater the energy for social change.

The proved value of this study was found in the descriptive assessment of opioid misuse/diversion among undergraduates as a critical issue affecting community public health and safety, and its special focus on collective efficacy as sustaining a more robust sense of community.

Summary

University public safety stakeholders and researchers from various disciplines who promote community health and welfare identified opioid misuse as complex and persistent—a wicked problem. In this cross-sectional, quantitative study I assessed misuse among U.S. undergraduates using CODS and tested for significance of relationship between several variables: between motives and sources for misuse, between filling a prescription and misuse, between having misused opioids and heroin abuse; between having observed its negative impact on classmates and regulation; and, between collective efficacy and regulation.

An examination of the literature pertaining to opioid misuse and collective efficacy follows. The methodology is outlined in Chapter 3. Results are described in Chapter 4, and I conclude in the final chapter with a discussion of the study's implications, its strengths and weaknesses, and opportunities for continued research.

Chapter 2: Literature Review

Introduction

My purpose in this cross-sectional, quantitative study was to assess opioid diversion and important factors that mediate diversion among U.S. college undergraduates. While determining diversion's pervasiveness and identifying, locating, and assessing mediating factors, the study examined the potential of collective efficacy in regulating diversion.

Prescription opioid diversion is a wicked problem—a complex and persistent detriment to individual and communal health and well-being (Wakeland, et al., 2012, Wakeland et al., 2013). The Kaiser Family Foundation Health Tracking Poll (Kaiser, 2017), reported that "one in five Americans say they know someone who has died from prescription pain killer overdose" (para. 1). As an omnipresent feature of America's medicalized and recreational culture, opioid analgesics are a signal product whose distribution in legal or illegal marketplaces promises profit or peril (McHugh, et al., 2015; Poitras, 2012; Tompkins, Hobelmann, & Compton, 2017). Meanwhile, American youth are a uniquely accessible and exposed set of consumers (Meshesha, et al., 2017; NIDA, 2018).

In this chapter, I explain the literature search strategy and the study's footing in disorganization theory. I then compare scholarly approaches previously undertaken in the field. In the discussion that follows, I relate the literature to key variables and concepts.

Literature Search Strategy

Prescription drug or opioid diversion is an emerging issue. Scholars from criminology; law; student life theory; preventative, clinical, and restorative medicine and psychology; pharmacology and pharmacometrics; public policy and administration;

economics; education; and politics have contributed to the discussion. Primary databases that I accessed during the search included Academic Search Complete, Center for Problem Oriented Policing, Criminal Justice Periodicals, Google Scholar, Oxford Bibliographies Online: Criminology, Political Science: A Sage Full-Text Collection, Political Science Complete, ProQuest Central. Website subject matter expert (SME) databases included: American College Health Statistics, Bureau of Justice Statistics, Center on Addiction and Substance Abuse at Columbia University, Center on Drug and Alcohol Research, University of Kentucky, CDC, National Center for Health Statistics and Morbidity and Mortality Weekly Report, Department of Justice, Community Oriented Policing Services, Drug Enforcement Agency (DEA), International Narcotics Control Board, Narcotics.com, National Center for Campus Public Safety, National Criminal Justice Reference Service, National Institute on Drug Abuse, Office of National Drug Control Policy, Researched Abuse, Diversion and Addiction-Related Surveillance, SAMHSA, Treatment Research Institute, U.S. Department of Justice Archives, University of Michigan Substance Abuse Research Center, and the Police Executive Research Forum.

Key search terms included *campus drug abuse, campus policing, campus prescription drug abuse, collective efficacy, community policing (on college campuses), community-oriented-policing (on college campuses), college drug(s) diversion, and college opioid(s) diversion, crime analysis diversion, disorder, drug diversion, drug enforcement, drug policy, informal social control, opiate(s), opioid(s) diversion, opioid diversion theory, pain management, prescription drug diversion, prescription opioid(s) diversion, policing opioid diversion (on campus), prescription monitoring (programs),*

problem analysis, problem oriented policing, social control, and *social disorder and disorganization theory.*

New leads for inquiry were developed from article and website bibliographies. Google and Mendeley automatic notifications for news stories and scholarly articles about prescription opioid diversion were used. Articles and website data after 1996, the year Perdu Pharma released Oxycodone, were preferred. However, seminal articles, work by subject matter experts, or those offering critical data points or perspectives were included regardless of date.

Theoretical Foundation

Prescription opioid diversion occurs in a socio-economic system that evolves organically in assorted structures and mechanisms. For example, supply and demand are diversion's drivers and this connotes production, products, resources, distribution systems and transaction patterns. (Wakeland, et al., 2012; Wakeland et al., 2013) But, besides the diversion scheme's temporal environment, there are intangible factors—such as the motives offered for misusing opioids or selling them; and, then there are diversion's negative effects on individual or communal health. Thus, it is not inappropriate to think of diversion as a "multifaceted crisis" (Schuchat, Houry, & and Guy, 2017, p. 3) manifesting in two overlapping domains—the physical and the moral.

Diversion's bi-domain dynamics can be deduced in Wakeland et al.'s (2013) "opioid-related, complex systems" (p. 2) model. The model highlights the issue's intricate mechanics and its evolution into a wicked problem with incalculable social implications. Meanwhile, disorganization theory, provided an apparatus for examining the relationships between actors within the social system hosting a diversion scheme.

Dynamic Systems Model

Wakeland's et al. (2013) dynamics simulation model arrayed actors, agencies, indicators (e.g., number of overdose deaths), decision points, and their connections in three sectors: nonmedical, medical, and diversion, which thus constitute the "opioid system" (p. 75S). The authors then annotated "complex chains of influence and feedback loops" (p. 75S) between components and sectors and illustrated sophisticated "causal" loops encompassing relationships between the system's agencies, agents, behaviors, and the consequences of these behaviors on indicators.

The researchers found they could influence these chains or loops through discrete theoretical interventions and observe how these interpositions changed the dynamics of the system (Wakeland et al., 2013). By intervening at different "leverage" (p. 3) points within the model they were able to improve outcomes (e.g., reduce overdose deaths). A primary intervention was the simulated education of prescribers about the risk of over-prescribing opioids.

Thus, Wakeland et al. (2013) demonstrated that a diversion economy can be conceptualized as an ecology with identifiable communication or transactional "chains of influence" or "feedback loops" (p. 3). Now, building a dynamic, mathematical, manipulative model was beyond this project's scope; but, a similar ecological approach was favored to understand undergraduate opioid misuse in the context of the social ties or cohesion that affect collective efficacy.

Wicked Problems

Ecological or social dynamism are the roots of the issue's complexity and intractability. Such wicked problems "are complex, unpredictable, open ended, or

intractable" (Head & Alford, 2008, p. 712). However, it is not these features alone that earn opioid diversion its wicked designation. Rather, it is the problem's insolvability. Researchers Rittel and Webber (1973), in their seminal article on "dilemmas in a general theory of planning" (p., 155) postulated the properties of wicked problems and arrived at the hypothesis that such problems are never really solved but are continuously *re-solved*. There are several reasons for this that bear on diversion.

Such problems lack a definitive end-point; thus stakeholders are denied a sense of problem resolution. (Rittel & Webber, 1973) Based on NSDUH data, Vuolo et al. (2014) estimated that 1,600 young adults initiated nonmedical use of prescription analgesics each day. The diverging routes each of these young people take to misusing pain killers cannot be calculated or anticipated. Second, solutions to wicked problems cannot be easily categorized as right ot wrong. At best, solutions may be termed workable. (Rittel and Webber, 1973) And third, although a solution may be workable it is difficult to measure success since wicked problems are symptomatic of deeper issues. (Rittel and Webber, 1973). Wakeland, et al. (2012) found that:

> Complex social systems are well known to be resistant to policy interventions, often exhibiting unintended consequences or unanticipated sources of impedance (Sterman 2000). These undesirable outcomes can result from our inability to simultaneously consider a large number of interconnected variables, feedback mechanisms, and complex chains of causation (Hogarth 1987). (pp. 1-2)

Ackoff (1974), theorizing on systems approaches to social issues, recognized that such difficult questions represented "a set of interrelated problems" or a "system

of problems," or even more simply— "a mess" (p. 21). Thus, the disordering impact of misuse is an important focus in a community-oriented approach to the problem.

Social Disorganization Theory

The usefulness of social disorganization theory depends on describing community as a social ecology with formal or informal structures, mechanisms, or networks; wherein, value perspectives are sorted, shared, or shaped. Fueled by the social dilemmas *du jour*, community regulates the social energies of organization or disorganization toward "equilibrium of social order" (Park, 1925, p. 66). As an eco-social approach, it delves community environment and behavior.

From Wakeland et al. (2013) or Wakeland, et al. (2012) systems perspective, behavior can stimulate or regulate opioid diversion. Social disorganization researchers identify the variables that mediate disorganization within social networks. Such "network theorists try to map social structures, studying regular and enduring patterns of relation in the organization of social systems and analyzing how these patterns affect the *behavior* [emphasis added] of individual members" (Bernardi, Gonzalez, and Requena, 2011, p. 164). Thus, identifying behavioral loops or relationships is an important step in adapting Wakeland, et al. (2012) and Wakeland et al.'s (2013) systemic analysis to affected communities and in understanding how disorganization theory can explain undesirable behavior within the community.

McMillan and Chavis (1986), following Gusfield (1975) defined community as both geographic and relational; the latter referring to the "quality of character of human relationship, without reference to location" (p. xvi). Social disorganization research

investigates the quality of relationships within a community and correlates this "sense of community" (p. 9) with disorder or criminality. Campus communities, like any, can be located and its relational networks and collective sense of community studied.

Across disciplines, social disorganization theorists examined the collective sense of efficacy that potentially mediated problematic behavior in favor of social order. (Hipp, 2016) Community psychologists, Chavis and Newbrough (1986), for example, identified emotional bonding and mutual support as variables relating to community health. Iscoe (1974) used the ideal of the "competent community" (p. 697); guided by rational, "coping" (p. 608) people who proactively engage issues affecting the community's well-being. (p. 608)

Theorists accepting the validity of an eco-social approach see social networks as constituted of "organized or ordered," relationships, "regular or recurring behaviors," and the "various ways these "regularities…condition…many social choices and behaviors" (Bernardi, et al., 2011, p. 165). Thus, Bernardi, et al., arrived at the crucial question for researchers: what is the relationship between social structure and "the action of individual actors" (p. 167)? Identifying and testing variables that operationalize these concepts has evolved within social disorganization theory and undertaken in this study.

During the last half of the 19th century researchers in Europe documented differences in crime rates from one neighborhood to another. In the early 20th century these studies, influenced by the Chicago school, became the platform for many sociologists or criminologists investigating the phenomenon of juvenile delinquency in relation to the juvenile's (usually male) environment, as in Breckenridge and Abbot's (1916) on the *Delinquent Child and the Home*. Or Burgess (1916), for example, looked

for the "influence of the neighborhood and the geographic environment" (p. 85) on variances in delinquency; and, Blackmar and Burgess (1917), mapped social conditions in Lawrence, Kansas neighborhoods. Many of early projects highlighted the plight of immigrants—an influx of whom were coming to the U.S. following World War I.

In their study of Polish immigrant acculturation in U.S. cities, Thomas and Znaniecki (1920), examined the impact of urban living on Poles whose previous environment had been agricultural. They noted that these immigrants transitioned from rural communities wherein all aspects of behavior were controlled to U.S. community's where such controls were weakened, and individualism celebrated. They thus contrasted the "demoralization" (p. 165) of the individual Pole with the group or community's "social disorganization," defined as the "decay of existing rules of behavior and institutions" (p. 165) within the larger community. This was reflected in "a decrease of the influence of existing social rules of behavior upon individual members of the group" (Thomas & Znaniecki, 1918-1920, p. 4).

The ideas of social disorganization and social control were taken up in various research projects. McKenzie (1921) defined "neighborhood" and looked for social and economic characteristics that paralleled delinquency in Columbus, Ohio. Park (1925), following Thomas and Znaniecki (1920), studied the disintegration of social control through "individualization" and the community's "disorganization" (p. 118). Thrasher (1927) examined 1,313 Chicago gangs as the product of neighborhood conditions. Shaw and McKay (1929, 1942/1969) examined "delinquency-producing factors" and "general processes" (p. 114) which contributed to delinquency in Chicago and 20 other American cities.

Initially the Chicago school's environmental approach isolated socio-economic factors (i.e. poverty). Indeed, it seemed that poorer neighborhoods that suffered greater disorganization, and therefore, a greater propensity for criminality. Poverty is an important factor as demonstrated by Oh (2005), but as Bursik (1988) points out, Shaw and McKay (1942/1969) did not theorize a causal link between "economic status and rates of disorder" (p. 520). Rather, they postulated that poor neighborhoods tended to generate "high rates of population turnover," (p. 520) and it was this "population heterogeneity" (p. 520) that thwarted a communal response to disordering behavior.

And, while Kubrin and Weitzer (2003) noted that disorganization theory focused on the place where crime occurred, as opposed to the type of person that committed crime, Shaw and McKay (1942/1969) concluded that delinquency was over-determined and that delinquents were forged, not so much by geography, as by the "operation of processes through which socialization takes place and the problems of life are dealt with" (p. 383). The critical disadvantages in disorganized neighborhoods were weak social ties and a lack of social cohesion, which they reasoned, diminished the capacity of neighbors to mitigate unwanted behavior or resolve "chronic problems" (Kubrin and Weitzer, 2003, p. 374).

In their detailed review of social disorganization theory, Cantillon, et al. (2003) suggested, that social disorganization and social organization are at opposite ends of a continuum, and at the disorganized end of the spectrum neighborhoods suffer from "weak social networks" that decrease their capacity to mitigate unwanted behavior (Kubrin and Weitzer, 2003, p. 374). Thus, social disorganization researchers perceived a relationship

between neighborhood disorder and the neighborhood's capacity to "realize common values" or "solve commonly experienced problems" (Cantillon, et al, 2003).

Park's (1925) cogent assessment that "delinquency is, in fact, in some sense the measure of the failure of our community organizations to function" (p. 106), highlights the theory's central formula: disorganization yields a dearth of social control, yields disorder. Park (1921) concluded: "Social control is the central fact and the central problem of society" (p. 42). And, Kubrin and Weitzer (2003) added that the critical "neighborhood mechanisms that reduce crime and disorder" are "social ties and the degree to which people exercise social control" (p. 376) through "purposive action" (p. 377). Wickes, Hipp, Sargeant, and Homel (2013) referred to collective efficacy in a similar manner as a "task specific process" (p. 116). Tasks could include, for example, "the social control of children" (p. 118).

Thus, while accounting for factors that tend toward disorganization, researchers are reciprocally assessing social organization as mediating lawlessness (Cantillion, et al., 2003) by measuring "informal social control, social ties, social capital, and collective efficacy" (Kubrin and Weitzer, 2003, p. 375)—the "intangible resources that facilitate social action for mutual benefit" (p. 377). (Kurbin & Weitzer, 2003; Thomas, 1918-1920; Sampson, et al., 1997)

Sampson, et al., (1997), whose work showed that collective efficacy mediated homicide rates in Chicago, provided the standard definition for collective efficacy as the "social cohesion among neighbors combined with their willingness to intervene on behalf of the common good" (p. 918). It is realized through informal social control; defined as

"the capacity of a group to regulate its members according to desired principles—to realize collective, as opposed to forced, goals" (p. 918).

Thomas (1918-1920), in recapitulating social control's intellectual tradition, distinguished between social control as communal enterprise versus social coercion; the latter ultimately resting on the threat or use of force (e.g., police powers). Rather, social control hinges on an ethics that supplants "economic self-interest" (p. 83) in favor of social forces uniting on a "shared value position" to achieve a common "ideal" (p. 84). Characteristically, this shared, communal commitment orbits "moral and collective goals" (p. 84). Thus, the importance of understanding social control as regulation—an informal mediation through social acts of behavior at variance with the ideal. It implies a type of social analysis that then compels social change on behalf of the commonweal. (Thomas, 1918-1920)

Social disorganization theory research has contributed to social analysis, but there are challenges. Kubrin and Weitzer (2003), for instance, provided useful correctives and cautions for the use of terms and phrases in social disorganization research to increase precision in operationalizing variables; something the authors saw as sometimes lacking in social disorganization literature. They urged analytical models that incorporate "intraneighborhood and extraneighborhood factors" (p. 375) and the relationships between them (p. 375). And, while not discounting cross-sectional research, they suggested that longitudinal studies will facilitate greater precision by allowing researchers to observe how variables change over time.

Kornhauser (1978) provided an intense appraisal of social disorganization methodologies and what the author perceived as a focus on irrelevant socio-economic

variables. Kornhauser's critique of Shaw and McKay's (1929/1969) study on Chicago delinquency centered on an assessment that their research lacked empirical rigor and that their conclusions were illogical. Although generally suspect of social research as imprecise, Kornhauser nonetheless suggested a focus on cultural factors contributing to delinquency over socio-economic factors. Although not explaining how cultural factors would be operationalized with greater precision, Kornhauser's argument for increased precision in methodology is a recurring theme in literature reviews (Kubrin and Weitzer, 2003).

Two projects demonstrate the tension between innovation and the importance of methodological care. Barton et al. (2010) looked at social disorganization in the college campus community and social organization as a "mediating factor" (p. 245) *vis a vis* campus crime. Using a large national sample, Ford et al. (2017) focused specifically on social disorganization as a factor in prescription drug diversion.

Barton et al. (2010) used an innovative research design in their study of the relationship between social disorganization and campus criminality. Using a small national sample of colleges, the variables included: demographic enrollment data, "heterogeneity," "relative disadvantage," "residential instability," and "campus organization" (p. 249). They assessed the effects of campus structures (variously defined) on violent and property crime but, depended solely on aggregate demographic and crime data. The authors had suggested that collective efficacy, following Sampson et al. (1997), is "a combination of community cohesion and organization participation" (p. 247), therefore, they operationalized collective efficacy, in part, as membership in campus organizations. However, Sampson et al. actually operationalized collective efficacy by

gauging social control using the customary series of Likert scale cues (not aggregate data) in 8,732 interviews. They only used organizational membership, derived from an alternative theory, as a point of comparison. Barton's et al. results were ambiguous and not generalizable. Here, Kornhauser's (1978) and Kubrin and Weitzer's (2003) cautions are recalled.

In another important effort to use disorganization theory in new ways, Ford et al. (2017) investigated the significance of social disorganization or social capital on adolescent prescription drug diversion. Factors were assigned to operationalize prescription drug misuse, disorganization, social capital, and "social participation" (p. 49}; the latter construct being very similar to Barton's et al. (2010) social organization membership. Computer assisted interviews of sample members (N = 17,856) included Likert scale cues to assess disorganization, social capital, and social participation. Several measures were in significant relationship, to include social disorganization to prescription drug misuse, and higher social capital to lower prescription drug misuse. The authors, however, did not ask individuals to self-report potential social control or regulating actions.

Thus, the current study's theoretical foundation was grounded in Wakeland's et al. (2012) and Wakeland's et al. (2013) conceptualization of an opioid system as dynamic, multifaceted, and subject to innumerable "variables, feedback mechanisms, and complex chains of causation" (p. 3). The authors' analysis revealed that by mathematical modelling, certain locations within the system's structures could be identified where an intervention could affect regulation. Such structures represent "the ordered arrangements of relations that are contingent upon exchange among members of social systems"

(Wellman and Berkowitz, 1988, p. 3) or “networks” (p. 4). On the other hand, such networks could serve as loci for diversion. Kelly et al. (2013a, 2013b) showed the usefulness of social network analysis in their research of diversion patterns observed in youth culture’s recreational venues (e.g., a club) or social networks.

Disorganization theory research treats informal social control at the micro or neighborhood level (Sampson, et al., 1997), taking in the complex array of elements that define a wicked problem in an eco-social, community-oriented context. Campuses are a type of community; however, in these communities, 1.3% of the neighbors, ages 18 and 22, misused opioids in the last 30 days. (SAMHSA, 2016a)

Literature Review

Scope of the Problem

Among the four prescription drug types posing a serious risk for misuse, pain relievers have consistently, at least, doubled their competitors’ popularity (over tranquilizers, stimulants, and sedatives) among self-reporting diverters (SAMHSA, 2016b). Misuse, also referred to as nonmedical or illegal use, and its related socio-economic implications have been treated variously in the literature. It is defined as “use in any way not directed by a doctor, including use without a prescription of one’s own; use in greater amounts, more often, or longer than told to take a drug; or use in any other way not directed by a doctor” (SAMHSA, 2016b, p. 9)

Schroeder and Ford (2012) noted, “numerous differences exist between prescription drug misuse and traditional illicit drug use, further highlighting the need for a new theoretical assessment of contemporary adolescent drug use patterns” (p. 7). They noted that prescription drug diversion is tied to friends and family, considered safe

sources for what is, after all, medicine. None of the physical danger or risk of arrest associated with acquiring street drugs need concern the misuser. The authors also found that opioids were perceived by students as a "safe and socially acceptable method to fulfill specific physical, social, and psychological needs" (p. 7).

Indeed, opioids have an ancient history and their analgesic and euphoric effects make them clinically useful and culturally popular (Zullig & Divin, 2012). Opioids derive from opium and include opiates naturally produced from poppy resins, such as morphine and codeine. Esters of morphine (opiates), such as heroin, are formed with chemical modification. Opioid peptides, such as endorphins, meanwhile, are endogenous. Drug manufactures use either opiates or esters of morphine to make synthetic or semisynthetic opioids. Well known examples include hydrocodone, oxycodone, and methadone.

Diversion has left its considerable fingerprints on the economic, health, safety, and social spheres of American life (White House, 2016). As of 2013 the U.S. had "less than 5% of the world's population… 80% of the global opioid supply, and 99% of the global hydrocodone supply" (McCabe et al., 2013, p. 102). With increased supply came increased risk of misuse, as shown in increased rates of morbidity and death (United Nations, 2013). Despite inherent difficulties in stemming their addictive characteristics, opioids are product of a vast production model.

Volkow, McLellan, and Cotto's (2011) analysis of 2009 data is illustrative: "79.5 million prescriptions for opioid analgesics" or "39% of the estimated projection of 201.9 million opioid prescriptions dispensed in the US in 2009" (p. 1299). "56.4% (44.8 million) of opioid prescriptions were dispensed to patients who had already filled another opioid prescription within the past month" (p. 1299). Since 2010, when opioid

prescribing peaked at “782 morphine milligram equivalents (MME) per capita,” (Guy et al. 2017, p. 698) prescribing was trimmed to “640 MME per capita in 2015” (p. 698) but, was still three times the 1999 prescribing rate. The CDC likewise noted a decline in opioid prescribing, but cautioned that county-to-county comparisons revealed that “providers in the highest prescribing counties prescribed 6 times more opioids than the lowest prescribing counties in 2015” (CDC, 2017b, Overview).

Since the 1990’s the opioid diversion trend toward epidemic was evidenced in the aggregation of annual data. Research was fueled by monitoring the trends and explaining them, using what Schroeder and Ford (2012) referred to a “sociodemographic” approach (p. 5). This data then enabled research from preventative, descriptive, curative, or regulatory perspectives (CDC, 2017a, 2018a, 2018b; Gilson & Kreis, 2009; Katz, Birnbaum, & Castor, 2010; McHugh, et al., 2015; Voon & Kerr, 2013).

More recently, opioid misuse has been evaluated as a possible conduit to other drug use, especially heroin. Data revealed most heroin users started by misusing prescription drugs (Compton et al., 2015; Inciardi et al., 2009; Jones et al, 2013). While Rigg and Murphy (2013) found creditable evidence that the relationship between heroin and prescription diversion may be bidirectional, Peavy et al.’s (2012) study of 433 heroin users found 39% “reported being hooked on prescription-type opiates first” (p. 261). Other research has generally concluded that opioid diversion is a gateway to heroin (Finklea, Sacco, & Bagalman, 2014; Improving predictability and transparency, 2014; Inciardi et al., 2009; NIDA, 2014; Pollini et al., 2011).

Approaches in the Literature

This literature review reports primarily on literature or portions thereof that treated prescription opioid diversion rather than the larger categories of prescription diversion or illegal drug use. The review was further refined by its focus on young adults, inclusive of collegians (ages 18 to 25). Although, authors have contributed from various methodological and theoretical perspectives, although most studies reviewed favored a community-oriented or ecological framework to underscore environmental factors which mediate diversion and that are related to disorganization theory. However, as of this writing, I found none who operationalized collective efficacy as mediating campus opioid diversion by looking at social control actions.

Many important studies treated the overarching phenomenon of alcohol or other drug use or abuse and mental health (Dennhardt & Murphy, 2013). These authors, as well as those that researched opioids specifically, frequently queried one of four well-recognized epidemiological databases supporting aggregate health and safety research. The American College Health Association's National College Health Assessment (NCHA), Drug Abuse Warning Network (DAWN), Monitoring the Future (MTF), and the National Survey on Drug Use and Health (NSDUH) support a wide range of investigations through aggregate data collection, categorization, analysis, or reporting.

NCHA, conducted annually since 2000 by the American College Health Association, surveys undergraduate, graduate, and professional program students on a range of health and safety issues: substance use, general physical, sexual, and mental health, violence, and general safety.

DAWN is conducted by SAMHSA's Substance Abuse and Mental Health Data Archive. A national public health surveillance network:

> DAWN captures both [emergency department (ED)] visits that are directly caused by drugs and those in which drugs are a contributing factor, but not the direct cause of the ED visit. Annually, DAWN produces estimates of drug-related visits to hospital EDs for the nation as a whole and for selected metropolitan areas. (Substance Abuse and Mental Health Data Archive, para.1)

MTF is conducted annually for the National Institute on Drug Abuse by the University of Michigan's Institute for Social Research. Evolving since 1975, when it surveyed only twelfth graders; it now surveys, eighth, tenth, and twelfth graders, college students, and other young adults on their "behaviors, attitudes, and values" (MTF, para 1).

NSDUH, formerly the National Household Survey on Drug Abuse, canvases the non-institutionalized U.S. population who are age 12 or older on tobacco, alcohol, and illicit drug use and regarding factors affecting treatment and mental health. The study is conducted annually for SAMHSA by Triangle Research Institute in Research Triangle Park, North Carolina. SAMHSA provides some of the most important resources for the study of substance abuse and mental health and has fielded the NSDUH annually since 1971. NDSUH statistics have appeared in a variety of published products that detail national, state, or regional trends for drug abuse and mental health. Throughout the years, these statistics have provided the basis for research questions that have framed many studies in the discipline.

SAMHSA's annual NSDUH results are the "primary source for statistical information on the use of illegal drugs, alcohol, and tobacco" for those "aged 12 or older" (SAMHSA, 2016a). Each year, data pertaining to opioid diversion (non-medical use) is collected nationally and results are usually reported for age cohorts, although occasionally, specific demographic units are spotlighted, such as college students, a segment within the age 18 to 21 cohort.

Despite differing methodologies, NCHA, DAWN, MTF, NSDUH, and other macro (national or global analyses) studies have consistently shown "increasing nonmedical use of prescription opioids" (Gilson and Kreis, 2009, p. S97). Macro research of this type is distinguished from meso (regional), or micro (community or neighborhood) research. The latter is most closely related, methodologically, to disorganization research, since disorganization theory researchers examine the diversion scheme's environmental or ecological aspects within an affected community. Arguing for a socio-cultural or community-oriented approach to diversion research, Vrecko (2015), explained his rationale:

> Much of existing research and commentary relating to drug diversion has been oriented towards population-level analyses that are linked to forms of epidemiologic inquiry, and survey-based data findings. In comparison, relatively few studies have explored non-medical prescription drug use and processes of drug diversion in terms of the smaller-scale social and interpersonal dynamics underlying these broad patterns of consumption. The present analysis is based on the hypothesis that fine-grained sociocultural approaches may be valuable for understanding the local

particularities and processes from which population level trends arise. (p. 298)

In a similar way, Simcha-Fagan and Schwartz (1986), while acknowledging the importance of aggregate data in disorganization theory research, nonetheless maintained that analysis of environmental factors that impact the individual are required to fully understand behavioral phenomenon. Aggregate, population-level statistics often spur ecological or community-oriented studies, but for community public administration and safety stakeholders, illumination of macro themes related to opioid diversion cannot be fully articulated without drawing on local analysis. (Mui, Sales, & Murphy, 2014; Vrecko, 2015) For example, without micro assessments researchers will fail to locate entrepreneurial structures that facilitate opioid consumption (Vrecko, 2015, p. 298).

While community-oriented or eco-social studies' diverse methodologies reflect research vitality they also indicate the problem's complexity. This is evidenced in the numerous variables that researchers have tested as potentially mediating opioid misuse and the diverse communities studied. Generally, researchers have designed opioid diversion studies to estimate pervasiveness, to postulate variables that could explain diversion, or to test variables that potentially mediate it. Many approaches can be found.

Investigators, for example, made important contributions in diversion research through geospatial analyses. McDonald, Carlson, & Izrael (2012) examined national opioid prescribing rates and explaining characteristics, such as prescription drug monitoring programs (PDMP). Their meso analysis found the highest prescribing rates in western and southern states and Appalachia. Rossen, Khan, and Warner (2013) came to similar

conclusions in a geo-spatial study comparing drug-poisoning deaths in U.S. counties for 2007-2009.

An example of pressing the "geographic imagination," per Brantingham & Brantingham (1991, p. 21), in micro analysis is Nobles, Fox, Khey, and Lizotte's (2010) crime mapping study at a large southeastern university and the encompassing town. The authors looked at criminal behavior reported in the school's Clery Act report, including drug and alcohol offenses, committed by or against students, on or off campus, and in the context of environmental and social factors. Nobles et al. simultaneously demonstrated the long unacknowledged inaccuracy of Clery Act reporting and the value of geo-spatial crime mapping and analysis.

Campus specific studies included McCabe, Teter, and Boyd's (2006) web-based survey of undergraduate prescription drug use at a large Midwestern university finding stimulant abuse in ascendency, but with 9.3% (n = 8,455) past year opioid misuse. Teter, McCabe, Cranford, Boyd, and Guthrie (2006) reached similar conclusions regarding the dominance of stimulant use; McCabe's et al. (2007) web-based survey of undergraduates at a large Midwestern university, investigating the "motives, diversion sources and routes of administration associated with the nonmedical use of prescription opioids" (p.562), found most undergraduates that misused opioids (7.5%, n = 4,478) used them to relieve pain, though those that diverted pain killers for other reasons were at increased risk for "other substance abuse problems" (p. 571); McCabe, Teter, and Boyd's (2009) reached similar conclusions.

Arria, Caldeira, Vincent, et al., (2008) studied the relationship between college students' perceiving potential harmfulness in misusing opioids and actual misuse; and

between a disposition for "high-sensation seeking" (p. 2) and misuse. Their interview-based, longitudinal research at a public, mid-Atlantic school confirmed that perceived potential harm mitigates misuse and high-sensation seeking correlates to misuse. Arria's et al. (2008) interview-based, longitudinal study of 1,253 college students at a large, mid-Atlantic university successfully determined an increased risk of exposure to, and initiation of, recreational drug use in college, especially for marijuana and prescription stimulants; one in five using by the time they entered their second year. Prescription analgesics and hallucinogens followed, with one in 10 students using by their sophomore year.

Quintero, Peterson, and Young (2006) used a two-phased, interview-based approach at a public university in the southwestern U.S. (*Phase 1n* = 33, *Phase 2n* = 19) to examine the socio-cultural environment that supported prescription drug misuse. Their qualitative assessment suggested students were influenced by the medicalization process, which sanctioned enhancing ones' individual life-style with prescription drug use. The authors observed that prescription drugs had been integrated into the students' life styles for "self-medication, recreation, and academics" (p. 924). In 2012, Quintero conducted 91 interviews and a text analysis of National Institute on Drug Abuse (NIDA) documents or publications to contrast the significance of prescription drug use in youth culture and NIDA's unwarranted "problematization of recreational pharmaceutical use by young people" (p. 523); claiming it institutionalized "mistrust of young people" (p. 523) and fating the young to "surveillance and control" (p. 523).

Meanwhile, other scholars studied opioid diversion among young adults, the larger category to which most college students belong, and found evidence that colleges

may attract opioid markets to the larger area. In their study of young adult opioid misuse. Vuolo et al. (2014), for example, used the recreational "venue" (p. 258) as their "basic unit of sampling" (p. 258). The authors explored the New York City locations where students entered the opioid market, either as sellers or buyers and determined bars proximate to colleges as a "setting" (p. 261) for transactions. A contribution in their eco-social research was their exploration of the relationship between the people involved in the diversion scheme and the places which served as transaction nodes.

In their study of young adults (N = 120) who misused prescription drugs in the San Francisco Bay area, Mui et al. (2014) also demonstrated the importance of environment. Their interviews helped determine that as young people entered the diversion economy they progressed on a "trajectory of exposure, motivation, access, and setting" (p. 250). Their work revealed that, theoretically, each point on the abuse progression could be explored with a view toward developing intervention technologies serving the special conditions found at that stage of the trajectory.

Researchers assessing the pervasiveness of opioid diversion or characterizing it, usually measure frequency over the respondents' lifetime, past 30 days, or past year. NSDUH uses all of these for different categories of persons. Tapscott and Schepis (2013) used both lifetime and past year data derived from DAWN to position their literature review of youth prescription opioid misuse in the U.S. They also modeled common measures used in opioid diversion research: risk factors for misuse, motives for misusing prescription drugs, sources that supply prescription drugs misused, being asked to transact for ones' own prescribed drugs, being asked to purchase drugs, and applied prevention or intervention technologies. Arria, Garnier-Dykstra, et al. (2011) measures

included past year diversion (sharing, selling, trading), frequency of respondents' adhering to the prescribers' orders for their own prescriptions, and "perceived harmfulness of nonmedical use of prescription analgesics" (p. 900), the latter thought to regulate misuse. They found that over a quarter of those age 21 to 26 (n = 192) diverted their own prescription.

Socio-Economic Underpinnings

Medicalization theory weaves together lessons from clinical practice in pain management and addiction medicine; commercial factors affecting production, prescription, or distribution of opioid analgesics; and more ephemeral ethical factors regarding drug use. Regardless of perspective or discipline, medicalization researchers consider a trajectory originating in a social issue or problem, such as opioid misuse, which culminates in public policy dilemma (Poitras, 2012; Smart, 1984). Medicalization refers to the diverse ways prescription diversion or misuse is perceived as both a medical and social issue.

Based on three decades of research, Conrad (2005) explained medicalization as "defining a problem in medical terms, usually as an illness or disorder, or using a medical intervention to treat it" (p. 3). The researcher recognized that this expansion of "medical jurisdiction" was the product of "complex social forces" (p. 3), and therefore, nonmedical distribution and use of opioids are presented in the literature as a social issue with legal, moral, or medical implications (McHugh et al., 2015; Phillips, 2013). One result is competing perspectives.

For example, state Prescription Diversion Monitoring Programs (PDMP) are considered by some authors as improving clinical practice (Manchikanti, Whitfield, &

Pallone, 2005; Morgan, Weaver, Sayeed, & Orr, 2013), while others demonstrate how they handicap clinical practice (Fishman, Papazian, Gonzalez, Riches, & Gilson, 2004). Still others view PDMD as primarily a regulatory or law enforcement tool (Wartell & La Vigne, 2013; U.S. Government Accountability Office [GAO], 2002).

Meanwhile, marketing opioids, such as OxyContin, and its potential social costs can be analyzed in a medical or legal context with equal vigor, as demonstrated in Van Zee's (2009) research. In a similar way, although the need for enforcement or regulation seem clearly indicated and delineated by various statutes, researchers have critiqued law enforcement's chilling effect on clinical work. Libby (2005) looked at the negative effects of the DEA counter-diversion programs on clinical practice:

> The DEA's painkiller campaign has cast a chill over the doctor-patient candor necessary for successful treatment. It has resulted in the pursuit and prosecution of well-meaning doctors. It has also scared many doctors out of pain management altogether, and likely persuaded others not to enter it, thus worsening the already widespread problem of undertreated or untreated chronic pain. (p. 1)

Medicalization research broadened hard and social science research to consider the relationship between opioid diversion, misuse epidemiology, and public policy (McHugh et al., 2015; Rehm, Anderson, Fischer, Gual, & Room, 2016). While the connection between epidemiologic and the policy discussion may seem clear on its face, the variety of responses to the opioid epidemic continues to fuel a spirited exchange of ideas within and between disciplines (Calcaterra, Glanz, & Binswanger, 2013).

Unlike street drugs there are legitimate commercial interests that support the legal production and distribution of opioids in the marketplace. In an important historical examination of OxyContin's commercialization and the unanticipated morbidity and mortality that quickly followed its distribution, Meier (2013) noted American medicine underwent a shift in the 1980s, during which physicians began to treat pain as a discrete malady rather than a symptom—the advent of pain management medicine. However, new approaches in medicine also meant new economic opportunities. Lembke (2012) reached a cynical conclusion that patients pay doctors when they are happy and treating pain pays better than treating addiction. Likewise, pharmaceutical firm profits rose with the onset of medicalization.

The diversion of prescription analgesics predated OxyContin's distribution in 1996, but OxyContin's launch and its soon-revealed addictiveness, focused the attention of the nation on the potential for abuse, addiction, and death that can occur when using such medicines (Meier, 2013). Quintero (2012) contrasted efforts to mitigate nonmedical use of prescription drugs with commercialization and "diagnostic bracket creep"—the process of expanding prescription research, production, and marketing to meet nonmedical needs (p. 524). Charges of profiteering were not uncommon.

In a study of Purdue Pharma's commercialization of OxyContin, Van Zee (2009) analyzed the potentially negative effect of pharmaceutical marketing on "evidence-based medicine" (p. 225). Meanwhile, in 2007, the federal government found Purdue Pharma criminally culpable in distorting information about the drug's addictive potential, and with the advent of OxyContin, an increase in "diversion and abuse" and "opioid-related overdoses" were documented (Van Zee, 2009, p. 224). Purdue Pharma earned almost $3

billion in cumulative profits selling OxyContin during 2001 and 2002 (Van Zee, 2009, p. 223).

In 2014, Purdue Pharma again faced legal proceedings, along with manufacturers Cephalon, Janssen Pharmaceuticals, Endo Health Solutions, and Actavis. Lawyers for the city of Chicago alleged these firms "knowingly and aggressively marketed opioid analgesics" minimizing additional risk and claiming benefits sans "scientific support" (City of Chicago, 2014, Para. 3). City leaders alleged that manufacturers used deceptive marketing practices, which led to $9.5 million in insurance reimbursements for opioid prescriptions in a 4-year period and which the city correlated to a 65% increase in emergency department visits in a 10-year period (para. 5). Aside from criminal conduct that may attend commercialization of pain-killers, the ethical and moral debate regarding their prescription has been contentious (Manchikanti, Fellows, Ailinani, & Pampati, 2010; Smith, 2012).

Economic and social cost analyses estimated the pharmaceutical industry's profits and the cost of diversion to society was in the multi-billions; this included the cost in lost human potential because of morbidity (Gilson & Kreis, 2009; Hansen et al., 2011; Inciardi et al., 2009; Katz et al., 2010a; Manchikanti, Boswell, & Hirsch, 2013; Poitras, 2012; Smith, Lee, & Davidson, 2010; Van Zee, 2009; White, Birnbaum, Schiller, Tang, & Katz, 2009). Economic and social costs were significant (Nargiso, Ballard, & Skeer, 2015), and Hansen et al. (2011) catalogued 14 areas for economic cost analysis under four categories: abuse treatment, medical complications, productivity loss, and criminal justice. There was an annual estimated cost of $50 billion because of opioid misuse, with

94% attributed to crime and lost productivity. Inocencio, Carroll, Read, and Holdford (2012) estimated 20.4 million dollars in costs directly related to health care.

Going beyond monetary losses, evidence connected opioid misuse with property crime, crime against persons, and risky sexual behavior with transmission of sexual diseases (Bonar et al., 2014; Nargiso et al., 2015; Vuolo et al., 2014). Researchers documented opioids' transition from medicine, to recreational drug, to problem, and have also linked opioid misuse to an array of individual impacts related to the effects of dependency or addiction: social exclusion, poverty, personal developmental issues, and difficulty transitioning to legitimate work opportunities (MacDonald & Marsh, 2002, p. 28).

Epidemiology

Epidemiological, policy, and pharmacometric research heightened awareness of the emerging opioid epidemic. NSDUH past year data for 2017 revealed that pain relievers were the most commonly misused psychotherapeutic drug (as compared to tranquilizers, stimulants, or sedatives) for those age 12 or older. Young adults (age 18 to 25) were more likely than those in other age cohorts to use psychotherapeutic drugs non-medically, including analgesics. (SAMHSA, 2018)

Table 1 highlights opioid misuse and its effects. Here, data for young adults (age 18 to 25) are shown in context. 2.5 million young adults represent the largest proportion of any NSDUH age cohort (7.2%) to misuse opioids (7.2%) averaging some 1,200 new initiates each day. Approximately 6% of the age 18 to 20-year-old cohort self-reported opioid misuse. (SAMHSA, 2018)

Table 1

2017 Past Year Opioid Pain Reliever Misuse

Age cohort (years)	Misuse in thousands	Percent-age of misuse among age cohort	Pain Reliever disorder in thousands	Pain reliever disorder: percent among age cohort	Pain reliever initiation in thousands	Pain reliver initiation average, per day
≥ 12	11,077[a]	4.1[a]	1,678[a]	0.6[a]	2,010[b]	5,506[b]
12-17	767[a]	3.1[a]	99[a]	0.4[a]	316[b]	866[b]
18-20	773[a]	6.0[a]	na	na	na	na
18-25	2,460[a]	7.2[a]	339[a]	1.0[a]	465[b]	1,273[b]
≥ 26	7,850[a]	3.7[a]	1,240[a]	.06[a]	1,229[b]	3,367[b]

Note. [a] Adapted from Substance Abuse and Mental Health Services Administration. (2018). *Key substance use and mental health indicators in the United States: Results from the 2017 National survey on drug use and health: Detailed tables*. Retrieved from https://www.samhsa.gov/data. [b] Adapted from Substance Abuse and Mental Health Services Administration. (2018a). *Key substance use and mental health indicators in the United States: Results from the 2017 National survey on drug use and health.* Retrieved from https://www.samhsa.gov/data.

Data for past month use indicates that 1.3% or 110,000 of those age 18 to 22 who were enrolled in college misused pain relivers, with 301,000, or 2.2% of their peers not attending college misusing. (SAMHSA, 2018) This data is compared with 2015-2016 data in Table 2.

Table 2

2015-2017 Past Month Opioid Pain Reliever Misuse Among Those Age 18-22 Years

	Enrolled in college ages 18 to 22 years		Others ages 18 to 22 years	
	(thousands)	(percentage)	(thousands)	(percentage)
2017	110	1.4	301	2.4
2016	104	1.3	288	2.4
2015	99	1.3	345	2.6

Note. [a] Adapted from Substance Abuse and Mental Health Services Administration. (2018). *Key substance use and mental health indicators in the United States: Results from the 2017 National survey on drug use and health: Detailed tables*. Retrieved from https://www.samhsa.gov/data [b] Adapted from Center for Behavioral Health Statistics and Quality. (2017). *2016 National Survey on Drug Use and Health: Detailed Tables*. Retrieved from https://www.samhsa.gov/data.

In Table 3, data for young adults (age 18 to 25) are compared for 2015 to 2017. For the purposes of this study, changes in NSDUH methodology in 2015 preclude a useful comparison with earlier data for the categories used in this table (SAMHSA, 2018). The modest decline in aggregate data must be weighed against numerable variables such as age adjusted morbidity and mortality statistics as shown in Table 3. Heroin use (Compton et al., 2015; Inciardi et al., 2009; Jones, et al., 2013), fentanyl overdose trends, and other data provide a comprehensive picture of alcohol and other drug abuse on campus.

Table 3

2015-2017 Opioid Pain Reliever Use Among Young Adults (Ages 18-25 Years)

	Misuse in thousands: past year	Percent-age of	Pain reliever disorder in	Pain reliever	Pain reliever initiation in	Pain reliver initiation

		misuse, past year	thousands	disorder, percentage	thousands, past year	average, per day
2017	2,460[a]	7.2[a]	339[a]	1.0[a]	465[c]	1,273
2016	2,454[a]	7.1[a]	291[a]	0.8[a]	585[c]	1,603
2015	2,979[b]	8.5[b]	427[b]	1.2[b]	596[c]	1,633

Note. [a] Adapted from Substance Abuse and Mental Health Services Administration. (2018). *Key substance use and mental health indicators in the United States: Results from the 2017 National survey on drug use and health: Detailed tables*. Retrieved from https://www.samhsa.gov/data [b] Adapted from Center for Behavioral Health Statistics and Quality. (2017). *2016 National Survey on Drug Use and Health: Detailed Tables*. Retrieved from https://www.samhsa.gov/data [c] Adapted from Substance Abuse and Mental Health Services Administration. (2017). *Key substance use and mental health indicators in the United States: Results from the 2016 National survey on drug use and health*. Retrieved from https://www.samhsa.gov/data;

Based on their analysis of U.S. mortality data, Rudd, Seth, & Scholl (2016) concluded "drug overdose deaths nearly tripled during 1999-2014" (Para. 1). CDC (2017a) attributed 218,000 deaths from 1999 to 2017 to "overdoses related to prescription opioids…five times higher in 2017 than in 1999" (Prescription opioid data, Key messages, para. 3). "Two out of three overdose deaths involve an opioid" (CDC 2018b).

Using aggregate data from 1999 and 2014 to 2016, the continuing increase in drug or opioid related morbidity is indicated in Table 4. Heart disease and cancer continue to lead as causes of death in the U.S., however, accidental death, which includes drug-induced death is third. Age-adjusted death rates, a more accurate measure for articulating trends, showed a consistent increase (threefold) in drug-induced deaths and deaths related to opioid misuse. "From 2015 to 2016, deaths increased across all drug categories examined" (Seth, Scholl et al., 2018, para. 1). The opioids, "fentanyl, heroin, hydrocodone, methadone, morphine, and oxycodone" were reported as the top six of the top 15 drugs

involved in overdoses from 2011 to 2016 (Hedegaard, Bastian, & Trinidad, 2018, p. 3) Provisional data for 2017 projects 72,306 drug overdose deaths, 19,354 attributed to opioid pain relievers. (NIDA, 2018)

Table 4

1999, 2014-2016 Aggregate and Age-Adjusted (per 100,000) Overdose Mortality

	Drug overdose deaths	Natural and semisynthetic opioid deaths	Percent of drug overdose deaths attributed to natural and semisynthetic opioids	Age-Adjusted Natural and synthetic opioids	Age-adjusted Heroin
2016	63,632	14,487	22.77	4.4	4.9
2015	52,404	12,727	24.29	3.9	4.1
…2014	47,055	12,159	25.84	3.8	3.4
1999…	16,849	2,749	16.32	1.0	0.7

Note. Adapted from Hedegaard H., Warner, M., Miniño, A. M. (2017) Drug overdose deaths in the United States, 1999–2016. NCHS Data Brief, 294. Retrieved from https://www.cdc.gov/nchs/products/databriefs/db294.htm.

As with other illegal drug use, opioid diversion has been correlated to high risk behavior and psychopathology (Benotsch et al., 2011; Bonar et al., 2014; Southern Illinois University Carbondale Core Institute, 2014; Teter, Falcone, Cranford, Boyd, & McCabe, 2010; Zullig & Divin, 2012). Benotsch et al. (2011) found a significant relationship between prescription diversion and risky sexual behavior, such as unprotected or multiple partner sex. Zullig and Divin (2012) investigated a relationship between prescription diversion and psychopathology, and stated, “the strongest findings in this study were observed among the depressive symptoms of hopelessness, sadness,

and depression, suicidality, and the use of opioid painkillers, including the behaviors of considering suicide (males) and attempting suicide (females)" (p. 894). Researchers have linked opioid dependency during pregnancy to neonatal abstinence syndrome (the experience of withdrawal symptoms) in newborns (Pritham, Paul, & Hayes, 2012). In addition to human suffering, other costs to the community occur.

Young Adults and the College Campus

In 2012 a summit of 55 Philadelphia area higher education leaders met to discuss nonmedical prescription drug use. These included:

> Student health center staff (e.g., nurse practitioners, physicians), counseling center staff (e.g., social workers, counselors, psychologists, psychiatrists), health promotion staff, campus safety staff (e.g., campus law enforcement and public safety officials), certified AOD specialists, residence life and housing staff, and judicial affairs staff. (Andes et al., 2014, p. 31)

They concluded that "there is very little being done on campuses in the region to address [non-medical prescription drug use]" (Andes et al., 2014, p. 35). Andes et al. (2014) recommended addressing three essential needs: (a) more "scholarly research that translates data into practice," (b) strategic planning "to prevent [nonmedical prescription drug use]," and (c) "ongoing [much improved] communication among personnel in student affairs, student health, and law enforcement on college campuses and in the surrounding communities" (p. 33).

In part, this study was encouraged by the Philadelphia summit and the call for research. One challenge was to recognize the elements of opioid diversion that are

common regardless of community and those that may be unique to the higher education campus. Like all communities, campuses are geographically, demographically, and culturally exceptional, but school communities are also shaped indirectly by the communities in which they are located and from which they recruit matriculants. They are also fashioned by the school's curricula, student-life organizations, and their *raison d'etre*. (Barton et al, 2010; Giacomini & Schrage, 2009; Griffin & Hurtado, 2011) Each campus community confronts emerging opioid misuse and an almost unpredictable range of delinquent acts stemming from misuse in its unique setting.

McCormack (2016) reported the concern of campus public safety professionals who, in a 2016 survey of International Association of Campus Law Enforcement Administrators ranked alcohol and other drug use as the third highest threat behind violence and sex crimes. Yet, these phenomena are often related. Clearly, alcohol or marijuana abuse have been identified as increasing the risk for sexual assault (Krebs, Lindquist, Warner, Fisher, and Martin, 2007). But, more recent investigations into young adult drug use also describe a not uncommon "social setting in which opioids and other drugs are used that is conducive to sexual violence" (Jessell et al., 2017, p. 2948). More research will be needed to explore opioid misuse and its collateral effects on campus. The issue is driven by the frequency of diversion. In their study of 17 to 19-year-old college students (N = 483), Garnier et al. (2010) found that over one third (35.8%) had diverted prescription drugs during their lifetime. Although, ADHD medicines were more frequently diverted, analgesics were diverted at a rate of 35.1%, usually through "sharing" (p. 5).

Four factors affecting opioid diversion are distinctively understood in the campus context. The literature quickly revealed their importance in explaining the uniqueness of campus diversion: heterogeneity, vulnerability, value perspectives; and branching from these, social disorganization.

Heterogeneity. Shaw & McKay (1942/1969) and disorganization theorists showed the relationship between a neighborhood's socio-economic features, heterogeneity, and criminality. Poverty is not associated with higher education (though individual students may suffer economic disadvantage), but heterogeneity, the critical disorganizing factor, is a feature of campus life. Not only do students matriculate each year, but others transfer, graduate, or leave school. Meanwhile, many students change their living arrangements while enrolled, demonstrating what Barton et al. (2010) referred to as "residential mobility" (p. 247). Although longitudinal macro studies have helped identify broad diversion trends, the complex campus community context demands special analysis. Heterogeneity is an important consideration in assessing campus social disorganization or organization, since many students frequently move. (Barton et al, 2010)

Another component of the phenomenon is the transitional nature of college life. From high school to work, further schooling, or some combination thereof, young people are in a transition to full adulthood, citizenship, and the responsibilities that accompany their new status within the larger community. Many, if not most, college students will manage decision making in the moral, physical, and cybernetic domains on their own for the first time. This will likely include their use of prescribed and illegal substances (McCabe et al., 2013). These factors suggest a pervading vulnerability.

Vulnerability. Aggregate youth substance abuse data indicated that illegal drug use was highest among college students (42%) in 2017 (Schulenberg et al., 2018), and opioid specific literature warned that undergraduates are part of an age group that is especially vulnerable to opioid misuse and the unwanted behavior that can accompany it. (Arria et al., 2008, Arria, Caldeira, Vincent, et al., 2008; Arria, Garnier-Dykstra, et al., 2011; Carlisle-Maxwell, 2011; Compton & Volkow, 2006; Erinoff, Compton, & Volkow, 2004; Hamilton, 2009; Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2015; Volkow, 2010; McCabe et al., 2014; SAMHSA, 2014, 2017; Zullig & Divin, 2012). College students have been the consistent focus of researchers who established the persistence of campus drug abuse (including alcohol and marijuana) and non-medical prescription opioid use. This has been frequently conjoined in the research with various forms of delinquency or misconduct; and of special concern – sexual aggression. (Parks, Frone, Muraven, and Boyd, 2016)

Meshesha et al. (2017) provided an excellent example of the campus's plural drug use environment while trying to isolate the effects of opioid misuse. Their detailed survey and interviews of "71 undergraduate students who either reported past-year [non-medical prescription opioid use] (n = 35) or control participants (n = 36) with no past-year drug use" found that opioid diverters had "lower time allocation to academic engagement, greater anhedonia, lower responsiveness to pleasant stimuli, and lower future orientation" (p. 249). However, 94.4% of the sample also reported marijuana use and 80% alcohol use, begging the question of which drug or which combination of drugs may have accounted for the same negative effects. Nonetheless, what the authors highlighted was

that, unlike their counterparts in the larger civil community, society anticipates that collegians will sustain a positive, future orientation that may be diminished by drug use.

If the campus habitat is locus for a subset of an age group susceptible to opioid diversion, it is also one in which prescription opioid misuse is compounded by a propensity for using other illicit drugs or alcohol (McCabe, West, & Boyd, 2013; Patrick, Singer, Boyd, Cranford, & McCabe, 2013; White, Hingson, Pan, and Yi, 2011). In results from Lord's et al. (2011) social network survey (N = 527), three motives emerged: "regular misuse: to get high, to manage chronic pain, and to cope with depression or anxiety" (p. 73).

Holloway and Bennett (2012) studied both college students and staff's prescription drug misuse at a single school in Wales, finding "overall, one-third of university students and one quarter of university staff reported lifetime use of prescription drugs not prescribed to them" (p. 140). The researchers found that "changing the recommended dosages or frequencies and keeping back part of the prescription for later use" (pp. 141–142) was the most common method for resourcing misuse. Thus, one factor that contributed to the campus's peculiar ecology is the availability of prescription opioids. (Fischer, Bibby, & Bouchard, 2010)

McCabe et al. (2014) conducted a comprehensive survey study of prescription diversion at one Midwestern university from 2003 to 2013 and, similarly established a significant dynamic between medical and nonmedical prescription opioid users. College students at one university who were legitimate medical prescription users, and who were selling, trading, or sharing their drugs, created nonmedical users in the process of distribution, albeit, perceived as benign (pp. 1176–1177). This is a pattern evident in the

larger population. Arria, Garnier-Dykstra, et al. (2011), in a 3-year study of prescription analgesic diversion in a population of 21 to 26-year-olds (*N* = 192), found 58% of the sample used painkillers as prescribed: 27% under-using, 16% over-using, and 63% diverting. Over-users were eight times more likely than underusers to divert (p. 900-901). In a longitudinal cohort study of college students at one university (*N* = 1,253), Arria, Caldeira, O'Grady, et al. (2008), found that by sophomore year, prescription stimulants were used by one in five students, and prescription opioids by one in 10.

Based on NSDUH 2013 data for past month use, 2.2% of "full-time college students aged 18 to 22 were current users of pain relievers" (Lipari, 2015, First Non-Medical Use of Prescription-Type Pain Relievers, para. 1), and that 251,000 full-time students had used them for the first time in the previous year, or "an average of about 700 new non-medical pain-reliever per day" (para. 2). Lipari and Jean-Francois' (2016) review of NSDUH 2014 data (past month use), for college students, showed "nearly 1 in 5 young adults aged 18 to 22 were current illicit drug users, roughly 1 in 4 were current cigarette smokers, and 1 in 3 were binge drinkers" (Introduction, para. 1). In their study of a university community, Meisel and Goodie (2015) found 30% of undergraduate respondents (*n* = 279) reported they had "close friends" (p. 112) who misused prescription drugs during the previous year.

Statistics suggest that youth experiment with a variety of substances and for most of them college provides the first opportunity to experiment. (Allen et al., 2017) NSDUH 2017 statistics for those age 18 to 20 indicate 35.3% used tobacco during the past year and 23.9% during the past month. 38.6% used alcohol during the past month and 24.9% of enrolled students in the age cohort binge drinking. 23.6% of those age 18-22 who were

enrolled used illicit drugs during the past month with marijuana being most used (23.6%) and opioid pain relivers used non-medically by 1.4% of the enrolled population. (SAMHSA, 2016c)

Lipari and Jean-Francois (2016) suggested several factors that contribute to the age cohort's susceptibility. For one, most undergraduates, in transition to adulthood, may find freedom from the relative restrictiveness of parents at home both "exciting and overwhelming" (para. 1). This "newfound freedom may also leave them vulnerable to making poor choices, such as engaging in substance use" (Introduction, para.1). Likewise, they may be more vulnerable to psychiatric conditions that facilitate addiction (Blanco et al., 2008), and suffer subsequent deterioration of mental or physical health (Arria, Caldeira, O'Grady, et al., 2008; Arria, Caldeira, Vincent, et al., 2008; Arria, Garnier-Dykstra, et al., 2011; Azimi-Bolourian, 2013; Carlisle-Maxwell, 2011; SAMHSA, 2014, 2016c, 2017).

Lipari and Jean-Francois (2016) theorized that "young adults make decisions regarding substance use without complete information about the risks associated with their choices" (Introduction, para. 2). Rather, their decision making is marred by a lack of experience in assessing risk combined with a sense of youthful immortality. Dennhardt and Murphy (2013), in their important literature review on the "prevention and treatment of college student drug use" (p. 2607), noted that "nationwide surveys reveal that rates of illicit drug use peak in adolescence and young adulthood and that college students account for approximately 50% of this high-risk group" (p. 2608). This begs several questions about the values that drive college student decision making.

Value perspectives. In focusing primarily on prevention and intervention for all kinds of drug use, Dennhardt and Murphy (2013), isolated several reasons for drug use among college students, not the least of which is the perception of peer expectations transmitted through social norming. This is not the same as peer pressure. Rather, it means that the collegian has accepted a value perspective in which he or she anticipates their participation in alcohol or other drug use as expected. The authors suggested further longitudinal research to explore causality.

Peralta and Steele (2010) examined college student value perspectives as mediating prescription drug misuse on campus and specifically. They designed and fielded a self-administered survey in 13 classes within the College of Arts and Sciences at a rural Midwestern university (N = 465) to confirm that social learning could partially explain non-medical prescription drug use. Social learning theory argues that criminality is learned within "intimate groups" (p. 866). They measured pervasiveness for lifetime, and past year and month, finding "higher than anticipated" (p. 882) misuse. In concluding their study, the authors recommended that future research should further explore the college ecology as "multidimensional," (p. 883), and should assess the "complex processes involving [student] perceptions, expectations, judgments, decision-making, and learning or not learning" (p. 883).

Bennett, Holloway, Brookman, Parry, and Gorden (2014) explored the value perspectives of students misusing prescription drug at a Welsh university (N = 472) using a survey delivered by mail. They assessed their respondents' use of neutralization (excuse making) in misusing prescription drugs by asking: "Did you think that there was anything

wrong in taking a drug that was not prescribed to you" (p. 191)? The concept of neutralization may be closely related to normalization as discussed in social learning research.

In a useful literature review on alcohol use and college student social media posts, Groth, Longo, and Martin (2017) found that at least two out of three of the 90% of college students who use social media post "alcohol related content" (p. 88) and found strong grounds in the literature for a positive correlation between posting "risky behaviors" (p. 88) and risky behavior. As in Dennhardt and Murphy's (2013) study, the authors emphasized the power of the perception of the behavior as mediating "risk taking" (p. 88). Content analysis conducted previously by Morgan, Snelson, and Elison-Bowers (2010) led to similar findings to include discovering that many college students 'like' posts showing alcohol driven behavior.

Schroeder and Ford (2012) used variables taken from the 2009 NSDUH to operationalize social learning, strain, and social control (disorganization) theory as mediating adolescent prescription drug misuse. The authors operationalized social control using "parental bonds, school bonds, and religiosity" (p. 12). Using 52,772 responses from the survey, they tested the three theories for their "explanatory power" (p. 15) *vis a vis* misuse. They found that all three theories could predict adolescent drug misuse but allowing for differences in the strength of their impact depending on the type of drug misused. To the point of this study, they noted that parental bonds were an especially important mediator for prescription drug misuse.

Mohamed and Fritsvold's (2012) ethnographic study of a drug "dealing community" among higher education schools in southern California characterized prescription diversion as an "emerging market" (p. 11). Although the authors found

Adderall (a stimulant used to sustain alertness during high stress periods or as a party preparatory potion) was the prescription most frequently diverted, opioids were of a category with "substantial abuse potential" (p. 66). In Mohamed and Fritsvold's development of a campus dealer taxonomy, the authors found prescription drug dealing and abuse on campus was conducted within a type of "pharmaceutical exchange" (p. 81). In this environment, unlike street markets, anyone with access to any prescription drugs could become a "de facto" (Mohamed & Fritsvold, 2012, p. 78) dealer.

Quintero (2012) argued that government and media, holding a "privileged status in society," have unhelpfully "problematized" recreational use of prescription drugs by young adults through the promulgation of epidemiological data (pp. 499, 494). Quintero stated this "categorical assessment" of nonmedical use of prescription drugs (converting licit drugs into illicit drugs) is inconsistent with recreational prescription drug use on campus by young adults who deport as well-informed and discerning consumers but not drug abusers (p. 494). Accordingly, young adults take prescription drugs to facilitate social interactions and not to get high.

Quintero (2012) discerned the importance of a campus's recreational culture as part of the larger multigenerational drug culture in which drugs are no longer used just for treating illnesses. Rather, the increased production and use of pharmaceuticals to enhance lifestyle (e.g., sildenafil, used to treat erectile dysfunction) has claimed a position in the marketplace. Quintero observed a trend toward "collapsing cultural boundaries between pleasure and medicine in society" (p. 523). Given this culture of consumption, Quintero questioned the label "illicit" on drugs meant to give pleasure (p. 510). However, the researcher does not address complications stemming from errors in

judgment, co-ingestion, risky behavior, and unanticipated medical dilemmas, victimization or other symptoms of social disorganization or disorder that are often correlated with nonmedical use of medicines.

Social disorganization. Operationalizing social disorganization and collective efficacy as mitigating opioid diversion is done in the context of Wakeland's et al. (2012) and Wakeland's et al. (2013) opioid system. Thus, it is helpful to explore the ecological, social, or cultural factors that shape the decision-making of actors within the campus system since social disorganization, following Thomas (1966), is the diminishment of "the existing social rules of behavior upon individual members of the group" (p. 4). Various authors have identified social disorganization as a risk factor for young adult substance abuse using risk and protective factor analysis. Stone, Becker, Huber, and Catalano's (2012) literature review, in which they identified risk and protective factors mediating young adult substance abuse, recovered the work of several authors who linked social disorganization to substance abuse. However, none of these researchers isolated collective efficacy as a protective factor.

Hawkins, Catalano, and Miller (1992), for example, following social disorganization theorists like Shaw and McKay (1969), advocated "risk focused" (p. 64) analysis of risk and protective factors and named neighborhood disorganization as a risk factor for young adult substance abuse. Buu et al. (2009) in a four county, longitudinal study (N = 220 males) found a similar link between neighborhood instability and increased risk for youth substance abuse. Neither author qualified heterogeneity as a factor in neighborhood instability, preferring to treat a theorized relationship between drug use and economic disadvantage.

Barton et al. (2010) looked at social organization's role in "mediating" (p. 245) campus crime without, however, finding grounds for generalization. They critiqued routine activities, general social economic, and importation theories as potentially explaining campus crime and then turned to social disorganization theory. They assessed the significance of campus social structure as exemplified in organization or student group membership or in the school's student-to-faculty ratio as mediating campus crime. Of these three, community organization explained the most variation.

In general, Barton et al. (2010) found support for disorganization theory. Further they found that the "social composition of campus population plays an important role in determining the amount of crime that occurs on campus, but only mixed support for the generalizability of social disorganization theory to campus community" (p. 253). The authors innovatively operationalized social disadvantage using "relative disadvantage," mimicking eco-social disadvantage as examined by Shaw and McKay (1942/1969) in Chicago neighborhoods. Relative disadvantage was indicated in students who applied for financial aid. This study used aggregate data but did not treat student value perspectives or collective efficacy.

Campus public policy and safety stakeholders and their public service counterparts in traditional communities encounter similar social dilemmas (Barton et al., 2010) and the emergence of opioid diversion presents a significant challenge. Rigg, Kurtz, and Surratt (2012) referred to prescription diversion as "disorganized crime" (p. 146), referring to its disparate transaction mechanisms—a "black box requiring concentrated systematic study" (Inciardi, Surratt, Lugo, & Cicero, 2007, p. 136). In their 4-year, interview-intense investigation of a South Florida prescription diversion

community's resourcing, Rigg et al. noted the challenge imposed on researchers by the "abstruseness of the diversion problem" (p. 146); made more challenging by the diversity of actors within the diversion economy in which, "physicians, pharmacists and other health care professionals; drug dealers and abusers, patients, students, and white-collar criminals; tourists, nightclub owners and all types of service personnel" (Rigg et al., 2012, p. 145) all play mediating roles. The campus community's diversion scheme is a as complex as any (Dennhardt & Murphy, 2013; McCabe et al., 2014; Quintero et al., 2006).

Regulatory Efforts

The literature provided an extensive overview of public, corporate, and counter-diversion policy strategies. The widespread social "satisfaction" realized in the use or abuse of street, club, and prescription drugs, and their potential combination in potent drug cocktails, has not been affected by a "stasis" in U.S. drug policy (Reuter, 2013, p. 127). Some, such as Quintero (2012), suggest penalizing young nonmedical users is not consistent with American's normalizing prescriptions that facilitate a lifestyle as opposed to managing pain.

Supported by macro, meso, and micro analyses and in collaboration with the medical community, metropolitan, county, state, and federal agencies have forged polices and contributed resources to stem prescription drug diversion. (Gilson & Kreis, 2009; Hansen et al., 2011). While the federal and state governments are at the forefront of the effort, the states have primary responsibility for diversion control, while the federal government sustains "a substantial interest in matters of controlled substances and drug abuse and diversion" (Fishman et al., 2004, p. 310). Generally, the government targets

"the minority of providers and patients that account for the most risk, while balancing the needs for pain treatment" (U.S. Department of HHS, 2013, p. 17).

The genesis of U.S. regulatory instruments, the Harrison Narcotics Tax Act of 1914, sought through licensing, taxation, and prescription to channel the production, acquisition, and distribution of "opium or coca leaves, their salts, derivatives, or preparations" (Chapter 1). Current federal drug policy is anchored in the Comprehensive Drug Abuse Prevention and Control Act of 1970, as amended. Per legislation and based on their risk for abuse, drugs are classified in one of five categories or 'schedules' by the Food and Drug and Drug Enforcement Agencies. Opioids are on Schedule II, controlled substances with legitimate medicinal uses and high potential for abuse or dependence. The DEA's Office of Diversion Control prevents "diversion of controlled pharmaceuticals and listed chemicals from legitimate sources while ensuring an adequate and uninterrupted supply for legitimate medical, commercial, and scientific needs" (DEA, n.d.a., para. 1). Meanwhile, the U.S. Government Accountability Office (GAO) evaluates DEA diversion control and assesses counter diversion efforts (GAO, 2011, 2014). However, in the history of public policy aimed at reducing drug abuse the advent of PDMP was one of the most significant developments in counter diversion theory and praxis. (Global Justice Information Sharing Initiative, 2015)

At state level PDMP are a surveillance mechanism and activity designed to regulate diversion and enhance clinical practice by harvesting controlled substance prescription data from pharmacy databases and making the data available to authorized persons (Brady et al., 2014; Fishman et al., 2004). This begs the question as to whether pharmacies are providing accurate information (Finklea et al., 2014), and their use are

still under study (Griffin & Spillane, 2012; Gugelmann & Perrone, 2011). Nonetheless, the literature highlighted PDMP as a formidable tool in stemming diversion and improving medical care.

PDMP history is multifaceted and is a key element in recent counter-drug legislation. Although PDMP are now based on sophisticated electronic capabilities, New York State employed the first non-electronic PDMP in 1914 (Finklea et al., 2014, p. 3). The Harold Rogers PDMP, administered since 2002 by the U.S. Department of Justice, authorized grants to states seeking to "collect and analyze controlled substance prescription data through a centralized database" (U.S. Department of Justice, n.d., para. 2). This was followed by the National All Schedules Prescription Electronic Reporting Act of 2005 authorizing, encouraging, and helping to fund monitoring programs within the states and interstate program communication (Manchikanti et al., 2005). Meanwhile, the Secretary for HHS establishes standards for state monitoring programs and supports program development.

The National All Schedules Prescription Electronic Reporting Act (2005) had its origins in the work done by the American Society of Interventional Pain Physicians and was modeled on Kentucky's acclaimed electronic reporting act of 1998 (Manchikanti et al., 2005). Though numbers vary, implementation of PDMP were estimated at $450,000 to $1.5 million with annual operating costs ranging from $125,000 to $1 million (Finklea et al., 2014).

PDMP are metric driven tools with each state defining data collection, access, data retention, and disposition parameters within the context of the state's desired outcomes (Fishman et al., 2004; Katz et al., 2010a; Worley, 2012). Optimum use of

PDMP will be contingent on states achieving a balance between clinical and regulatory imperatives. (Finklea et al., 2014; Gilson et al., 2012; McCabe, West et al., 2013; McDonald & Carlson, 2013; Morgan et al., 2013; Pew Charitable Trusts, 2012; Reifler et al., 2012; Wilsey et al., 2010; Worley, 2012). The Pew addressed this issue succinctly:

> Although PDMPs currently differ in their relative emphasis on improving medical care versus reducing drug diversion and abuse, they are well positioned to serve both objectives. Indeed, these objectives substantially overlap since the appropriate prescribing of controlled substances can reduce their diversion and abuse, while law enforcement efforts can protect public health by limiting diversion. (Pew Charitable Trusts, 2012, para. 9)

Researchers underline the potential capacity for organizing data that PDMP represents (American Society of Interventional Pain Physicians, n.d.; Brady et al., 2014; McDonald & Carlson, 2013). For example, Finklea et al. (2014) identified three areas particularly ripe for further study: "defining effectiveness," accounting for differences among PDMP, and I assessing "potential confounding factors" (p. 10). The desired outcome is safe and effective clinical praxis.

Clinical decision making has had an important effect on the diversion economy (Brady et al., 2014). Baehren et al. (2009) studied emergency department physician analgesic prescribing, comparing prescribing decisions among doctors who had access to PDMP with those who did not. Baehren et al. found that with the advantage of PDMP-assisted analysis, doctors changed prescriptions for 41% of patients, reduced or denied opioids for 61%, and increased pain-relieving medicines for 39%. Volkow et al.'s (2011) study of 79.5 million opioid prescriptions during 2009 (39% of the 201.9 million

projected prescriptions for that year), revealed that a better understanding of opioid prescription patterns could be achieved by comparing prescribing patterns among medical specialties or within different age groups. To better understand the opioid diversion economy, researchers are assessing prescribing patterns using PDMP (Fortuna et al., 2010). Clinician and patient attitudes about pain management, for instance, could lead to a reassessment of opioid use (Arria, Garnier-Dykstra, et al., 2011; Morgan et al., 2013)

The Congressional Research Service reported that two-thirds of PDMP are "administered by either state pharmacy boards or health departments" (Finklea et al., 2014, p. 4). Thus, based on pharmacy reported Schedule II prescription data, PDMP can help detect suspicious prescribing patterns or doctor shopping. Of concern is the effect on clinical practice of diversion and diversion counter-measures. Some clinicians may be under-prescribing despite patients' legitimate pain symptoms, fearing they are contributing to opioid dependency or that they may be negatively labeled as an enabler. (Finklea et al., 2014; Gilson & Kreis, 2009; Lembke, 2012; Manchikanti et al., 2005; Smith et al., 2010; Van Zee, 2009).

However, Baehren et al. (2009) found that access to PDMP data improved clinician prescribing behavior. It is perhaps an overgeneralization to conclude that the nation's clinicians are either succumbing to the fear of being profiled as pushers or perceiving them as motivated completely by economic greed. It may be true that the more knowledge doctors have, the more they can make better decisions for prescribing opioids safely (Fischer et al., 2010; Morgan et al., 2013). Determining practitioner motives might be best done by considering the uniqueness of each community (McDonald & Carlson, 2013; McDonald et al., 2012). PDMP can give stakeholders community-specific data,

though PDMP deployment has not been fully refined (Clark, Eadie, Knue, Kreiner, & Strickler, 2012). Questions about data collection choices, intended use, data quality, methodologies, effectiveness measures, and interpretation continue to be addressed while the policy community seeks agreement on best practices (Clark et al., 2012; Congressional Research Service, 2016).

Summary and Conclusions

Epidemiological, policy, and pharmacometric data make clear the risk in opioid production and distribution. This phenomenon is explained, in part, by medicalization—the metamorphosis of a medical issue into a social issue. The sociocultural factors that contributed to the opioid epidemic have created what public policy and administration scholar practitioners refer to as a wicked problem. Unfortunately, such a problem does not lend itself easily to solution and public policy and safety stakeholders may have to settle for re-solving the problem in the context of their community's changing eco-social environment.

Campus communities, meanwhile, are a unique type of community as reflected in their homogeneity, the vulnerability of the population to opioid diversion, the values clarification process in which the young are immersed, and the social disorganization or organization dynamic peculiar to the higher education campus. And, while many studies have added to the prescription opioid diversion knowledge base, none have looked at collective efficacy as potentially mediating opioid diversion. The current study addressed this gap. Although research showed that college students may not be fully equipped emotionally, intellectually, or socially to make informed decisions about substance use (Lipari and Jean-Francois, 2016), their potential for mitigating opioid diversion through

social action has not been fully investigated. Information that sheds light on opioid misuse may support more effective support, risk management, public safety architectures, and policy design (Wachtel & Wachtel, 2012). In Chapter 3, I discuss the research design.

Chapter 3: Methodology

Introduction

My purpose in this quantitative study was to describe opioid misuse among U.S. college undergraduates by assessing the nature of opioid misuse among undergraduates and possible significant links between having filled a prescription and later misusing opioids or heroin use; between sources and motives resourcing misuse; and between observing disorder attributed to opioid misuse and regulating diversion; and between social efficacy and regulating diversion.

In this chapter, I focus on the research design and rationale and discus population, sample, recruitment, participation, and data collection. Instrumentation and variable operationalization are explained, and attention given to validity and ethical concerns.

Research Design and Rationale

Pervasiveness and persistence of opioid diversion in the United States has been established in the literature. While trend research has documented the epidemic nature of opioid misuse, the public or safety policy community requires new research (Andes et al., 2014; Goldstein, 1979, 1990). Therefore, this study used a quantitative, descriptive design to assess opioid diversion in the U.S. undergraduate community. Using a web-based survey, I asked undergraduates to report on their participation in the campus's opioid diversion economy, their observations of non-medical opioid use and its negative consequences; and whether, based on their observations and the campus's sense of collective efficacy, they took social control actions to regulate opioid misuse. An assessment of opioid diversion was based on undergraduate self-reporting via CODS.

Prescription diversion literature revealed the survey as the optimum method for determining the scope of prescription drug diversion. As a quantitative tool, it has the advantages of practicality, economy, and participant anonymity (Fowler, 2009; Nardi, 2014; Rea & Parker, 2005). Using a survey is consistent with approaches used by many researchers studying drug diversion (Patrick et al., 2013) and is a practical way to canvas student behavior involving a sensitive issue. McCabe, Boyd, Couper, Crawford, and D'Arcy (2002), for example, compared results of a web-based survey of undergraduates (N = 3,500) at a large Midwestern University with results from a national U.S. Postal Service delivered survey of undergraduates (N = 3,500) regarding alcohol and drug use to validate the use of web-based surveys for undergraduates. Likewise, Sampson, et al. (1997) found that collective efficacy was "an important construct that can be measured reliably at the neighborhood level by means of survey research strategies" (p. 923).

Methodology

Population and Sampling

Despite a robust promotional program, an earlier single-campus, random sample study failed to produce enough CODS responses for generalization. Given limited financial and temporal resources, I contracted with SG for a national, multicampus, undergraduate, nonrandom, sample panel. The population consisted of U.S. undergraduates, or those who graduated from, or terminated an undergraduate program within the last 12 months. The panel solicited by SG comprised a sampling frame of 631. The sample consisted of 434 (N = 434) undergraduates or recent undergraduates who were at least 18 years old.

To derive the sample size, I used Faul, Erdfelder, Buchner, and Lang's (2009) *G*Power 3.1*, a general, "flexible statistical power analysis program for the social, behavior, and biomedical sciences" (Faul, Erdfelder, Lang, & Buchner, 2007, p. 175). A small effect size was supported by SAMHSA's (2013) finding for small effect size in determining a "strong evidence level" as needed to find extant risk or protective factors that predict for opioid misuse (p. 2). Bartlett, Kotrlik, and Higgins (2001) urged over-sampling in survey based, social science research to offset a poor response rate, unless the researcher can insure response sufficiency. In this study SG guaranteed enough responses. Input parameters included: chi-square tests, goodness-of-fit, contingency tables, an effect size of 0.3, an alpha level = .05, a power level = .95, and *df* = 24. The *G*Power* calculation indicated a sample size of 423. The SG panel yielded 434 (*N* = 434) responses.

Recruitment, Participation, Data Collection

Respondent recruitment and CODS distribution were accomplished through SG's panel services. SG provides panel respondents through a network of sample partners that are chosen on a per-study basis, depending on which partner's strengths match the participant profile needed for the project.

Sample partners opt-in by completing a questionnaire asking about demographics, education and work experience, hobbies, consumer habits or interests, household information, medical or health circumstances, etc. Every six months, panelists renew their profile to maintain an accurate database. SG interrogated the panelist pool to match the sample criteria. Survey panelists amass points per survey participation minutes which

are redeemable for services selected by the panelist, such as apps, web-based vendors, travel accommodations, PayPal, and the like.

The invitation email was provided by SG and is shown in Appendix A. Although 434 completed surveys were guaranteed within the parameters of the contract, the survey landing page, shown in Appendix B, promoted the survey's purpose, the importance of honest and focused participation, the role of participants, estimated time to complete the survey, the promise of anonymity, procedures and question types, participants' rights, confidentiality and data security, informed consent, and an invitation to read more about the project on the study's webpage. Participants exited the survey by selecting *submit* at the end of the survey or by quitting at any time. Data was digitally transmitted to SG on completion.

Demographic information comprised age on last birthday, gender, racial or ethnic heritage, urban or rural school location, adamic status (rank), academic progress (self-reported quality of effort), living arrangements while in school, employment, financial worries, and whether their school had residence halls.

Pilot Study

The CODS validating process followed Fan and Yan's (2010) four phase guidelines for survey "development," "delivery," "completion," and "return" (p. 133), and was developed, tested, and piloted under the guidance of a cross-disciplinary, peer-expert panel. The CODS question inventory is shown in Appendix D.

The survey was piloted to a random sample of 25 students each, at two northeastern schools. The survey proved functional and it was readied for distribution at the research-partner site. The survey was promoted for five days at another northeastern

school and then sent to all enrolled undergraduates using the undergraduate email listserv. A low response rate precluded generalization but yielded a third pilot. After another edit and review cycle, CODS was piloted with 25 SG undergraduate panelists, separate from the SG study panel sample. The pilot proved the survey as functional and reliable.

Instrumentation and Operationalization

Following Forza's (2002) suggested validating process, a new survey instrument should be tested by "colleagues, industry experts and target respondents" (p. 171). CODS quality and validity were established by the a cross-disciplinary, peer-expert review panel which focused on format, content, and administrative protocol throughout development, testing, and piloting.

Following Fowler (2009) the priority of effort in developing a valid instrument went to enhancing question simplicity and understanding, enhancing confidence that the right questions were asked of participants who would know the answers, and mitigating the social desirability phenomenon by minimizing the perceived risk of sanction and enhancing participation as serving a higher purpose.

Question design was based on the literature review. Following SAMHSA's recommendation, I consulted Taylor-Powell's (1998) questionnaire design guide to establish criteria for an effective survey and reviewed the literature on survey research. Although, CODS had unique emphases and questions, I found it useful to compare CODS question types or categories with those used in the *2018 NSDUH: Final CAI Specifications for Programming* (CBHSQ, 2017) sections "pain reliever screener," "pain relievers main module," and "risk/availability section;" McCabe's et al. (2007) survey of

student opioid misuse at a Midwestern college; and the *2017 Indiana College Substance Use Survey*. To better craft questions for assessing collective efficacy, Hipp's (2016) "Collective efficacy: How is it conceptualized, how is it measured, and does it really matter for understanding perceived neighborhood crime and disorder," was very helpful; as was Sampson's, et al. (1997) seminal article, "Neighborhoods and violent crime: A multilevel study of collective efficacy."

CODS was tested through its early iterations by the peer-review panel, which consisted, of psychologists and psychiatrists with experience in addiction treatment, law enforcement, educators (to include social and hard scientists, and former university administrators), and an attorney. Some reviewers were permitted to complete test surveys without guidance. Others were given specific roles to play (e.g., a student who had misused prescription opioids, a student who sold them, etc.). Reviewers submitted written comments on their experience and offered suggestions for improving the survey.

The validating process demonstrated the instrument's functionality and reliability. CODS question types and that of other studies showed favorable comparability and the data analysis yielded results consistent with that of other studies. CODS variables were operationalized as follows.

Collective efficacy. An independent variable (interval level of measure). Respondents were asked to use a Likert scale ([5] strongly agree, [4] agree, [3] neither agree or disagree, [2] disagree, [1] strongly disagree) to indicate their level of agreement with eight statements indicating social cohesion or social ties.

- If I was concerned about my alcohol, opioid or other substance use I am confident that my school has staff available to help me.

- Students at my school are concerned about the negative impact opioid use has on other students.
- Students at my school help other students who struggle with opioid, alcohol, or other drug addictions.
- Students at my school are concerned for each other's health and welfare.
- Students at my school will report other students who are making too much noise to the Resident Advisor or other campus or local authorities.
- Students at my school will report other who are having a health emergency to the Resident Advisor or other campus or local authorities.
- Students at my school discussed the issue of opioid, alcohol, or other drug use.

The average of the eight Likert scores provided a collective efficacy score ([5] very strong sense of collective efficacy, [4] strong sense of collective efficacy, [3] moderate sense of collective efficacy, [2] weak sense of collective efficacy, [1] undetected level of collective efficacy).

Disorder. This independent variable refers to negative consequences attributed to opioid misuse. Respondents were asked to report whether they observed any of their fellow undergraduates suffer from poor decision-making, life unmanageability, or overdose: (a) yes, (b) no, or (c) "I am not sure." Participants also selected any of the following which they had observed: (a) inappropriate or risky behavior, (b) negative health effects, (c) misuse of other drugs, (d) negative personality or (e) relationship effects and they attributed these negative consequences to opioid misuse. Reporting any one of these constituted a positive response.

Diversion. A dependent variable (nominal level of measure) was defined as misusing or distributing prescription opioids.

Misuse was defined as use of a prescription opioid "in any way that a doctor did not direct, including use without a prescription of the respondent's own; use in greater amounts, more often, or longer than the respondent was told to take them; or use in any other way a doctor did not direct." (SAMHSA, 2016a, p. 2). Respondents were asked, "Have you used opioids during the past 12 months nonmedically? This includes using an expired prescription that you kept after the period or reason intended for its use." (a) yes; (b) no.

SAMHSA (2016a) uses the word *misuse* over nonmedical use. However, because the term could be perceived as pejorative, CODS uses the phrase *nonmedical use*. Students may be unwilling to see themselves as *misusing* opioids. Nonetheless, nonmedical use is defined in CODS using SAMHSA's definition for misuse.

Distributing prescription opioids was determined using a series of questions asking respondents who self-reported filling a prescription during the last 12 months to self-report giving away, selling, or trading away prescription opioids to friends or family. During the past 12 months, how many times:

- Have you given away some of your prescribed painkillers to a friend?
- Have you given away some of your prescribed painkillers to a family member?
- Have you sold some of your prescribed painkillers to a friend?
- Have you sold of your prescribed painkillers to a family member?
- Have you traded some of your prescribed painkillers to a friend?
- Have you traded some of your prescribed painkillers to a family member?

In a separate question all participants self-reporting misuse were asked: “In the last 12 months have you sold prescription pain killers (opioids) to anyone?” (a) yes; (b) no.

Filled a prescription for opioids. This independent variable (nominal level of measure) refers to respondents self-reporting that they filled a prescription for opioids prescribed for them by a clinician in the last 12 months. This variable was measured by asking: “During the past 12 months, did you fill a prescription for opioid pain relievers?” (a) yes; (b) no.

Heroin use. A dependent variable (nominal level of measure), respondents were asked, “During the last 12 months, have you used heroin?” (a) yes; (b) no, (c) “I prefer not to answer this question.”

Motive for misuse. An independent variable (nominal level of measure), motive was the self-reported rationale for the most recent occasion of misuse. Students were asked, “Thinking about the most recent time you used an opioid nonmedically, which of the following best describes your reason for doing so?” The response inventory included (a) to relieve physical pain; (b) to relieve emotional pain (examples: anxiousness, stress, traumatic memories, etc.); (c) to be more open, out-going, or accepted in social situations; (d) for recreational purposes (fuel the party, get high, fun, etc.); (e) Just to try it and see what it was like; (f) I may be physically or psychologically dependent on or I have a habit; (g) Other than the above.

Regulation. A dependent variable (nominal level of measure), signifying social control (action) aimed at mitigating the impact of the opioid diversion scheme. Respondents were asked: “Which of the following actions have you taken during the past

12 months?" Selecting one or any combination of the first five statements indicated social control action or regulation.

- I have discussed someone else's non-medical opioid use with a friend or family member.
- I have discussed someone else's non-medical opioid use with a member of my school faculty or staff.
- I have discussed someone else's non-medical opioid use with a professional outside the school.
- I have discussed someone else's non-medical opioid or other substance use directly with that person.
- I have chosen to avoid a person or persons who use opioids non-medically.
- I was aware or suspected someone else was using opioids nonmedically and I took no action.
- Exclusive/None of the above

Source for misuse. A dependent variable (nominal level of measure), this was the self-reported resource for the opioid most recently diverted for misuse. "Thinking about your most recent nonmedical pain killer use, which one of these, best describes your source for that opioid?" The response inventory includes (a) clinician (physician, physician assistant, etc.), (b) friend, (c) family member (relative), (d) dealer, (e) party host, (f) other than the above.

Data Analysis Plan

Data was organized for analysis by SG and analyzed using the International Business Machine Statistical Package for Social Sciences Statistics. In cross-sectional,

quantitative studies Creswell's (2009) suggested combining descriptive (RQ1) and inferential questions (RQ 2 to RQ6). This facilitated a comprehensive assessment of undergraduate diversion across the physical and moral domains. After determining pervasiveness (RQ1), essentially a descriptive task, five additional questions and hypotheses were proposed to explore five potential links between mediating factors (RQ2 through RQ6).

RQ1: How pervasive is opioid diversion among U.S. college undergraduates? Descriptive statistics were based on data drawn from questions that would be helpful in characterizing the extent and seriousness of opioid diversion on campus.

RQ2: What is the relationship between the motive undergraduates self-reported for misusing opioids and their self-reported source for misuse? The Chi-square test was used for significance and Cramer's V for strength of association between variables in the following hypotheses.

H_02: There is no significant relationship between the reason for an undergraduate's opioid misuse and the source for misuse.

H_A2: There is a significant relationship between the reason for an undergraduate's opioid misuse and the source for misuse.

RQ3: What is the relationship between having filled a prescription for opioids and misusing opioids? The Chi-square test was used for significance and Cramer's V for strength of association between these two variables in the following hypotheses.

H_03: There is no significant relationship between having filled a prescription for opioids and misusing them.

H_A3: There is a significant relationship between having filled a prescription for opioids and misusing them.

RQ4: What is the relationship between self-reported opioid misuse and self-reported heroin misuse. The Chi-square test was used for significance and Cramer's V for strength of association between variables in the following hypotheses.

H_04: There is no significant relationship between self-reported opioid misuse and self-reported heroin misuse.

H_A4: There is a significant relationship between self-reported opioid misuse and self-reported heroin misuse.

RQ5: What is the relationship between attributing observed disorder to opioid misuse and regulating opioid misuse? Observed disorder was operationalized by the respondent choosing any one example of unwanted behavior. Similarly, regulation was indicated in the respondent choosing any social control action; specifically, this meant discussing another person's opioid misuse with someone else or the affected person or avoiding the affected party. The Chi-square test was used for significance and Cramer's V for strength of association between these two variables in the following hypotheses.

H_05: There is no significant relationship between attributing observed disorder to opioid misuse and regulating opioid misuse.

H_A5: There is a significant relationship between attributing observed disorder to opioid misuse and regulating opioid misuse.

RQ6: What is the relationship between campus social efficacy and taking a social control action to regulate misuse? The vigor of campus social efficacy was measured by asking survey participants to use a Likert scale (Strongly agree [5] – strongly disagree

[1]) to assess eight value statements pertaining to social ties or cohesion. The average of these scores represented the respondent's estimate of campus social efficacy.

Participants were asked to report their social control actions (regulation) or their decision not to act; specifically, this meant discussing another person's opioid misuse with someone else or the affected person or avoiding the affected party.

An independent samples *t*-test with 'taking a social action (regulation)' as the independent variable was used to test the following hypotheses.

$H_0 6$: There is no significant relationship between campus social efficacy and taking some social control action to regulate misuse.

$H_A 6$: There is a significant relationship between campus social efficacy and taking some social control action to regulate misuse.

Threats to Validity

There was no manipulation of variables, and the variables represent the self-reported extant environment. Criteria reflect Frankfort-Nachmias and Nachmias's (2008) contention that content development requires "familiarity with all the items describing the content population," which is useful in "exploratory research, when investigators attempt to construct instruments and employ them for the first time" (p. 150).

The literature indicates that confidence in self-reporting instruments is warranted. McCabe et al. (2014) stated, "There is general consensus that self-report drug surveys have a high degree of validity" (p. 1181). The authors mitigated bias "by informing potential respondents that participation was voluntary, ensuring potential respondents that data would remain anonymous, using a self-administered computer-based survey, and

explaining the relevance of the study to potential respondents" (p. 1181). The same steps were taken for CODS.

It should be noted that McCabe et al. (2014) also reported confidence in self-report surveys based on their review of research that attempted to substantiate self-report surveys using chemical or biological analysis. However, some of the researchers they cited to support their methodology experienced difficulties due to technical issues. For example, Fendrich, Johnson, Wislar, Hubbell and Spiehle (2003) tested for the veracity of their sample in which they used computer-assisted, survey responses followed by post-testing respondents' hair, saliva, or urine for evidence of marijuana, cocaine, or heroin. The authors found that respondents underreported drug use.

Moore et al. (2014) were unable to clearly correlate college waste water tests showing the presence of key psychostimulants to student survey self-reports of psychostimulant use. Wills and Cleary (1997) found they could not rely on the Breath CO Analyzer to accurately confirm 7th Grade student survey self-reports on cigarette smoking. On the other hand, while these studies did not support the use of self-reporting methodologies as McCabe's et al. had suggested, their reference to Zaldivar Basurto et al. (2009) was useful, in that the latter authors found a very satisfactory correlation between urine testing and university student, survey self-reporting of cannabis and cocaine use.

Gosling, Vazire, Srivastava, and John's (2004) examined web-based surveys used in psychology and concluded that web sampling was as reliable as any "traditional methods" and yielded "similar findings" (p. 102). While some authors have suggested "that college populations are not valid in assessing theories because they are comprised of a subpopulation" (Wiecko, 2010, p. 1189), Wiecko found that college students

participate in the same patterns of criminality and attitude formation as the larger population.

Under the assumption that safeguards can heighten integrity-consciousness or mitigate dishonest impulses, informed consent questions asked respondents to confirm that were at least 18 years of age, indicate their willingness to participate; and confirm that they had no intent to deceive in taking the survey. Finally, Rea and Parker (2005) stated surveys are a recognized and important part of democratic society's effort to align public interest with public policy and that this seems to encourage veracity.

CODS' development attempted to cultivate a spirit of trust and integrity through survey design and execution, by helping respondents value survey participation, and by creating a safe, anonymous on-line environment. The reliability of CODS was also supported by the fact that the current study's results were consistent with previous studies.

Ethical Procedures

The core principle for an ethical study was the use a systematic "operational ethic," (Cooper, 2006, p. 18) consistent with public service. This entails valuing clarity of purpose, transparency, and candor. I conducted this study in accordance with the codes of ethics for the American Society of Criminology (2016), the American Society for Public Administration (2013), and the International Association of Emergency Managers (2011).

This study was reviewed at each stage by a peer review panel consisting of mental health and medical professionals, education administrators and faculty, law enforcement, and an attorney. The study received Walden's Institutional Review Board (IRB) approval On January 17, 2018 (#01-17-18-0173545).

Participants were members of a commercial survey panel provided by SG and no special agreements or permissions were needed to access the panel members. Participants did not provide personal identification information. Confidentiality and non-attribution were assured, and anonymity preserved. SG hosted the survey using secure transmission and data storage protocols. Data is retained under digital password protocols. No physical records were made.

The Thank You page, shown in Appendix C, provided guidance to participants having concerns about alcohol or other drug use/abuse or suicide. Links to help and knowledge centers were provided.

Summary

In this chapter I focused on the quantitative cross-sectional methodology for testing opioid diversion among U.S. undergraduates. Opioid diversion poses a dilemma for campus public safety stakeholders since opioid misuse may be anticipated on a college campus based on national trend data. Meanwhile, no previous studies sought to measure campus collective efficacy as potentially mediating opioid misuse. Goldstein (1990) noted, “it is inherent in the nature of the inquiry process—actually one of its major values—that analysis of a problem often leads to redefinitions of the problem” (p. 76). Per Goldstein, the current study facilitated a fresh perspective on campus opioid diversion through the lens of disorganization theory. In Chapter 4, I discuss the results of the study.

Chapter 4: Results

Introduction

My purpose in this quantitative, cross-sectional, survey analysis was to describe opioid misuse among U.S. undergraduates by assessing its pervasiveness on campus and key links between factors that potentially mediate misuse within the diversion economy's physical and moral domains. This study addressed the following research questions:

RQ1: How pervasive is opioid diversion among U.S. college undergraduates?

RQ2: What is the relationship between the motive undergraduates self-reported for misusing opioids and their self-reported source for misuse?

H_02: There is no significant relationship between the reason for an undergraduate's opioid misuse and the source for misuse.

H_A2: There is a significant relationship between the reason for an undergraduate's opioid misuse and the source for misuse.

RQ3: What is the relationship between having filled a prescription for opioids and diverting opioids?

H_03: There is no significant relationship between having filled a prescription for opioids and diverting them.

H_A3: There is a significant relationship between having filled a prescription for opioids and diverting them.

RQ4: What is the relationship between self-reported opioid misuse and self-reported heroin misuse?

H_04: There is no significant relationship between self-reported opioid misuse and self-reported heroin misuse.

H_A4: There is a significant relationship between self-reported opioid misuse and self-reported heroin misuse.

RQ5: What is the relationship between attributing observed disorder to opioid misuse and regulating opioid misuse?

H_05: There is no significant relationship between attributing observed disorder to opioid misuse and regulating opioid misuse.

H_A5: There is a significant relationship between attributing observed disorder to opioid misuse and regulating opioid misuse.

RQ6: What is the relationship between campus social efficacy and taking a social control action to regulate misuse?

H_06: There is no significant relationship between campus social efficacy and taking some social control action to regulate misuse.

H_A6: There is a significant relationship between campus social efficacy and taking some social control action to regulate misuse.

After a brief explanation of the pilot survey and validating process, and a description of data collection, I present the findings. Data analysis for each research question provides an explanation of tests applied to the data. A summary of findings concludes the chapter, preceding a final chapter explaining the study's implications for future research.

Pilot Study

The survey was piloted to a random sample of 25 students at each of two northeastern schools. The survey proved functional and it was readied for final distribution at a research-partner site, another northeastern college, where it was promoted for five days prior to distribution to all enrolled undergraduates. Insufficient

responses precluded generalization but provided a useful third pilot. After a final edit and review cycle, CODS was piloted with 25 SG undergraduate panelists, separate from the final SG sample. The survey's functionality was verified, and the results confirmed that the survey would solicit useful data.

Data Collection

SG collected the data from the survey in August 2018 during a 2-day period. A total of 631 respondents accessed the survey and after ineligible respondents or the uninterested self-excluded the final sample contained 434 undergraduates. The demographic features of the sample are shown in Table 5.

All participants were between 18 to 25 years of age on their last birthday. Most respondents were White (n = 267, 61.5%) females (n = 371, 85.5%) attending an urban school (n = 363, 83.6%). Three out of four respondents reported that their schools offered residence life on campus (n = 332, 76.5%), although most respondents lived off campus (n = 289, 66.6%). One in four participating undergraduates were sophomores (n = 121, 27.9%) or seniors (n = 116, 26.7%), with almost as many juniors (n = 98, 22.6%). Asked to self-assess their academic progress during the past 12 months, most self-reported being an above average student (n = 175, 40.3%). Slightly more than half of the respondents worked part time (n = 220, 50.7%) and 18.2% (n = 79) were full-time employees. Most undergraduates strongly agreed (n = 172, 39.6) or agreed (n = 147, 33.9%) that they worried about having the money needed to finish their academic programs.

Table 5

Sample Demographic Characteristics

Variable	Frequency	Percent
Gender		
Female	371	85.5
Male	58	13.4
I do not wish to answer	5	1.2
Race/Ethnicity		
American Indian/Alaska Native	2	0.5
Asian	41	9.4
Black/African-American	70	16.1
Hispanic/Latino	38	8.8
Native Hawaiian or Other Pacific Islander	1	0.2
White	267	61.5
Other	11	2.5
Prefer not to answer	4	0.9
School location		
In a rural area	66	15.2
In an urban area	363	83.6
I am not sure	5	1.2
Academic rank or class		
Undergraduate freshman	80	18.4
Undergraduate sophomore	121	27.9
Undergraduate junior	98	22.6
Undergraduate senior	116	26.7
Undergraduate in a category not listed above	19	4.4
Academic progress (success)		
Struggling student	5	1.2
Below average student	9	2.1
Average student	122	28.1
Above average student	175	40.3
Excellent student	123	28.3
Living arrangement while at school		
At home or in other housing not owned by school	289	66.6
School owned housing	145	33.4

Employment while at school		
Occasionally (e.g., for holidays, breaks, etc.)	66	15.2
Part-time	220	50.7
Full-time	79	18.2
None of the above	69	15.9
I worry about having the money I need to complete my education.		
Strongly disagree	17	3.9
Disagree	56	12.9
Neither agree or disagree	42	9.7
Agree	147	33.9
Strongly agree	172	39.6
Residential campus		
Yes	332	76.5
No	71	16.4
I am not sure	31	7.1

Results

Pervasiveness (RQ1)

Descriptive statistics were used to gauge the scope of campus diversion based on: (a) respondents' self-reported past-year experience of opioids and, (b) respondents' assessment of diversion grounded in their observations. Response frequencies with percentages describing the prevalence and intensity of opioid misuse on campus are depicted in Table 6.

The prevalence of opioid misuse in the sample was 6.9% (*n* = 30) and 2.9% (*n* = 13) self-reported using heroin during the last 12 months. The frequency for observing another undergraduate misusing opioids was 23.8% (*n* =103), and for being told about someone else's misuse was 30.3% (*n* =131). The frequency for reporting knowledge of overdoses among undergraduates was the same for both opioids and heroin, 9% (*n* = 39).

Likewise, 9% (*n* = 39) reported knowing an undergraduate who switched from opioid misuse to using heroin. Two in five undergraduates (*n* = 174, 40.3%) assessed campus opioid misuse as very common (*n* = 45, 10.5%) or common (*n* = 129, 29.8%), while 31% (*n* = 136) strongly agreed (*n* = 45, 10.6%) or agreed (*n* = 90, 20.8%) that campus opioid misuse was a serious issue.

Table 6

Prevalence and Intensity of Opioid Diversion (Misuse)

Variable	Frequency	Percent
Opioid misuse during the past 12 months		
Yes	30	6.9
No	404	93.1
Heroin use during the past 12 months		
Yes	10	2.5
No	414	95.6
I prefer not to answer.	7	1.8
How common do you think non-medical prescription opioid use is among undergraduates at your school?		
Very common	45	10.5
Common	129	29.8
Neutral – I do not know.	177	41.0
Not common	72	16.6
Not at all common	8	2.0
During the past 12 months, have you SEEN a fellow undergraduate from your school take a painkiller (prescription opioid) and you knew it was being taken non-medically?		
Yes	103	23.8
No	278	64.1
I am unsure.	52	12.1
During the past 12 months, as an undergraduate at your school TOLD you that they took, or are taking, opioid (painkillers) nonmedically?		
Yes	131	30.3
No	276	63.7
I am unsure.	26	6.1

At my school non-medical use of opioids is a serious issue.		
Strongly agree	46	10.6
Agree	90	20.8
Neither agree nor disagree	184	42.3
Disagree	81	18.6
Strongly disagree	33	7.7
Has anyone at your school overdosed on opioids during the last 12 months?		
Yes	39	9.0
No	204	47.0
I am not sure.	191	44.0
Has anyone at your school overdosed on heroin during the last months?		
Yes	39	9.0
No	204	47.0
I am not sure.	191	44.0

Response frequencies and percentages for having filled a prescription for opioids or completing diversion transactions to family and friends *via* gift, selling, or barter are depicted in Table 7. Thirty (n = 30, 6.9%) students self-reported having filled a prescription during the last 12 months. Approximately one in five (n = 13, 21.7%) gave opioids to friends and 21.7% (n = 13) gave opioids to family. Remaining diversion patterns included the 11.7% (n = 7) who sold opioids to a friend; 10.0% (n = 6) who sold them to family; the 11.7% (n = 7) who traded them to a friend; and 10.0% (n = 6) bartered to family.

Table 7

Filling a Prescription for Opioids and Diversion to Friends and Family

Variable	Frequency	Percent
Have you filled a prescription for opioid painkillers prescribed for you by a clinician (doctors, physician assistants, etc.) during the past 12 months?		
No	404	93.1

Yes	60	13.8
Gift to friend		
No response/Did not fill prescription	374	86.2
Not at all	47	10.8
1 time	8	1.8
2 times	4	0.9
3 or more times	1	0.2
Gift to family		
No response/Did not fill prescription	374	86.2
Not at all	47	10.8
1 time	9	2.1
2 times	1	0.2
3 or more times	3	0.7
Sold to friend		
No response/Did not fill prescription	374	86.2
Not at all	53	12.2
1 time	5	1.2
3 or more times	2	0.5
Sold to family		
No response/Did not fill prescription	374	86.2
Not at all	54	12.4
1 time	1	0.2
2 times	4	0.9
3 or more times	1	0.2
Bartered to friend		
No response/Did not fill prescription	374	86.2
Not at all	53	12.2
1 time	3	0.7
2 times	3	0.7
3 or more times	1	0.2
Bartered to family		
No response/Did not fill prescription	374	86.2
Not at all	54	12.4
1 time	1	0.2
2 times	2	0.5
3 or more times	3	0.7

Relationship Between Motives and Sources (RQ2)

No significant relationship was found between self-reported motive for misusing opioids on the last occasion of misuse (independent variable) and the self-reported source for opioids misused (dependent variable) was shown using a chi-square analysis: $\chi^2(20) = 31.23$, $p = .052$, Cramer's V = .51.

Frequency crosstabulation is exhibited in Table 8. Among those misusing opioids ($n = 30$) the primary motive for misusing on the last occasion of misuse was to relieve emotional pain ($n = 11$, 36.7%) or to relieve physical pain ($n = 8$, 27.7%). The primary sources for misused opioids were clinicians ($n = 12$, 40%) or friends ($n = 12$, 40%).

Table 8

Observed and Expected Frequencies of Motive Versus Source of Opioid Misuse

Motive	Source				
	A clinician	Dealer	Family member	Friend	Party host
For recreational purposes (fuel the party, get high, fun, etc.)	2 (2.0)	0 (0.2)	1 (0.7)	1 (2.0)	1 (0.2)
I may be psychologically or physically dependent on opioids or I have a habit	0 (0.4)	0 (0.0)	1 (0.1)	0 (0.4)	0 (0.0)
Just to try it and see what it was like	0 (0.8)	0 (0.1)	1 (0.3)	1 (0.8)	0 (0.1)
To be more open, out-going, or accepted in a social situation	1 (1.2)	1 (0.1)	1 (0.4)	0 (1.2)	0 (0.1)
To relieve emotional pain (examples: suppress anxiety, stress,	4 (4.4)	0 (0.4)	0 (1.5)	7 (4.4)	0 (0.4)

traumatic memories, etc.)					
To relieve physical pain	5 (3.2)	0 (0.3)	0 (1.1)	3 (3.2)	0 (0.3)

Note. Expected frequencies are in parentheses.

Relationship Between Filling a Prescription and Diversion (RQ3)

Questions required respondents to state whether they had filled a prescription for opioid pain killers in the last 12 months (independent variable) and whether they had misused opioids during the last 12 months (dependent variable). Of the 60 (13.8%) undergraduates who filled a prescription, one in four (n = 15, 25%) misused opioids. Based on the chi-square test, a significant relationship between having filled a prescription and later misusing opioids was evident, $\chi^2(1) = 35.40$, $p < .001$, Cramer's V = .29. Table 9 provides frequency crosstabulation data.

Table 9

Observed and Expected Frequencies of Filling Prescription Versus Opioid Misuse

	Used opioids non-medically	
Filled prescription	No	Yes
No	359 (348.1)	15 (25.9)
Yes	45 (55.9)	15 (4.1)

Note. Expected frequencies are in parentheses.

Relationship Between Opioid Misuse and Heroin Use (RQ4)

A chi-square analysis tested a potential link between having misused opioids in the past 12 months (independent variable) and using heroin in the past 12 months (dependent variable). Thirty (30, 6.9%) undergraduates misused opioids and one third of these used heroin (n = 9, 30%). A significant relationship was established *via* a chi-square test: $\chi^2(2) = 98.73$, $p < .001$, Cramer's V = .48. A crosstabulation of data is exhibited in

Table 10

Observed and Expected Frequencies of Opioid Misuse Versus Heroin Use

	Used heroin		
Used opioids non-medically	I prefer not to answer this question	No	Yes
No	8 (7.4)	394 (386.3)	2 (10.2)
Yes	0 (0.6)	21 (28.7)	9 (0.8)

Note. Expected frequencies are in parentheses.

Relationship Between Observed Disorder and Regulation (RQ5)

A series of chi-square tests were conducted to determine the association between attributing observed negative consequences to opioid misuse (independent variable) and the respondent acting to regulate opioid diversion (dependent variable) *via* a social control action. Social control actions included discussing someone else's non-medical opioid use with a friend or family member, discussing it with family, discussing it with school faculty or staff, discussing it with a professional outside of school, discussing it directly with the affected person, or avoiding someone who used opioids non-medically. Table 11 displays frequency crosstabulation for these variables.

Poor Decision-making. There was a significant association between seeing an undergraduate suffer from making poor decision-making attributed to opioid misuse and regulation, $\chi^2(2) = 80.00$, $p < .001$, Cramer's V = .43, with more students than expected performing a social control action after seeing a co-undergraduate suffer from making poor decisions attributed to misusing pain killers.

Life Unmanageability. There was a significant association between witnessing a co-undergraduate's life become unmanageable and regulation: $\chi^2(2) = 63.44$, $p < .001$,

Cramer's V = .38, with more participants than expected performing a social control action when they saw a fellow student experiencing life unmanageability ostensibly due to opioid misuse.

Risky Behavior. There was a significant association between observing opioid misuse lead to inappropriate or risky behavior and regulation: $\chi^2(1) = 73.53$, $p < .001$, Cramer's V = .41, with more students than expected performing a social control action when they observed opioid misuse lead to inappropriate or risky behavior.

Unhealthiness. There was a significant association between witnessing opioid misuse affect someone's health negatively and regulation: $\chi^2(1) = 44.47$, $p < .001$, Cramer's V = .32, with more undergraduates than expected performing a social control action after seeing opioid misuse affect someone's health negatively.

Misuse of Other Drugs. There was a significant association between seeing opioid misuse lead to misusing other drugs and regulation: $\chi^2(1) = 38.15$, $p < .001$, Cramer's V = .30, with more participants than expected performing a social control action after seeing opioid misuse lead to misusing other drugs.

Personality Change. There was a significant association between observing opioid misuse affect someone's personality negatively and regulation: $\chi^2(1) = 51.45$, $p < .001$, Cramer's V = .34, with more participants than expected performing a social control action after witnessing opioid misuse affect someone's personality negatively.

Relationships. Finally, there was a significant association between seeing opioid misuse affect a co-undergraduate's important or significant relationships negatively and

regulation: $\chi^2(1) = 35.92$, $p < .001$, Cramer's V = .29, with more respondents than expected taking a social control action when they observed opioid misuse affect someone's important or significant relationships negatively.

Table 11

Observed and Expected Frequencies of Observed Disorder Versus Regulation

	Social control action taken	
Negative consequence	No	Yes
Seeing an undergraduate suffer from making poor decisions attributed to non-medical opioid use		
Not sure	41 (43.5)	31 (28.5)
No	191 (150.9)	59 (99.1)
Yes	30 (67.6)	82 (44.4)
Seeing an undergraduate whose life became unmanageable		
Not sure	33 (38.0)	30 (25.0)
No	210 (175.7)	81 (115.3)
Yes	19 (48.3)	61 (31.7)
Seeing opioid misuse lead to inappropriate or risky behavior		
No	213 (171.4)	71 (112.6)
Yes	49 (90.6)	101 (59.4)
Seeing opioid misuse affect someone's health negatively		
No	221 (190.8)	95 (125.2)
Yes	41 (71.2)	77 (46.8)
Seeing opioid misuse lead to misusing other drugs		
No	208 (178.7)	88 (117.3)
Yes	54 (83.3)	84 (54.7)
Seeing opioid misuse affect someone's personality negatively		
No	217 (183.5)	87 (120.5)
Yes	45 (78.5)	85 (51.5)

Negative consequence	Social control action taken	
	No	Yes
Seeing opioid misuse affect someone's important or significant relationships negatively		
No	219 (192.0)	99 (126.0)
Yes	43 (70.0)	73 (46.0)

Note. Expected frequencies are in parentheses.

Relationship Between Collective Efficacy and Regulation (RQ6)

The potential link between campus social efficacy and regulation was tested using an independent samples *t*-test with 'taking a social action (regulation)' as the independent variable. Respondents took such action, or they did not.

Social efficacy (dependent variable) was computed as an average of eight Likert-scale questions in which respondents estimated their co-undergraduates' value perspectives. Before interpreting *t*-test statistics, normality and equality of variances were tested. A Shapiro-Wilk test revealed that values for social efficacy were significantly different from a normal distribution ($p < .001$). However, the skewness (-0.06) and kurtosis (0.68) of this variable were within the normal range. Westfall and Henning (2013) noted that variables with skewness less than 2 (in absolute value) and kurtosis less than 3 (in absolute value) may be assumed as normally distributed. Levene's test for equality of variances was not significant ($p = .117$), signifying that equal variances could be assumed.

T-test results were significant, $t(432) = 3.21$, $p = .001$. Thus, taking a social control action was correlated to higher social efficacy scores. Undergraduates who took a social control action ($M = 3.68$, $SD = 0.63$) had a higher social efficacy score than those that did not ($M = 3.49$, $SD = 0.55$).

Summary

Descriptive statistics were compiled and presented for RQ1—characterizing opioid diversion among undergraduates and showing a prevalence of opioid misuse of 6.9%. Chi-square analyses were conducted to address RQ2 through RQ5. (RQ2) There was no significant relationship between the motive for misusing opioids and the source of opioids that were misused. (RQ3) There was a significant relationship between filling a prescription for opioid pain killers and then misusing opioids. (RQ4) There was a significant association between misusing opioids and using heroin. (RQ5) The results showed that observing negative consequences attributed to opioid misuse was significantly linked to a social control action (regulation). Finally, an independent samples *t*-test was conducted to address RQ6, showing that respondents who performed a social control action had higher campus social efficacy scores than those who did not perform a social control action. The next chapter considers the implications of these results and indicators for future research.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

My purpose in this quantitative assessment of opioid diversion among U.S. undergraduates was to gauge the scope of misuse, the behaviors that drive diversion on college campuses, and the potential for mediating diversion through collective efficacy. To that end, the significance of links between some factors affecting the diversion scheme were explored: between having filled a prescription and later misusing opioids; between misusing opioids and heroin use; between sources and motives resourcing misuse; between observing disorder attributed to opioid misuse and regulating diversion; and between social efficacy and regulating diversion.

The results showed that the prevalence of opioid misuse in the sample was 6.9% and most of these individuals had not diverted opioids to friends or family. No significant relationship was found between the reason respondents said they misused opioids and who provided them. There was a significant link between having filled a prescription for opioids and then later misusing them and between having misused opioids and heroin use. Based on disorganization theory RQ5 and RQ6 were concerned with the campus community's capacity to regulate diversion through social action. Results reveal that there is a significant association between having observed negative life events that are then attributed to opioid misuse and regulating diversion, and there is an association between social efficacy and regulation.

The findings demonstrated (a) the prevalence of opioid misuse at a rate comparable to trends in NSDUH findings for the 18 to 25-year age cohort; (b) the scope of campus diversion as an emerging threat to student health and welfare; and (c) collective efficacy as potentially mediating campus diversion.

Interpretation of Findings

Pervasiveness

The study's first task was to assess diversion, understood as either misusing or distributing opioids, by providing respondents the opportunity to self-report opioid misuse; assess campus diversion, and self-report distribution of opioids as part of the diversion scheme.

As shown in Table 3, the prevalence of past year opioid misuse, at 6.9% (n = 30), was slightly less than NSDUH estimates for 2015 to 2017. By comparison, statistics for past year abuse of opioid pain relievers among *all* those 12 years old or older were—4.7 % in 2015, 4.3% in 2016, and 4.1% in 2017. This underscores the significant risk for misuse within the undergraduates' age cohort.

A review of MTF (2018) statistics suggested that 2003 to 2009 may have been the high-water mark for use of narcotics other than heroin by college students and the rate of opioid abuse has since declined. McCabe et al. (2014) noted this decline in their 10-year web-based, survey study (2003 to 2013) of prescription misuse among undergraduates at a Midwestern university and they found an inverse increase in stimulant use. Martins' et al. (2017) analysis of misuse from 2002 to 2014, likewise revealed a decrease in past-year, non-medical, prescription opioid use among adolescents, emerging adults (ages 18 to 25 years), and young adults (ages 26 to 34 years).

But, while past-year opioid misuse may be declining, those ages 18 to 25 years are still abusing opioids more frequently than the rest of the population (CBHSQ, 2017, 2018). Schulenberg et al. (2018) noted that MTF data showed illegal drug use was highest among college students (42%) in 2017. Also, compelling is the increasing age-adjusted morbidity related to opioid misuse among all those ages 15 to 24 years. (Hedegaard et al., 2017) Lastly, CODS 2018 and NSDUH past year data must be considered with NSDUH past month opioid misuse statistics for those enrolled in college, age 18 to 22, indicating that current misuse is about the same at 1.3% during the past 30 days for 2015 and 2016, and 1.4% in 2017.

The emergence of diversion was highlighted in data revealing that two of five undergraduates reported opioid misuse as common; almost one in four observed another undergraduate misuse opioids; almost a third were told of another's own misuse; and almost a third perceived opioid misuse as a serious issue on campus. In the context of statistics revealing college students as vulnerable to the onset of alcohol or other drug abuse, these observations indicate that, despite a possible decline in opioid misuse for all those age 12 years or older, diversion continues to supplement the larger drug abuse issue and continues to emerge as a significant threat to college student health and safety.

Motives and Sources

Speculation that most undergraduates misused opioids to relive pain and that their most likely source for pain relievers would be friends must be tempered by failure to reject the null hypothesis. There was no significant relationship between the rationale for misuse and the source for diverted opioids. Clinicians and friends were, in equal parts, the primary sources for misused opioids.

In the literature, friends and family were usually treated as a single, combined source for misused prescription opioids and the one most commonly cited as fueling the diversion economy. (Daniulaityte et al., 2014; McCabe et al., 2007; Mui et al., 2014; SAMHSA 2017, 2018) Clinicians were the number-two source for misused opioids among those ages 18 to 25 years, and the primary source for misused opioids obtained from friends or family. (SAMHSA 2017, 2018) For these reasons, the effort to parse friends and family as separate sources may have been helpful, since, as shown in Table 8, family was shown as a discrete third source compared to clinicians or friends, highlighting the critical role clinicians play in the opioid system. (Wakeland et al., 2013). Although the literature cited physical pain relief as the most frequent motive for misuse (McCabe, West et al., 2013; SAMHSA 2017, 2018; Zullig and Divin, 2012), the current study showed that among those who misused opioids (n = 30) the primary rationale for misuse was to relieve emotional pain (n = 11, 36.7%), with physical pain relief at 26.7% (n = 8), and recreational use at 13.3% (n = 4).

Diversion

A significant association was found between having filled a prescription and later misusing or diverting opioids as shown in previous finings (SAMHSA, 2017, 2018). CODS 2018 results, shown in Table 3, demonstrate that those filling a prescription are at increased risk for deciding to divert them, primarily, by simply giving them away, and probably to a friend or family member in emotional pain.

Opioid Misuse to Heroin Use

Although, CODS 2018 self-reported heroin use (n = 13, 2.9%) was significantly higher than that which was reported for those age 18 to 25 in past year NSDUH (2016)

(1.6%) or 2017 (1.8%) data, the significant relationship found between opioid misuse and heroin use is consistent with increased concern, expressed by public policy and safety stakeholders, that opioid misuse is a gateway to heroin use (Martins et al., 2016). Jones (2013) found increasing heroin use among past year opioid misusers in his analysis of NSDUH data for 2002 to 2004 and 2008 to 2010. He noted that more heroin users in the 2008 to 2010 cohort reported previous opioid misuse (83%) than in the 2002 to 2004 cohort (64%). He also observed increased risk for heroin use among those more frequently misusing opioids. Muhuri, Gfroerer, and Davies (2013) studied similar increases, attributable in part to heroin's less expensive pricing and in part, perhaps, to a 2010 crush-resistant reformulation of OxyContin, designed to make it more difficult to defeat its time-release mechanism.

Social Disorganization and Collective Efficacy

Applying social disorganization theory to opioid diversion by testing collective efficacy meant determining if collective efficacy was operative and then, whether undergraduates perceived opioid misuse and related delinquency as an issue that invited their social concern. In this study, collective efficacy was successfully operationalized and those respondents with a higher collective efficacy score were shown to be more likely to take a social action (regulation) than those with a lower score.

While a significant relationship was found between having observed disordering conduct and taking social action, the legitimacy of the null hypothesis was potentially potent. On the one hand, campus social cohesion or ties may have been nil, or on the other hand, students may have shown indifference to the issue. Neither proved the case.

Rather a robust link between collective efficacy and regulation was apparent. Students who perceived extant social ties or cohesion 'found' the problem and acted.

In their extensive and useful review of social disorganization theory as framed by various authors, Cantillion et al. (2003), showed the consistency of empirical support for informal social control, although operationalized in various ways by different researchers. Following Sampson et al. (1997), they noted:

> Logically, informal social control taps into the ability of the community to realize its common values and regulate behavior that would be harmful to the collective and, in fact, there was extensive discussion over the years on the important role of informal social control in controlling crime and delinquency. (p. 324)

The current study affirmed the link between social ties or social cohesion and the decision of undergraduates to exercise informal social control. If they saw something they were likely to say something.

Limitations of the Study

As demonstrated, cross sectional studies are indispensable for assessing collective efficacy, because they provide public policy and safety stakeholders a sense of the situation under prevailing conditions. Cross sectional studies are especially beneficial if they correspond to other studies and provide useful points of comparison. However, though residential mobility of the student body may make it difficult to deploy longitudinal studies on campus they offer many benefits. They may provide greater precision in identifying trends in alcohol or other drug use or in indicating changes in the quality of social ties or cohesion that characterize collective efficacy over time.

A second limitation pertains to the types of social actions used to operationalize regulation. As Kubrin and Weitzer (2003) noted, operationalizing social disorganization's concepts is a central challenge in the theory's application. The actions selected for the current study were very basic: discussing ones' concerns or avoidance. Other regulating actions or activities could have been identified; for example: joining an organization committed to opioid misuse prevention, intervention, or recovery; taking a course or attending a lecture to learn more about opioid misuse; searching the web for more information about opioid misuse; political participation to shape policy related to misuse; or serving on a behavior assessment team or as part of a restorative judicial program. Regulating actions specific to the opioid crisis and those more generally related to the health and wellbeing of peers may both mitigate misuse or the unwanted behavior that sometime flows from misuse.

In addition, Kubrin and Weitzer (2003) pointed out several factors that can be expressed as limitations. Their concern was that collective efficacy may not explain social action entirely and it probably doesn't. Likely, social action is overdetermined, and unknown aspects need to be examined. These "contextual effects" (p. 391) would include the role other social phenomenon in the environment play. It should be remembered that Kubrin and Weitzer were writing about social disorganization applied to a neighborhood study, though as shown in this study, a cross-sectional methodology can identify some of these effects. To the authors' point however, a thorough-going study of social disorganization within a community would benefit from testing a variety of tools or methodologies—a mixed methods approach comes immediately to mind. Many of these tools were precluded in the cross sectional, web-survey based model used.

Kubrin and Weitzer (2003) provoked thinking about important distinctions yet to be made in applying social disorganization theory to campus diversion or any type of wicked problem. Should researchers assume college students think about community "conventionally" (p. 379)? How do undergraduates perceive community and in which ways do they think of themselves as members of a community? Are they "conventional" (p. 379) thinkers in terms of these concepts? Also, the authors correctly point out that social ties or social cohesion could just as easily promote delinquency as regulation. And, as Barton, Jensen, and Kaufman (2010) argued, social cohesion or social ties can help explain, in part, campus crime.

Another limitation arises from my decision to measure pervasiveness only in terms of past 12-months' misuse and exclude past 30-day misuse. Past 30-day trends are often different from past 12-month trends, and in fact, past-month misuse is generally regarded as indicating *current* use. CODS 2018 would not have taken that much longer to complete by adding a question(s) about past 30-day use and it would have yielded useful data points.

Recommendations

"Alcohol and other drugs (AOD) have been an enduring, controversial and evolving presence in American higher education over the past century" (Aikins, 2014, p. 25). While, cross-sectional web-based, survey research is needed to assess the scope of opioid misuse, future research should include campus specific studies that embrace various methodologies. A longitudinal, community-oriented study that articulates the various social structures or "contextual effects" (Kubrin & Weitzer, 2003, p. 391) that mediate substance abuse will be useful to public policy and safety stakeholders.

Longitudinal studies would test the success of collective efficacy over time and increase precision. Such studies would identify a more comprehensive inventory of social actions, going beyond discussing the matter with others or avoiding malefactors, and will explore the college students' understanding of community and their perceptions and expectations for membership and participation *vis-à-vis* delinquency.

Second, while this study shed light on the wicked problem of opioid diversion and its complexities, future work will focus more broadly on opioid misuse in the context of alcohol and other drug use. While information about opioid misuse as a discrete issue is necessary and helpful, alcohol and other drug use are important variables in treating the threat posed by substance abuse in the context of individual value formation and decision making.

An array of factors impact diversion and social disorganization and need to be examined. Arkes and Iguchi (2008) recognized the importance of various demographic factors, including age, in dynamic correlation with prescription drug misuse. However, as suggested in this paper, a focus on collective efficacy as potentially mitigating substance abuse is indicated. Schroeder and Ford (2012) found that social structures (e.g., family, school, religion, etc.) are shaped by different social ties and have different rates of success in mitigating drug abuse depending on the type of drug at issue. They nonetheless argued that social ties are a central component of collective efficacy. The actual impact of social structures on opioid misuse (or other substance abuse) will be a fruitful area for continuing research.

Implications

The implications for positive social change are found in well planned and executed research to assess the scope of opioid diversion and using the product of that research to fuel re-solving the wicked problem in the local community. Wakeland et al, (2013) referred to "leverage" (p.3) points, that if identified within the opioid system, could be the locus for lifesaving action. These points become, in the language of social disorganization theory, the time and place for regulation or social action. The data from CODS 2018 identified social ties or social cohesion (collective efficacy) as potentially empowering the individual's commitment to social action at the decisive point. Considering this thesis in the light of positive social change, the study's three most timely implications for public policy and safety scholar-practioners are:

- Commit to ongoing assessment of opioid diversion in college campus communities using complementary methodologies
- Disorganization theory will provide a helpful lens through which a continuing assessment of diversion's emergence in the community can be conducted
- Collective efficacy, essential to disorganization theory, underscores the importance of social ties or social cohesion as setting conditions for regulation (mediating diversion)

A brief reference to Schiavo's (2016) valuation of "communications for health and social change" (p. 1) and Maton's (2008) innovative treatment of "empowering community settings" (p. 5) provide a useful context for these implications.

Based on his work in the area of social or community psychology, Maton (2016) proposed the idea of "empowering community settings" (p. 5). For Maton, community

settings are located within society's "political, economic, [or] psychological" (p. 5) domains. The setting can be thought of as a social network in which individual needs or hopes are expressed, especially by the "marginalized or oppressed" (p. 5), and importantly, wherein there is a capacity for social change.

Community settings are social action elements that empower individuals or a "collective" (Maton, 2016, p. 5). Such settings must have a "participatory-developmental process" (p. 5), characterized by "active and sustained engagement" (p. 5), yielding increased "awareness and capacity" (p. 5) and, ultimately, achieving political, economic, or psychological "empowerment outcomes" (p 5). An example of a community setting, treated by Maton (2003), was "empowering youth growing up in adverse circumstances to develop, achieve, or accomplish" (p. 5).

While Maton (2003) focused entirely on the poor and marginalized, and from a distinctive, dichotomous, adversarial position *vis-à-vis* community structures, the idea of the empowered community setting is useful in the discussion of campus opioid diversion. The campus community setting might be described as empowering college youth to respond to the emerging issue of opioid diversion (drug abuse). Not unlike Maton, social disorganization theory sees collective efficacy as the fruit of a developmental process in which social ties or social cohesion empower social action—here, the regulation of opioid diversion.

Meanwhile, Schiavo (2016) critiqued the current state of health communications regarding public health issues as unimaginatively limited to disseminating information as

opposed to purposefully mobilizing the community and activating social action. She suggested designing communications strategies with "interested communities and stakeholders" (p. 2) is imperative.

Like Maton (2003), Schiavo (2016) saw the engagement of the community's members or its collectives as essential for social change, but that must be communicated in collaboration with community stakeholders. The current study indicated that students are seeking to communicate their concerns to others, an important first step toward mediating the opioid crisis. It seems implied that public policy and safety stakeholders can continue shaping the formal and informal communications that enhance collective efficacy and mobilize a focused response to opioid diversion and its unintended negative consequences.

Conclusions

Wicked problems are "inherently resistant to a clear definition and on an agreed solution" (Head & Alford, 2015, p. 714). As such, opioid diversion continues to be a pervasive health and safety issue in the U.S. and on its college campuses. Its scope is apparent in the aggregate data for misuse, diversion transactions, and the undergraduates' own assessment. My findings indicate two critical transitions which will be an appropriate focus for campus public policy and safety officials: (a) the transition from filling a prescription for opioids and misusing or distributing them, and (b) the transition from misusing opioids to using heroin. Perhaps more importantly, the role of collective efficacy as potentially mitigating opioid misuse cannot be overlooked. Although the quality of social

ties or cohesion that empower individual or collective social action is difficult to measure, the evidence of their positive impact on unwanted behavior is replete in the literature. (Morenoff, Sampson, and Raudenbush, 2001; Sampson, et al., 1997)

While the issue of opioid diversion may defy permanent solution, this study demonstrated collective efficacy as potentially mediating misuse and the delinquency attributed to it. This study's contribution to the ongoing effort to re-solve opioid diversion was grounded in social disorganization theory and the theory's capacity to embrace the dynamic nature of the opioid diversion economy in its physical and moral domains. If it is true that social policy problems "are grounded in value perspectives" (Head & Alford, 2015, p. 713), then so also are their solutions. The peculiar nature of the campus communities, located within larger civil jurisdictions, provides both challenge and opportunity in shaping the value perspectives of its youthful student-citizens. These value perspectives are part of the context for explaining both delinquency and its regulation through social control. (Simcha-Fagan & Schwartz, 1986) Thus, collective efficacy is a useful way to discuss the capacity of student citizens to commit to social action.

Social disorganization theory encourages respect for the uniqueness of each community's eco-social environment and values the potential for social cohesion as empowering positive social change. The application of the theory to campus opioid diversion holds promise in this regard. It signals to scholar practioners the importance of continuous assessment and analysis as part of the problem-solving process. Such an analytical process will undertake the ongoing challenge to identify indicators that explain both diversion and collective efficacy with greater precision using mutually supporting methodologies.

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Appendix A: SurveyGizmo | Invitation to Participate

Dear Panelist,

Based on the information stored in your yovoco USA profile, we believe we have a survey that you will qualify and earn from.

The survey takes approximately [redacted] minutes and if you successfully completed, your account will be credited with [redacted].

Take Your Survey Now

Can't open the link? You can copy the link below into your browser.

https://s.cint.com/Survey/Start/ff0b7953-3d6e-c3de-8c5c-4f20ce18b886

Your participation is voluntary.

If **CANNOT** participate in the survey we would appreciate it if you could decline participation in the survey by clicking on the following link: Decline survey

Appendix B: Survey Landing Page & Informed Consent

WELCOME TO THE CAMPUS OPIOID DIVERSION SURVEY (UNDERGRADUATE)

This survey is part of a study conducted by Mark Plaushin, OSFS, in partial completion of a PhD. in Public Policy and Administration at Walden University.

Survey Procedures. To protect your privacy and confidentiality, no identifying information will be collected. Your completion of the survey implies your consent. The survey may take from three to nine minutes to complete. Only enrolled undergraduates who are at least 18 years of age may participate. Please make a copy of this consent page for your records.

Purpose of Study. The purpose of this study is to describe the use or misuse of opioids on campus, by giving students an opportunity to self-report their perceptions of use or misuse, and their own experience of use or misuse. This study does not look at over-the-counter medicines that do not require a prescription, only at prescribed opioids like codeine, fentanyl, hydrocodone, hydromorphone, methadone, morphine, oxycodone, or oxymorphone.

Question Types. The survey has basic demographic questions as well as questions that ask for your candor about the use of opioids or heroin. For example: "Have you filled a prescription for painkillers (opioids) during the last 12 months?" "Have you used a prescription painkiller (opioids) non-medically during the last 12 months?" "Have you sold an opioid to someone during the last 12 months?"

What are your rights as a participant? You have the right to participate, not to participate, or to stop participation at any time without penalty. If you wish to terminate your participation, simply select "EXIT" on any survey page.

What are the risks in taking the survey and being truthful? There is an unknown risk that in reflecting on one or more of the survey's questions you may suffer some measure of unpleasant memories associated with your or someone else's alcohol or other substance abuse. If the memory becomes disruptive of your peace of mind, it would be prudent to seek the assistance of a mental health professional, clergy, or other helper. It is important that your feelings be validated, and that your experience be put into a healthy context.

What are the benefits? Others will benefit from your participation. You may: (a) experience a sense of accomplishment in contributing to the health and welfare of your co-collegians by advancing scientific inquiry about pain killer misuse; (b) learn something about social science, survey research; or (c) gain greater situational awareness about the complex issue of painkiller misuse.

Confidentiality. You remain anonymous. Your personal identifying information is not

collected; that includes your IP address, response IDs, etc. I, law enforcement, nor anyone at school will see your survey. SurveyGizmo does not forward email addresses to anyone, nor will they contact you or give your email to a third party. The school's name is not used, but people will know that it was conducted in the Philadelphia area. Data is kept in locked digital files and is maintained under password for seven years.

Questions? Contact mark.plaushin@waldenu.edu, or you may contact Walden University's Research Participation Advocate at 612-312-1210 or IRB@Waldenu.edu to discuss your rights as a participant. You can follow-up on the study at www.resiliencynet.net.

Okay, that's it! Thank you for your patience, and I appreciate your help.

Appendix C: CODS Thank You Page

Thank you for completing the survey.

If you have concerns about opioid use, do not underestimate how many people are available to help you or a friend!

Psychology Today website provides information about many resources and offers you the ability to narrow your search for helpers to a specific location. Go to: https://therapists.psychologytoday.com/rms/?tr=Hdr_Brand

Psychology Today's list of "Opiate Drug Detox Treatment Centers in Philadelphia, PA," can be found here: https://treatment.psychologytoday.com/rms/prof_results.php?city=Philadelphia&state=PA&spec=232

To better understand the U.S. opioid crisis, see... *Chasing the Dragon: The Life of an Opiate Addict*, at: https://www.youtube.com/watch?v=lqdmWRExOkQ&t=827s

If you need help in dealing with concerns or intrusive thoughts about taking your life or harming others, see https://www.linesforlife.org. Suicide is a permanent reaction to a temporary problem. The suicide hotline numbers are: 800-273-8255 or Text 273TALK to 839863.

Meanwhile, more information about *this* study and CODS can be found at www.resiliencynet.net

Peace, MP

Appendix D: Campus Opioids Diversion Survey (CODS) Draft A

WBSRI = web based self-report inventory LOM = Level of measure NA = Not applicable
Patton = Patton Classification: experience/behavior (EB), opinion/value (OV), feeling (F), background (B), knowledge (K), sensory (S)

Module 1 Screening

Item	Patton	Mode	Question Type | LOM	Number
Age 18 or older	NA	WBSRI	Screen | Dichotomous | NA	1
Willingness to participate	NA	WBSRI	Screen | Dichotomous | NA	2
Clarify intent	NA	WBSRI	Screen | Dichotomous | NA	3

Module 2 Demographics

Item	Patton	Mode	Question Type | LOM	Number
Age on last birthday	K	WBSRI	Demographic | nominal	4
Gender	K	WBSRI	Demographic | nominal	5
Racial/ethnic heritage	K	WBSRI	Demographic | nominal	6
Urban or rural school	K	WBSRI	Demographic | nominal	7
Academic status (rank)	K	WBSRI	Demographic | nominal	8
Academic progress (success)	F	WBSRI	Demographic | screen | nominal	9
Living arrangements at school	K	WBSRI	Demographic | nominal	10
Employment	K	WBSRI	Demographic | nominal	11
Financial worries	F	WBSRI	Demographic | Likert | interval	12
Residence halls at school	K	WBSRI	Demographic | nominal	13

Module 3 Prescription for opioids

Item	Patton	Mode	Question Type | LOM	Number
Active duty prescription	EB	WBSRI	Dichotomous | nominal	14
Filled prescription, 12 months	EB	WBSRI	Dichotomous | nominal	35
Separate clinicians, 12 months	EB	WBSRI	Multiple choice | nominal	36

Module 4 Collective efficacy & value perspective

Item	Patton	Mode	Question Type | LOM	Number
Efficacy | Social control actions	EB	WBSRI	Checkbox | nominal	26
Value formation | influenced by…	F	WBSRI	Checkbox | nominal	27
Efficacy | concern about negatives	OV	WBSRI	Likert | interval	28
Efficacy | helping affected	OV	WBSRI	Likert | interval	29
Efficacy | concern health & welfare	OV	WBSRI	Likert | interval	30
Efficacy | shared values	OV	WBSRI	Likert | interval	31
Efficacy | reporting noise	OV	WBSRI	Likert | interval	32
Efficacy | reporting health emergency	OV	WBSRI	Likert | interval	33
Efficacy | discussing issue	OV	WBSRI	Likert | interval	34

Module 5 Assessing problem

Item	Patton	Mode	Question Type | LOM	Number
Estimate pervasiveness	OV	WBSRI	Likert | interval	15
Estimate seriousness of issue	OV	WBSRI	Likert | interval	21
Efficacy | confidence school resources	OV	WBSRI	Likert | interval	24

Module 6 Experience attributed to opioid misuse

Item	Patton	Mode	Question Type | LOM	Number
Observed misuse	EB	WBSRI	Dichotomous | nominal	16
Told about misuse	EB	WBSRI	Dichotomous | nominal	17
Observed poor decision making	EB	WBSRI	Dichotomous | nominal	18
Observed unmanageability	EB	WBSRI	Dichotomous | nominal	19
Observed negative array of negatives	EB	WBSRI	Checkbox | nominal	20
Anyone opioid overdose	EB	WBSRI	Dichotomous | nominal	22
Anyone heroin overdose	EB	WBSRI	Dichotomous | nominal	23

Module 6 Diversion

Item	Patton	Mode	Question Type | LOM	Number
Transaction, gift, friend	EB	WBSRI	Multiple choice | nominal	37
Transaction, gift, family	EB	WBSRI	Multiple choice | nominal	38
Transaction, sale, friend	EB	WBSRI	Multiple choice | nominal	39
Transaction, sale, family	EB	WBSRI	Multiple choice | nominal	40
Transaction, barter, friend	EB	WBSRI	Multiple choice | nominal	41

Module 6 Diversion

Transaction, barter, family	EB	WBSRI	Multiple choice | nominal	42
Opioid misuse, 12 months	EB	WBSRI	Dichotomous | nominal	44
Last misuse, motive	F	WBSRI	Multiple choice | nominal	45
Misuse, nomenclature & quantity, 12 months	EB	WBSRI	Multiple choice | nominal	46
Last misuse, frequency	EB	WBSRI	Multiple choice | nominal	47
Last misuse, source	EB	WBSRI	Multiple choice | nominal	48
Last misuse, transaction mode	EB	WBSRI	Multiple choice | nominal	49

Module 7 Heroin

Item	Patton	Mode	Question Type | LOM	Number
Opioid to heroin transition	EB	WBSRI	Dichotomous | nominal	25
Heroin misuse, 12 months	EB	WBSRI	Dichotomous | nominal	43

Module 8 Diversion (dealing)

Item	Patton	Mode	Question Type | LOM	Number
Sales in past 12 months	EB	WBSRI	Dichotomous | nominal	50
Transaction customer	EB	WBSRI	Multiple choice | nominal	51
Transaction customer	EB	WBSRI	Multiple choice | nominal	52
Transaction motive	EB	WBSRI	Multiple choice | nominal	53
Transaction node	EB	WBSRI	Multiple choice | nominal	54