UNDERSTANDING THE OPIOID EPIDEMIC IN RURAL OHIO: A MIXED-METHODS ANALYSIS OF MORAL VALUES, STIGMA, AND MEDICATION FOR OPIOID USE DISORDER (MOUD)

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ABSTRACT

Christine Anne Schalkoff: Understanding the Opioid Epidemic in Rural Ohio: A Mixed-Methods Analysis of Moral Values, Stigma, and Medication for Opioid Use Disorder (MOUD)
(Under the direction of Vivian Go)

Background: The opioid crisis continues to take a devastating toll in rural Appalachia. While evidence-based treatment options for opioid use, including medication for opioid use disorder (MOUD) are available, drug-related stigma remains a barrier to service uptake. Moral and religious underpinnings of this stigma deserve more exploration, as they may shape stigma related to drug use and treatment but remain understudied. Developing successful stigma reduction interventions and scaling up treatment for opioid use requires first understanding more about the relationship between morality, stigma, and treatment attitudes and uptake in rural Appalachia.

Methods: I conducted a mixed-methods dissertation using data from six counties in rural Appalachian Ohio. First, I used structural equation modeling (SEM) techniques to test the validity of measures of moral intuitions in a population of PWUD (n = 319) and to test a mediation model of the effects of moral intuitions on internalized drug-related stigma and MOUD uptake. In the second study, I analyzed data from qualitative interviews with 45 PWUD and non-PWUD community stakeholders, to explore moral and religious views related to addiction and treatment held by PWUD and non-PWUD stakeholders.

Results: Quantitative measures of moral values did not function as expected in a sample of PWUD and should be adjusted to ensure validity. Full mediation models revealed no significant direct or indirect effect of moral values on internalized drug-related stigma and MOUD uptake; however, stigma was positively associated with MOUD uptake, potentially

reflecting exposure to stigma when accessing MOUD and/or differential levels of acceptability surrounding different modalities of MOUD. Religious practice emerged as a significant predictor of stigma among PWUD. Qualitative results supported the importance of different types of religiosity in influencing attitudes toward addiction and treatment.

Conclusions: This dissertation explored the connection between morality, stigma, and evidence-based treatment attitudes and uptake in a rural Appalachian context. Findings revealed the importance of religiosity on stigma and attitudes among PWUD and non-PWUD community members and highlighted the need for better measures of morality among this population. Study results suggest new avenues for stigma reduction interventions and community partnerships to address opioid use in rural Appalachia.

In memory of my grandmother, Shirley Kozlik, for her strength, fearlessness, and academic tenacity in a world of men.

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LIST OF ABBREVIATIONS

AoV	Assumptions of Vulnerability
ARC	Appalachian Regional Commission
ASAM	American Society of Addiction Medicine
CDC	Centers for Disease Control and Prevention
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
EBI	Evidence-based Intervention
FDA	Food and Drug Administration
HCV	Hepatitis C Virus
MFQ	Moral Foundations Questionnaire
MFT	Moral Foundations Theory
MOUD	Medication for Opioid Use Disorder
NIDA	National Institute on Drug Abuse
NIH	National Institutes of Health
OHOP	Ohio Opioid Project
OUD	Opioid Use Disorder
PWUD	People Who Use Drugs
SAMHSA	Substance Abuse and Mental Health Services Administration
SEM	Structural Equation Modeling
SEP	Syringe Exchange Program
SSP	Syringe Service Program
TDM	Theory of Dyadic Morality
TLI	Tucker-Lewis Index

CHAPTER 1: INTRODUCTION

1.1 Specific Aims

The opioid crisis continues to take a devastating toll in the United States (US). The CDC estimates that over 750,000 Americans have died from a drug overdose since 1999,[1] and the rural Appalachian area of the US is a particular hotspot for substance abuse and related deaths. In 2018, four of the six states with the highest recorded rates of drug overdose deaths were in the Appalachian region.[2] A variety of factors characterizing rural Appalachian communities, including economic distress, a history of opioid overprescribing, drug trafficking patterns, and widespread physical, sexual, and emotional trauma have fueled the epidemic.[3–14] A number of harm reduction interventions including needle exchange programs, naloxone for overdose, and medication for opioid use disorder (MOUD) are effective,[15–20] yet are severely underutilized in rural Appalachia.[21–26] Our previous qualitative work in Appalachian Ohio found that these evidence-based interventions (EBIs), including MOUD, are highly stigmatized, posing a significant barrier to provision and uptake of these services. Understanding the context of this stigma is key to addressing the opioid epidemic in this region.

While some public health theories seek to explain stigma and its subsequent impact on health behavior, more work is needed to explicitly address the moral underpinnings of stigma.[27–30] Public health efforts to reduce stigma tend to focus on educating the target community about a stigmatized disease or behavior and often are not effective.[31–34] Moral values may profoundly shape stigma related to drug use and treatment in rural areas, particularly in the Appalachian region, yet are overlooked in the context of public health.[35–37] It is critical to understand the

relationship between morality, stigma, and harm reduction programs in rural Appalachian areas in order to scale up evidence-based treatment for substance use.

The field of moral psychology provides theories that seek to explain how an individual's underlying moral intuitions translate into strong judgements about their own and others' behaviors. Moral Foundations Theory (MFT) posits that an individual's overall sense of morality is based on their relative endorsement of five foundations of moral values: harm/caring, fairness, loyalty, authority, and sanctity.[38] The extent to which an individual endorses each of these moral foundations has been shown to predict other characteristics and behaviors, such as attitudes toward crime victims or toward syringe exchanges.[39–41] The Theory of Dyadic Morality (TDM) adds the idea that moral judgements are related most strongly to perceptions of harm and vulnerability. In other words, the extent of moral blame assigned to individuals or actions is related to the degree of perceived harm toward others.[42] Both theories emphasize that intuition-based moral judgements are at the root of views and behaviors, making them critical to understand in the context of drug addiction and treatment. Additionally, both theories are accompanied by scales designed for use in measuring moral intuitions—the Moral Foundations Questionnaire (MFQ) for MFT, and the Assumptions of Vulnerability (AoV) scale for TDM. However, while the MFQ has been used and validated in multiple countries and research contexts,[43–45] neither scale has been used specifically in the rural Appalachian context, nor have their psychometric properties been tested among a population of people who use drugs (PWUD).

The proposed mixed-methods research aims to explore how moral values influence stigma related to drug use, and in turn, provision of, uptake of, and/or support for MOUD among healthcare providers, PWUD and other non-PWUD community members. Given the importance of using validated survey measures and testing validity when using measures in a new study population,[46] measurement properties of the MFQ and AoV will also be explored. I will address these questions through the following proposed Specific Aims:

Aim 1. Conduct a confirmatory factor analysis to test the validity of 1) the Moral Foundations Questionnaire and 2) the Assumptions of Vulnerability Scale in a sample of PWUD in rural Appalachian Ohio.

Aim 2. Examine the association of moral intuitions (using the MFQ and AoV) with uptake of MOUD for substance use among PWUD in rural Appalachian Ohio and assess whether internalized drug-related stigma mediates this pathway.

Aim 3. Use a mixed-methods approach to integrate Aim 2 quantitative results with qualitative interviews. Qualitative interviews will explore moral views related to addiction and treatment held by treatment providers, PWUD, and other community stakeholders and how moral views shape attitudes toward drug use and treatment options.

This research will provide researchers, practitioners, and policy advocates with a deeper understanding of the cultural moral values that influence stigma and barriers to MOUD in rural Appalachian areas. Findings will inform interventions to reduce stigma and judgements toward stigmatized behaviors and evidence-based treatment by recognizing and working within individuals' moral intuitions—a potentially powerful tool and understudied approach.[47–52] This research and training will also further my knowledge and skills in moral and social psychology theory, mixed methods research, and interdisciplinary research in the field of substance use.

CHAPTER 2: BACKGROUND AND LITERATURE REVIEW

This chapter presents a summary of relevant background and literature related to my proposed research questions and presents the gaps that I will address in my dissertation. I first present a brief synopsis of the opioid epidemic nationally and in rural Appalachian Ohio, an explanation of barriers to evidence-based treatment (especially medication for opioid use disorder, or MOUD) in rural Ohio, and a discussion of substance use stigma as a barrier to MOUD access and uptake. I then examine potential drivers of drug-related stigma and present relevant findings from intervention efforts aimed at reducing this stigma. Finally, I present my argument for a focus on the cultural context and moral and religious underpinnings of stigma to improve drug-related stigma reduction interventions.

2.1 The Opioid Epidemic in the United States: Spotlight on Rural Appalachia

Opioid addiction and opioid overdose are a public health crisis in the United States. The Centers for Disease Control and Prevention estimates that over 932,000 Americans have died from a drug overdose since 1999,[1] and that in 2020, opioids were involved in close to 75% of drug overdose deaths.[1] Despite millions of dollars in increased federal funding to combat the epidemic, opioid overdose death rates are not slowing.[1,53] While fatal overdose death rates involving prescription opioids and heroin have stabilized in the past several years, a wave of deaths involving synthetic opioids (such as fentanyl or carfentanil—an elephant tranquilizer with a potency that is 10,000 times greater than morphine) began in 2013 and has not yet crested.[54] Furthermore, the ongoing COVID-19 pandemic has only exacerbated the opioid epidemic in the United States, due in part to the effects of increased isolation and mental health challenges, reduced ability to access substance use-related resources, and changes in drug supplies.[55,56]

Historically, drug epidemics have been concentrated in urban/metropolitan areas; however, the current opioid epidemic has especially threatened rural and economically disadvantaged areas in the United States.[57–59] In particular, the Appalachian region has emerged as a hotspot for opioid use and related consequences. This region accounted for more than half of the ten states that reported the highest increases in drug overdose death rates from 2020-2021.[2] Furthermore, Appalachian counties have been identified as some of the most vulnerable areas to HIV/hepatitis C (HCV) outbreaks, bloodborne diseases that are related to injection drug use.[59,60]

The disproportionate burden of opioid-related morbidity and mortality in rural Appalachia is related to a variety of factors that characterize rural Appalachian communities, such as economic deprivation and lack of educational opportunities, a high prevalence of jobs involving manual labor and resultant chronic pain, overprescribing of prescription medications, illicit drug trafficking patterns, and other forms of widespread community trauma and lack of social capital that may contribute to a cycle of substance use, as they can both contribute to and derive from substance use.[6,7,14,61] Furthermore, apart from evidence linking each of the aforementioned risk factors separately to substance use, Dasgupta et al. have recently called for an increased focus on the ways in which structural factors in Appalachia—such as economic shocks, poverty, distress, and adverse childhood experiences/childhood trauma—may interact.[7] The authors suggest that substance use may be a response to the confluence of these factors and events, which researchers have begun to conceptualize as mass community trauma.[7,62] Taken together, the economic and social challenges facing rural Appalachia have primed the region to emerge as a particular hotspot for the current substance use epidemic.

2.2 The Opioid Epidemic in Rural Ohio: From "Dreamland" to Pill-Mill Capital

Among Appalachian states, Ohio has been especially burdened by the opioid crisis. The state ranked fifth in the country in the rate of drug overdose deaths (47.2 per 100,000 persons) in 2020,[1] and 5,017 Ohioans died in that year alone from an unintentional drug overdose.[63]

Appalachian Ohio has also become well-known for its unique recent “pill mill” history, which included physician-operated clinics that masqueraded as pain management centers and freely dispensed opioid pills for cash, with little or no medical examination. These pill mills flooded the population with opioid painkillers.[64] While opioid prescribing rates and prescription opioid deaths have since declined in Ohio, synthetic opioids such as fentanyl and carfentanil have entered the system from foreign markets and continue to drive increasing drug overdose death rates, particularly in Appalachia.[12,13]

The Appalachian Regional Commission (ARC) reported that overall mortality increased 5% in Appalachia between 1999 and 2014 while decreasing 10% in the rest of the country,[3] attributing much of this disparity to “diseases of despair.” This categorization includes deaths from alcohol and other drug overdose, as well as alcoholic liver disease and suicide.[3] Among Appalachian states, Ohio has the third highest mortality rate from these causes, at 78.0 per 100,000 persons in 2015.[3] Furthermore, Appalachian Ohio has also experienced widespread economic downturn and poverty in the past four decades.[3,61] About 18% of the population in Appalachian Ohio lives in poverty, and the area also has a lower-than-average percentage of the population in the labor force and above-average levels of disability in the population.[3] These characteristics, which are related to unstable labor markets, socioeconomic disadvantage, and downward social mobility, have been linked to increased distress, hopelessness, child abuse and intimate partner violence, and substance use.[8,61,65]

While Appalachian culture is not necessarily a monolith,[66–68] some prevailing cultural characteristics that are important to consider in the context of substance use research have been described in prior rural research, and were also discussed by community members during qualitative interviews conducted by our own research team in southern Ohio.[69] These include: 1) general stigma and a “conservative” culture of disapproval surrounding the use of psychotropic substances; 2) widespread religiosity and prevalent religious infrastructure that can often house recovery groups and harm reduction efforts but can also sometimes reinforce

stigmatizing views of substance use; 3) tensions between this inherent disapproval of substance use and widespread generational alcohol and other substance use in the region (including a long history of production of illicit substances, such as moonshine and methamphetamine);[70,71] and 4) conflict between pride in self-sufficiency coupled with a mistrust of outside entities and widespread reliance on limited social services. Further discussion of our study area is found in **Chapter 4**.

2.3 Evidence-based Treatments for Opioid Use: Medication for Opioid Use Disorder (MOUD)

Although the scale of the opioid epidemic in the U.S. and particularly in rural Appalachia is staggering, successful, evidence-based treatments for opioid use disorder (OUD), as well as evidence-based harm reduction methods for limiting the negative consequences of OUD and other substance use, do exist. These include a variety of tools, such as syringe service programs (SSPs) or syringe exchange programs (SEPs) that provide clean equipment and support resources for substance use, use of naloxone to reverse overdoses, safe injection sites, inpatient residential or outpatient behavioral therapy, peer support programs to support recovery, and the use of medication for opioid use disorder, or MOUD.[19,72–74]

Medication for opioid use disorder (MOUD) is the term used to characterize several types of pharmacological treatment for opioid use, all involving the use of prescription medications to reduce or block cravings for narcotics.[19] The National Institutes of Health (NIH), National Institute on Drug Abuse (NIDA), Substance Abuse and Mental Health Services Administration (SAMHSA), Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), and American Society of Addiction Medicine (ASAM) all support the use of MOUD for opioid addiction.[19,75–77] Types of MOUD include methadone (the oldest form of MOUD), buprenorphine, and naltrexone (also used to treat alcohol addiction).[75] When used appropriately, MOUD is extremely effective and can reduce illicit opioid use more effectively than non-pharmacologic forms of addiction treatment.[78,79] A robust body of evidence indicates

that use of these medications is associated with improved treatment retention, reduced illicit opioid use, reduced mortality risk, reduced injection and sexual risk behaviors, and reduced healthcare expenditures.[78–82]

2.4 MOUD Barriers: Stigma as a Key Challenge

Despite the efficacy of evidence-based treatments for opioid use, including MOUD, barriers to the widespread implementation and uptake of MOUD persist, particularly in rural Appalachian regions. Apart from predisposing rural Appalachia to the opioid epidemic, factors common to rural areas also influence the ability of rural Appalachian communities to respond to opioid use.[3,7,8,83] Barriers to MOUD provision in rural Appalachia include a shortage of healthcare providers generally, a shortage of providers who have completed the requisite DATA 2000 waiver training in order to prescribe MOUD, stigma toward MOUD and toward patients with OUD among healthcare providers, and lack of institutional support for MOUD.[84–88] A report by the National Rural Health Association revealed that 91.9% of substance use treatment organizations in the United States are found in urban areas, and that in 2016, only 39% of rural counties in the U.S. had a DATA-2000-waivered physician—and among that subset of counties, in 41.3% of cases there was only one waivered physician.[74] Additionally, even when a county has a physician that is reported to have a DATA 2000 waiver, it is not guaranteed that this provider is actually actively prescribing or prescribing at capacity.[89]

However, provider-side access challenges are not the only barriers to substance use care. Even when MOUD is available, actual uptake of the medication by people who use opioids may be limited in rural Appalachia—due to burdensome counseling requirements and restrictions, provider access challenges, and stigma surrounding addiction in these areas.[26,90,91] Moreover, drug-use-related stigma in various forms is increasingly being recognized as a key driver of low MOUD provision and uptake.[92,93] Results from work in rural Appalachia, including results from our own qualitative interviews with people who use drugs indicate that the use of MOUD is often seen by both general community members and PWUD themselves as simply

"exchanging one drug for another," as the use of most psychotropic substances is considered to be "unclean."[69]

2.4.1 Substance Use Stigma: An Overview of Stigma Types and Conceptualizations

Stigma is complex and multidimensional and has been defined in a variety of ways, including originally as a "mark, [a] condition, or [a] status that is subject to devaluation."[94] Initially, conceptualizations of stigma focused on a *physical* mark or attribute displayed by a group of people.[95] More recently, stigma has been defined as a socially constructed phenomenon resulting in discrimination toward individuals as a result of an individual's position in a group that is considered undesirable by others.[95] Being stigmatized disqualifies that person from "full social acceptance" and results in stereotyping, discrimination, and social rejection.[29,92,94,96] This socially constructed stigma is placed upon an individual or group through the use of "othering" and labels (e.g., "addict" or "junkie") and is then reinforced through discrimination.[94] Stigma has been linked to a variety of adverse outcomes among those who are stigmatized, including decreased mental health, lower predisposition to seek psychological help or treatment, social isolation and decreased social support, and workplace/employment discrimination and job instability.[29,94]

The concept of stigma is often broken down into several different subdomains: perceived stigma (believing that discrimination and prejudice does exist toward an individual or group), enacted stigma (behaving toward stigmatized individuals or groups in a way that shows prejudice or discrimination), and internalized/self-stigma (acceptance/feeling of lower worth by a member of a stigmatized group).[94] Other types of stigma that are sometimes described include anticipated stigma (a person's expectation that they will experience stigma or discrimination), public stigma (the level and substance of stigma in a community or culture), and courtesy stigma, or stigma placed "by association" on individuals who interact closely with the stigmatized group.[94] Stigmas associated with different statuses (such as substance use stigma and criminal history stigma) may also intersect, and individuals may experience multiple stigma types (such

as perceived and internalized stigma) simultaneously.[94,97] Given the socially constructed nature of stigma, conditions that are stigmatized vary in different cultural contexts—for example, marital status, mental health, or certain infectious diseases may be more or less stigmatized in different cultures, depending upon the social and cultural context.[95] Furthermore, stigma may be deeply culturally endorsed and perpetuated through policies that are put in place in certain areas—such as in the realm of criminal law (e.g., criminalization of certain drugs).[31] Above and beyond the adverse outcomes of experiencing a condition (such as mental illness, HIV/AIDS, or substance use) that is stigmatized, the experience of stigma itself has been considered a "hidden burden of illness" that can affect a person's potential recovery from the underlying condition—and may also directly contribute to health problems due to the effect of stress from experiencing stigma.[95,98]

Although the bulk of stigma research has historically focused on stigma surrounding mental illness or infectious disease (such as HIV), drug-related stigma has more recently emerged as an area of focus.[98] Stigma related to drug use has been documented among the general public,[99,100] among healthcare providers,[87] and among PWUD themselves,[101,102] and this stigma—including perceived and internalized stigma—among PWUD has been linked to decreased psychological well-being, increased risk behaviors, and lower likelihood of treatment utilization.[31,98]

Substance-use related stigma can also vary based upon the type of substance in question; for example, people who inject drugs (PWID) and/or use illicit substances such as heroin or crack cocaine may face greater stigma than those who do not inject drugs,[98] and results from our team's qualitative work in southern Ohio also suggests that there is greater stigma surrounding heroin or methamphetamine use compared to misuse of prescription opioid painkillers.

2.4.2 Medication for Opioid Use Disorder (MOUD) Stigma

Stigma toward MOUD in the U.S. is theorized to be deeply intertwined with drug-related stigma, due in part to perceptions that drug use is a result of a choice or personal failure, and therefore requires a choice-based solution—rather than a medical solution.[69,86,92,103] As illicit opioids have been among the most stigmatized drug categories historically, some of this stigma may spill over to opioid-based treatment modalities—like opioid agonists such as methadone or buprenorphine.[92] Qualitative research into attitudes toward MOUD in rural areas, including in our study area, suggests that this stigma is culturally driven and rooted in perceptions that the use of any sort of "mind-altering" substance does not constitute being "clean," and that this use of MOUD is therefore heavily stigmatized.[69]

Stigmatizing attitudes toward MOUD have been documented in both treatment providers and PWUD.[92,103,104] Among PWUD, those who receive MOUD sometimes face stigma in faith-based or abstinence-based recovery groups (such as the Narcotics Anonymous 12-step model). PWUD using MOUD are often not welcome at these groups or are not allowed to assume any informal leadership role or speaker position at recovery meetings.[92] Furthermore, PWUD themselves may have negative views of MOUD due to an internalization of addiction stigma and beliefs that they are just exchanging one drug for another if they rely on MOUD for recovery.[69]

Stigma toward MOUD among providers and PWUD themselves can have serious consequences. Among healthcare providers, this stigma can result in arbitrary dose or duration limits on prescribed medications—despite an evidence base that does not support short-term MOUD use—discrimination toward patients receiving MOUD, and an unwillingness to prescribe MOUD even if waivered to do so.[86,92,103] Among PWUD, stigma toward MOUD can result in a lack of MOUD uptake and a reliance on abstinence-only recovery.[92] Additionally, among PWUD who are already using MOUD, perceived and internalized stigma can result in social withdrawal, lack of recovery support or avoidance of support groups utilizing an abstinence-based model, and/or concealment of MOUD status among recovery groups.[92]

2.5 Stigma Reduction Efforts: Success and Failures

As described above, stigma among general community members, healthcare providers, and PWUD remains an intractable barrier to MOUD uptake, particularly in rural communities. Our NIDA-funded work in Ohio underscored substance-use related stigma as a key barrier to the uptake of evidence-based treatments, including MOUD; a finding which has also been documented in previous research.[26,86,103]

Suggestions for how to best address and decrease drug-related stigma vary; however, there has traditionally been a consistent emphasis on interventions that provide educational resources—driven by the expectation that dispelling myths about substance addiction and MOUD will translate into decreased stigma and increased support for MOUD.[105] However, findings from the substance use field, as well as findings related to HIV and mental health stigma, have shown that oft-used educational interventions and other attempts to reduce stigma—among providers, PWUD, and other community members—are not effective.[31–34] A recent systematic review of 13 substance use stigma reduction interventions found mixed results from interventions that relied on an educational component.[31] For example, one intervention using educational factsheets about alcoholism found no significant difference in attitudes toward PWUD between those who received the educational material and those who did not.[106] However, an educational intervention involving positive depictions of PWUD did significantly lower stigmatizing attitudes toward people who use heroin among members of the general community.[31,107]

The same mixed or negative results have been shown for interventions aimed at reducing stigma toward MOUD. For example, a 2008 study examined the effect of a workshop for substance use treatment providers, aimed at increasing provider willingness to prescribe MOUD. Compared with a control condition, a knowledge-based training (consisting of educational training on evidence-based treatment) “had absolutely no positive impact on drug and alcohol counselors’ willingness to use or the actual use of pharmacotherapy,” and the

researchers reported that participants' "willingness to use pharmacotherapy actually drifted lower at post than before their training in evidence-based practice."[108]

This lack of consistent success of individual or interpersonal educational interventions—which often focus on highlighting the biological basis for addiction and firmly framing addiction as a disease—is similar to the lack of evidence in educational interventions in other areas of stigma, including HIV and mental health stigma.[32] Results of a large systematic review of stigma reduction interventions revealed that although educational interventions are popular and are often a "first step" in attempts to reduce stigma, results of these interventions are mixed at best.[32] Even if the interventions are successful in improving knowledge about a particular condition, they often are not effective in changing attitudes or intended behaviors.[32,109] Moreover, despite the widespread prevalence of the disease model of addiction in the public health and substance use research field and its incorporation into educational interventions, many researchers have increasingly raised concerns with this framing and have suggested that it 1) has not been effective in reducing stigma or shifting attitudes toward substance use[33,110] and 2) may actually *increase* stigma toward PWUD,[111,112] as the idea of "disease" carries with it its own stigma. This may lead to perceptions among both PWUD and non-PWUD that those who use drugs are sick, weak, out-of-control and unpredictable, or "abnormal."[33,113]

2.6 A Moral and Religious Component to Stigma: Toward a Different Understanding of Stigma, Stigma Reduction, and MOUD Acceptance

Given the lack of effective interventions to reduce substance use stigma, there is a need to identify alternative approaches[31,109,114] that focus on the underlying determinants of stigma—with the recognition that "stigma may be motivated by exaggerated or inappropriate fears of contagion, *moral judgements about persons with the target health problem, macro-religious ideas about the cause* [emphasis added], anticipation of burdensome demands for assistance, or other factors."[95] To this end, stigma research should include what Weiss et al. describe as the "cultural epidemiology of stigma," or how stigma is shaped in a particular cultural or regional

context.[95] Our study team's prior work in southern Ohio, as described briefly above and in **Chapter 4**, has also found that stigma is culturally bound, has a strong moral and potentially religious component, and is a critical barrier to acceptance of harm reduction—including MOUD—in communities in the area.

Moral views—intuitions and judgements stemming from neurological and psychological processes that produce perceptions of right and wrong[115]—held by a community, including healthcare providers and people who use drugs, may shape substance use-related stigma, which in turn can affect implementation and uptake of evidence-based treatment, such as MOUD.[86,116] Religiosity, while not synonymous with morality, also falls under the moral domain and is related to moral attitudes and judgements, given theoretical and empirical links between religious beliefs and prosocial (or antisocial) behavior toward others.[117,118] Particularly in areas in which religious infrastructure or religious culture is especially prevalent, religiosity may also influence judgements related to substance use.[119] While some public health theories explore the relationship between attitudes and beliefs, stigma, and behavior, theoretical frameworks in public health often do not consider the underlying morality that may be at the root of stigma and discrimination.[33] The field of moral psychology—rooted in social psychology—offers in-depth theories related to morality, religion, negative attitudes, and stigma[38,42,120] that have been underutilized in the context of the current opioid epidemic.

Understanding these moral and religious perceptions is the first step to designing more successful interventions for shifting attitudes toward stigmatized behaviors.[121] In order to more fully address stigma toward drug use and MOUD, particularly in rural Appalachian areas, theories that attempt to explain the underlying cognitive drivers of stigma and negative judgements toward MOUD could be critical. For these theories, moral psychology can fill the gap—and will be explored in **Chapter 3**.

CHAPTER 3: THEORETICAL FRAMEWORK AND CONCEPTUAL MODEL

3.1 Theoretical Background: Moral Psychology in Health Behavior

This proposed research draws on two prominent theories from the growing field of moral psychology, as well as related theories of religion and morality, and also draws upon research in evolutionary biology, neuroscience, and anthropology.[122–125] Moral psychology, as an offshoot of moral philosophy, focuses on questions of moral judgements and behaviors—in other words, issues related to what we consider "right" and "wrong," or fair/unfair, in a variety of situations. However, as a field that also grew out of social psychology, moral psychology extends beyond the purely philosophical arguments of virtue ethics, deontology vs. consequentialism (e.g., utilitarianism), and hypothetical dilemmas (e.g., the Trolley Problem) present throughout philosophical history and seeks to empirically study and understand the cognitive, cultural, and evolutionary drivers of our moral decisions and behavior—in other words, why and how we understand what we consider to be "right" or "wrong," how we develop a sense of moral judgement, how we perceive ourselves and others as moral agents, and how our moral cognitions and judgements influence our behavior and interactions with others.[124,125]

Researchers in moral psychology have investigated a plethora of questions in the moral and social domain, including: how and when moral cognition is first demonstrated in children and develops as we age;[126,127] how moral behaviors may have arisen evolutionarily;[128] the role of emotions such as empathy, guilt, disgust, and anger in interpersonal interactions;[129,130] the role of institutional or cultural norms in morality;[131] intergroup and intragroup conflict;[132] the connection between religious beliefs and moral judgements;[133] the neurological processes involved in moral judgements;[134] and how judgements and behaviors may be able to be elicited

or modified through “priming,” the process of using stimuli to activate certain cognitive pathways.[124,125,135]

Moral and social psychology also historically have connections to the field of health behavior, as prominent health behavior theories have come from researchers in the field of psychology and have included a focus on key concepts in social psychology—such as Bandura’s Social Cognitive Theory,[136] Azjen’s Theory of Planned Behavior,[137] and theories of social marketing that incorporate insight into cognitive processing and biases.[138]

3.1.1 Reason vs. Intuition in Moral Judgement

A central debate in the field of moral psychology centers around the question of how moral judgements are made: are perceptions of morality driven by critical reasoning and higher-level thinking skills, or is morality driven instead by quick emotional reactions and gut “intuitions”? For centuries, the predominant view of many moral philosophers, from Aristotle and Plato to Descartes and Kant, was that moral decisions were made (and in the view of many moral philosophers, **should** be made) through logic and rational thinking.[139] However, some 18th-century philosophers, including David Hume, argued that it was not calm, reasoned thought that primarily drove moral views, but instead feelings and “passion”—with reason playing a smaller role.[139]

The discussion and debate over the relative roles of reasoning and emotion in the formation of moral judgements still continues in the work of researchers in moral psychology. Until the early 90s, rationalism was still the dominant view of leading social/moral psychologists; while it was understood that emotional affect did play a part in moral perceptions, most leading scholars operated under the assumption that emotional reactions were tempered by rational thought and that this process of deliberative logical reasoning was ultimately what resulted in a moral decision (**Figure 1**).[139]

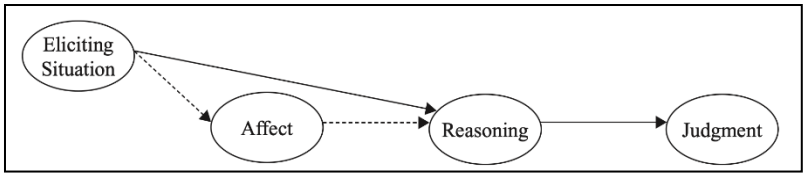

Figure 1. Example rationalist view of moral reasoning (from Haidt, 2001)

However, over the last several decades numerous challenges to the dominance of rationalism have emerged, both in moral psychology and in research of cognitive processing generally (including work in behavioral economics, a field often utilized by health behaviorists).[140,141] Documentation of such phenomena as confirmation bias, framing effects, anchoring bias, cognitive dissonance, delay discounting, and many others have provided increasing evidence undercutting the idea that decision-making is driven by strict rationality.[142–146] Instead, the field has shifted to a paradigm of morality that emphasizes the role of emotional reactance and intuition in the formation of moral judgements—and in the case of many recent proposed models, quick, automatic, intuitive feelings that require lower levels of cognitive resources and processing are theorized to be the dominant route by which moral perceptions are reached.[124,125]

Much of this shift was driven by the introduction of the social intuitionist model (**Figure 2**).[139] This model posits that while reasoning **does** play a role in the formation of judgements, it is not the first nor strongest pathway between a situation or event and an individual's judgement about the situation. Instead, we respond to stimuli with an initial response from our "intuitive" system of cognition, which produces an automatic, essentially effortless response and requires few higher-level cognitive resources (Path 1 in **Figure 2**). Following that initial intuition and the judgement resulting from it, we may engage in post-hoc reasoning to rationalize that initial intuition (Path 2). Following this, we may relay this reasoning about our judgement to others, which can affect the intuitions of others (Path 3). We may also influence others simply through our initial judgement/stance related to a situation, through the power of social persuasion/social norms (Path 4). The model suggests that we are sometimes able to override our initial

judgement through the engagement of our "reasoning" system, which requires motivation, more time, and increased cognitive resources (Path 5). Alternatively, or in addition, we may also spend time thinking about an initial situation during private reflection (Path 6), and in doing so (particularly if we engage our power of imagination and envision experiencing something from another person's perspective), we may trigger a different intuition that can override the first one.

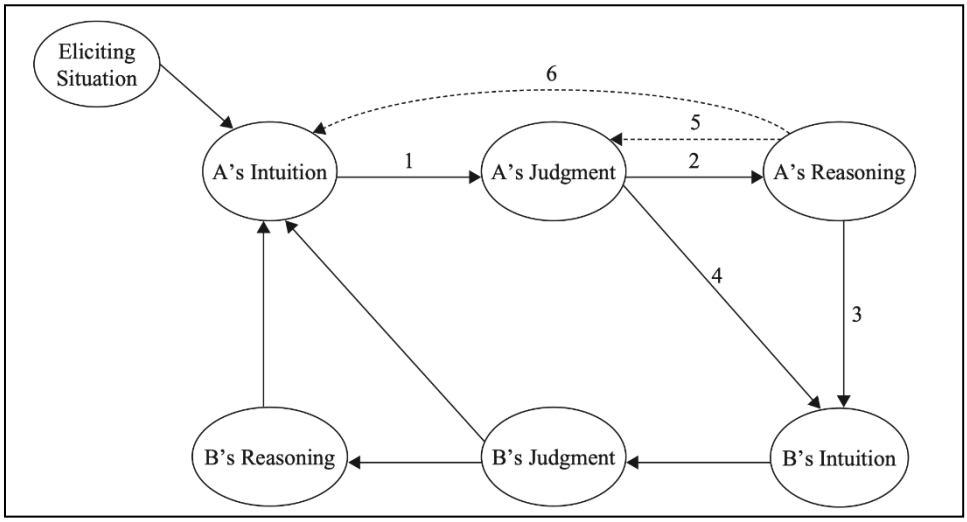

Figure 2. The social intuitionist model of reasoning, demonstrating the process of intuition and reasoning of an individual (from Haidt, 2001) (A), including during interaction with another individual (B). Link 1: Intuitive judgment; Link 2: Post-hoc reasoning; Link 3: Reasoned persuasion; Link 4: Social persuasion; Link 5: Reasoned judgement; Link 6: Private reflection

The introduction of this model to the field of moral psychology triggered a proliferation of research and discussion focused on the role of this "intuitive system" of judgement and the role of quick emotional processing and post-hoc reasoning in the formation of moral judgements.[124,125,139] However, much remains to be explored about this intuition-based process of moral judgement, and new theories in the field provide different explanations of the way that this process is triggered and how it functions, and offer different behavioral predictions accordingly. Two of these theories include Moral Foundations Theory[38] and the Theory of Dyadic Morality,[42] and are described below.

3.2 Moral Foundations Theory

Moral Foundations Theory (MFT) evolved out of the social intuitionist model, and posits a pluralist, modular explanation for moral processing, meaning that distinct cognitive pathways to moral intuitions exist and that different pathways from multiple distinct moral "foundations" can be triggered with different situations/stimuli.[38] Specifically, MFT proposes five different moral "foundations" present across cultures and groups: perceived harm/caring, fairness, loyalty, authority, and sanctity. If triggered, each foundation theoretically produces a distinct emotional response and corresponding moral judgement.[38]

MFT posits four central claims. First, MFT assumes that the human mind is "organized in advance of experience"—meaning that while moral knowledge and perceptions are very susceptible to environmental and developmental influences, at least some initial tendencies and predispositions (referred to as "modules") to developing certain moral judgements (such as the basics of fairness, or vengeance) are automatically present due to a long evolutionary history.[38] Second, while everyone starts off with the same set of modules, different moral perceptions develop and are shaped by cultural practices—so that finished moral intuitions are not necessarily the same across different cultures and regions. Third, as first developed in the social intuitionist model, MFT states that rapid intuitions are the first step in moral processing, rather than conscious, deliberative choice. Lastly, MFT is a pluralist theory of moral judgement because it posits multiple moral "domains" or "foundations" that exist and that arose from distinct evolutionary pressures—for example, as shown in **Table 1**, the Care/Harm foundation is theorized to have developed in response to evolutionary pressures related to caring for offspring, and the Sanctity/Degradation foundation may have developed in response to pressures selecting for disease avoidance.[38]

MFT suggests that endorsement of these moral "foundations" affects attitudes toward specific issues, including climate change, sexual offenses, and voting behavior.[49,147,148] Very recently, MFT has also been applied to views of syringe exchanges.[149] In this way, MFT can

predict an attitude toward a given behavior or a view of a particular policy or intervention, based on underlying moral foundations. For example, MFT predicts that individuals who place more emphasis on sanctity/loyalty/authority have different attitudes toward a variety of social issues, in contrast to individuals who place the greatest emphasis on the caring and fairness foundations.[39]

Table 1. Five foundations of MFT (from Graham, 2013)

Foundation	Care/harm	Fairness/cheating	Loyalty/betrayal	Authority/subversion	Sanctity/degradation
Adaptive challenge	Protect and care for children	Reap benefits of two-way partnerships	Form cohesive coalitions	Forge beneficial relationships within hierarchies	Avoid communicable diseases
Original triggers	Suffering, distress, or neediness expressed by one's child	Cheating, cooperation, deception	Threat or challenge to group	Signs of high and low rank	Waste products, diseased people
Current triggers	Baby seals, cute cartoon characters	Marital fidelity, broken vending machines	Sports teams, nations	Bosses, respected professionals	Immigration, deviant sexuality
Characteristic emotions	Compassion for victim; anger at perpetrator	Anger, gratitude, guilt	Group pride, rage at traitors	Respect, fear	Disgust
Relevant virtues	Caring, kindness	Fairness, justice, trustworthiness	Loyalty, patriotism, self-sacrifice	Obedience, deference	Temperance, chastity, piety, cleanliness

3.3 Theory of Dyadic Morality

The constructionist Theory of Dyadic Morality is also grounded in social intuitionism and cultural pluralism, but suggests that fundamental perceptions of harm drive subsequent moral judgements, arguing against a modular explanation for morality in favor of a simpler model.[42] According to this theoretical framework, people process situations involving perceived harm through dyadic comparison and dyadic completion; that is, individuals rely on the cognitive template of an intentional "agent" enacting harm to a vulnerable "patient" in order to characterize situations and ultimately assign moral judgement.[42] In order for this dyadic completion to be initiated, a norm violation and concurrent negative affect are needed – in other words, people need to notice unusual behavior and have a negative reaction to it.

TDM posits that instead of distinct moral foundations that trigger distinct responses (such as a “purity” foundation that is distinct from an “authority” foundation), moral judgements arise out of perceptions of harm in different forms.[42] Different moral judgements may arise because of vastly different perceptions of who is enacting harm upon whom—which varies by culture and context.[42] For example, Schein & Gray present the question of sexual assault—in such cases, there is often a split between those who perceive the victim of the assault as the person being harmed, versus those who think that that the person who claimed assault is enacting harm on the accused assailant and is just seeking power or money.[42] Where harm is perceived dictates a person’s moral judgement about the situation.

Furthermore, TDM suggests that once a potential dyadic situation is identified, harm is perceived, and a moral judgement is stimulated, a feedback loop (called the “dyadic loop”) is initiated,[42] in which the initial situation/norm violation is then reinforced and perceived to be even more harmful (**Figure 3**).

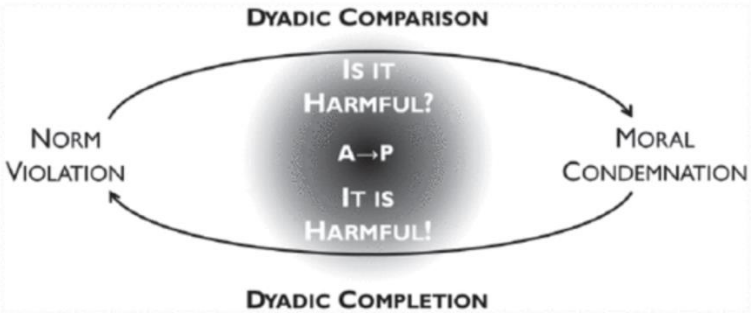

Figure 3. Dyadic completion process (from Schein & Gray, 2018)

3.4 MFT and TDM Implications

Both Moral Foundations Theory and the Theory of Dyadic Morality have important implications for health behavior research, particularly in the area of intervention design and implementation. Beyond allowing researchers to gain a deeper understanding of the moral intuitions behind attitudes, judgments, or stigmatizing beliefs related to a topic—such as

substance use—these theories also provide suggestions for how to improve behavioral interventions targeting health-related beliefs and health behaviors.

A growing body of research, particularly in the case of MFT (given its age and widespread application in the field of psychology), suggests that attitudes and behaviors can be shifted by framing intervention messages to be in line with individuals' moral intuitions—in other words, tapping into these underlying moral intuitions can allow for more effective messaging.[47,150] For example, a recent study of moral foundations and the use of physical fitness apps found that engagement with these health behavior apps could be predicted by moral foundations, leading to the authors' suggestion that future campaigns targeted at increasing app use should frame campaigns in a way that explicitly addresses underlying moral values.[50] As another example, several studies have examined how moral intuitions affect attitudes toward climate change and environmentally-conscious behaviors—as well as intentions to perform those behaviors.[49,51,52] Results of these studies indicated that when persuasive messages were framed in a way that aligned with participants' moral intuitions, the participants' intentions to perform pro-environment behaviors increased—e.g., for people who more strongly respond to the moral foundations of loyalty and authority, framing environmental messages to evoke the concepts of "duty" and "patriotism" in protecting the environment was effective in increasing recycling intentions.[151]

In the case of substance use stigma, these theories have the potential to provide valuable insight into the drivers of this stigma, as well as clues about how to more effectively design stigma reduction interventions. However, as noted in **Chapter 1**, these theories and their associated measures have not been applied *directly* to work within a population of people who use drugs (PWUD)—neither generally nor in a rural Appalachian context, specifically. Therefore, there is a need to test the validity of the MFQ and AoV measures in this population.

3.5 Religiosity and Morality

While religion and morality are distinct concepts, religious beliefs and behavior can still be examined as part of the moral domain, given the theorized pathways by which human social groups developed religious beliefs and the influence that religiosity can have on moral perceptions and moral judgements.[118,152] Furthermore, many individuals worldwide still consider religion to be an indispensable element of morality; results from a recent Pew Research survey indicated that 51% of respondents globally thought that belief in God is a precondition for morality.[153] While the percentage of people in the United States who endorsed the same belief has decreased in the last decade, more than a third (36%) of Americans still responded that they thought it is necessary to believe in God in order to be moral and have good values.[154] Furthermore, the percentage of Americans with this belief increases among those with lower education levels, among those who self-identify as White evangelical Protestants, and among those who are politically conservative.[154]

Religiosity has been hypothesized to be linked to moral behavior due to its role in affecting group dynamics and prosocial behavior and its utility in addressing the evolutionary puzzle of larger group cooperation.[117,118,152,155] Religious practices often involve shared rituals, celebrations, and meetings, which could have played a role in increasing in-group cohesion, shared identity, and altruistic behavior/cooperation within groups.[118] As human social group sizes expanded, widespread belief in an omniscient, supernatural figure could have also helped to maintain group cooperation by limiting “cheating” behavior that other group members might not notice—if group members believed that their actions were being observed at all times by an omniscient being, they may have been more likely to act in prosocial ways even when otherwise given the opportunity to cheat others.[118]

Beyond lay perceptions that religion may be related to morality and hypothesized evolutionary pathways that attempt to explain this connection, numerous studies have also shown that religious beliefs and practice are associated with judgements and behavior toward

others, in often complex ways.[118] For example, some early studies of religious group membership and prejudiced beliefs found that individuals who self-identified as members of a particular religious tradition (e.g., Catholics) reported less tolerant views of people who held differing ideologies (e.g., socialists), as compared to those who had no religious affiliation.[118] Later studies examined the effect of different religious primes on prosocial behavior toward others, and also began to examine the differential effects of different dimensions of religious belief on judgements and behavior.[118]

Overall, religion can be viewed as a complex phenomenon with strong ties to moral beliefs and judgements. In the context of substance use, religion has been linked to beliefs about the morality or immorality of using drugs,[119] perceived causal attributions of initiation of substance use,[156] and beliefs about how to cope with active addiction.[157,158]

3.6 Conceptual Model

Both of the moral psychology theories described above are appropriate for understanding the underlying moral drivers of attitudes, behaviors, or stigmatizing views. Drawing upon the theories described above, as well as the theoretical and empirical literature related to the influence of religiosity on moral judgements, I propose two conceptual models to guide my specific aims.

In the context of drug use and treatment, MFT suggests that PWUD who place more emphasis on the foundations of sanctity, authority, and loyalty would also report greater levels of internalized drug-related stigma, and would therefore be less likely to access MOUD than those who place more emphasis on the caring and fairness foundations. MFT predicts a positive association between endorsement of the sanctity, authority, and loyalty foundations and stigma; conversely, there would be negative associations between endorsement of fairness and harm/caring moral values and drug-related stigma. These pathways are influenced by the sociocultural context in which people are raised and live; in the rural Appalachian environment,

religiosity in particular makes a key contribution to this context. **Figure 4** shows the proposed paths and associations.

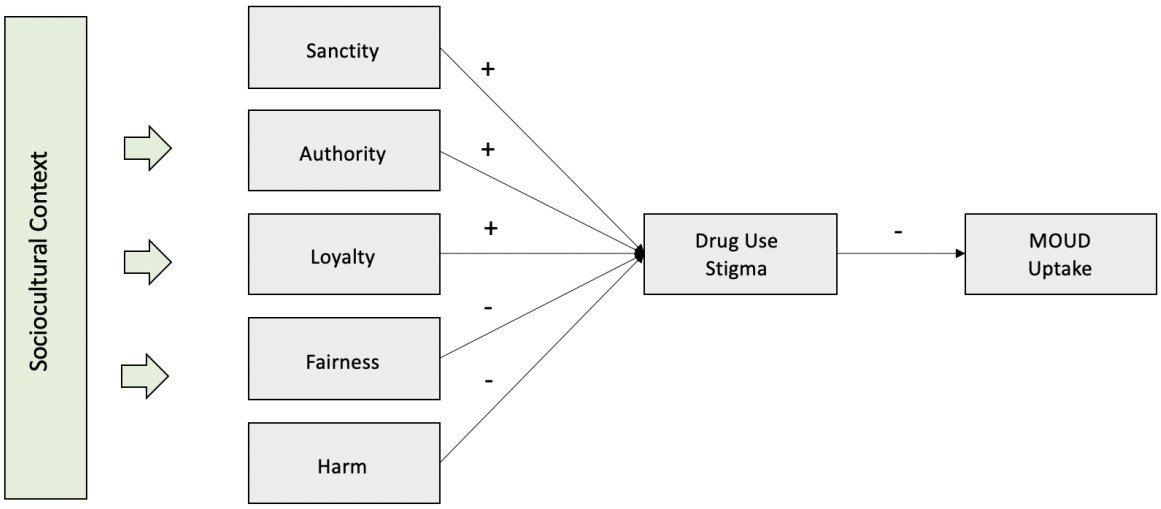

Figure 4. Application of Moral Foundations Theory to MOUD uptake

The Theory of Dyadic Morality (TDM) complements the MFT by offering a deeper explanation of why individuals make the moral judgements and hold the stigma and attitudes that they do toward behaviors. According to this theoretical framework, people perceive situations involving harm to be dyadic in nature, with an intentional "agent" enacting harm to a vulnerable "patient."[42] In the context of substance use, the TDM predicts that the moral tendency to perceive stigmatized individuals (considered to hold the position of "the Other," culturally) as vulnerable to harm (rather than agents capable of inflicting harm on others) would be associated with decreased stigma, and therefore increased support for/uptake of MOUD. **Figure 5** shows the proposed associations.

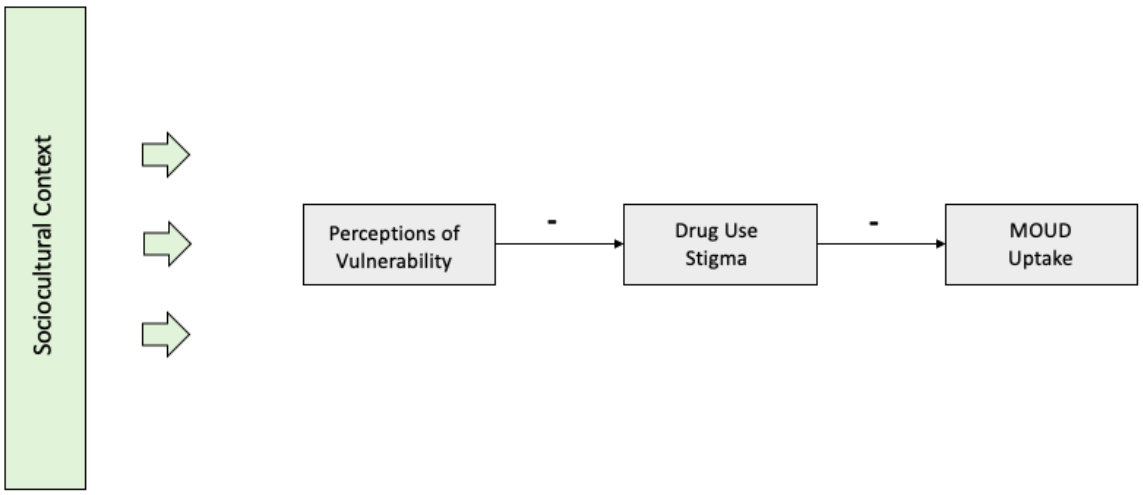

Figure 5. Application of the Theory of Dyadic Morality to MOUD uptake

CHAPTER 4: METHODS

4.1 Study Design Overview

This research employed a mixed-methods, interdisciplinary strategy to examine how moral values and related religious and other sociocultural factors are associated with drug-related stigma and, in turn, MOUD uptake among PWUD. It also explores moral and religious conceptualizations of drug- and treatment-related stigma among PWUD and other non-PWUD community members. Mixed methods research has gained popularity in recent years for its ability to bridge the gap between purely qualitative and quantitative methods, and their constructivist and postpositivist paradigms, respectively, in order to provide a deeper understanding of a research question.[159–162] Mixed methods research is grounded in a paradigm of pragmatism, in which researchers should use whichever method(s) are most appropriate to fully explore and answer the questions at hand.[159–162] Specifically, I utilized a convergent parallel mixed methods design, in which I collected and analyzed quantitative and qualitative data simultaneously, and then explored the extent to which the results converged, diverged, or combined to more fully describe moral and religious perceptions of addiction in rural Appalachia and understand the application of moral psychology theory to opioid use and treatment in this region.

A convergent parallel mixed methods design is appropriate for use in cases in which a more complete understanding of a topic is desired; according to Creswell and Clark, the design is suitable “when the researcher wants to compare quantitative statistical results with qualitative findings for a complete understanding of the research problem.”[159] In this research study, a convergent parallel design also fit appropriately into the timing of the larger parent study, as this

design does not place restrictions on when qualitative and quantitative data should be collected (they can occur separately/simultaneously). This design was also appropriate for the research questions at hand, as qualitative and quantitative results were examined to see the degree to which they support one another, and the degree to which qualitative findings helped to supplement quantitative results and provide support for the proposed quantitative associations. A convergent design was appropriate for providing a deeper understanding of the application and comparison of two different theories of moral psychology, as the qualitative results helped support the quantitative results to explore model/theory fit.

4.2 Parent Study: OHOP

My dissertation research is situated within the larger Ohio Opioid Project study of opioid use and treatment access in rural Appalachian Ohio, funded by the National Institute on Drug Abuse (Implementing a Community-Based Response to the Opioid Epidemic in Rural Ohio, UG3/UH3DA044822, PIs, Miller, WC; Go, VF). This parent study is one of seven continuing sites in the Rural Opioid Initiative (ROI), aimed at understanding the opioid crisis in rural areas across the United States.

4.2.1 Parent Study Setting

The parent study and my research are based in six counties in the rural Appalachian region[163] of southern Ohio: Scioto, Jackson, Pike, Gallia, Vinton, and Meigs counties (indicated in **Figure 6**). These study counties are classified as "distressed counties" by the Appalachian Regional Commission,[164] and have high rates of drug overdose deaths and related infectious diseases, such as hepatitis C.[165] These counties are also designated as rural counties, according to the Office of Management

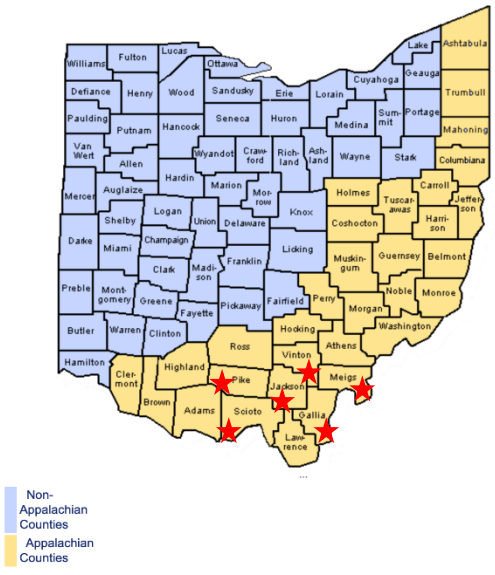

Figure 6. Ohio Opioid Project (OHOP) study counties (from ODJFS)

and Budget and the Economic Research Service Rural-Urban Commuting Areas.[166,167]

Through our team's work in these study counties since 2016, we have established strong partnerships with health departments, substance use treatment organizations, judicial organizations, faith-based organizations, and other community groups in the region.

4.2.2 Parent Study Design

OHOP is a five-year, two-phase grant study that follows the Exploration, Adoption/Preparation, Implementation, and Sustainment (EAIS) model for intervention design and implementation.[168] During this process, our team has been working to understand the context of opioid and other substance use in the study region, and to collaborate with community members to design a service delivery plan for implementation in the area. The first phase (UG3) of OHOP took place in Scioto, Pike, and Jackson counties and included both quantitative and qualitative data collection, epidemiological analyses of drug overdose mortality and other consequences of drug use, a policy review of relevant laws and policies in the state, and a quantitative survey of the collaborative abilities of organizations working in the area of substance use. The second phase (UH3) of OHOP, which is ongoing, includes additional qualitative interviewing with stakeholders and PWUD in three additional counties, and additional quantitative survey administration to a new sample of PWUD.

4.2.3 Additional Parent Study Context: Prior Findings from the Ohio Opioid Project

During the first phase of the OHOP study, our team completed two years of formative data collection to understand factors driving substance use and treatment availability in a tri-county region. This formative work included both secondary data analyses and qualitative interviewing with key community members (e.g., substance use treatment providers, healthcare providers, law enforcement, judicial officials, and public health personnel) and drug users.

During the more than 60 interviews we conducted, community members and drug users consistently revealed highly stigmatized and moralized views of both drug use and MOUD.

Stigma was often connected to concerns with MOUD overprescribing, stemming from a fear of a repeat of the region's pill mill history, or a lack of knowledge surrounding how MOUD works and whether it is effective. However, much of the stigma surrounding MOUD appeared to be tied to judgements (and sometimes moral and/or religious judgements specifically) of drug use and treatment. Some stakeholders indicated that part of the issue was related to the cultural and religious norms in the area, as any type of drug use (including the use of pharmaceuticals like MOUD) is viewed as unacceptable.

This stigma toward substance use and toward MOUD extended to healthcare providers and substance use treatment providers in the region. While some healthcare providers and providers at substance use treatment centers were supportive of those struggling with drug use, behaved in a welcoming manner, and advocated for MOUD and/or were trained to provide it, drug users and other stakeholders described many providers who displayed stigmatizing attitudes and/or were unwilling to administer MOUD, and who shamed patients who disclosed their MOUD regimen.

Many PWUD presented similar moral judgements and internalized stigma; some had internalized the idea that drug use is a personal failing and believed that MOUD is just another drug—that a person isn't "clean" and successful until they are completely abstinent. Furthermore, both PWUD and stakeholders in the area reflected the influence of regional religious infrastructure and beliefs in shaping attitudes toward drug use and treatment options. Some providers (and PWUD) advocated for faith-based treatment options, while others expressed frustration with cultural narratives that they thought resulted in people "praying for sobriety," rather than utilizing evidence-based treatment options.

Overall, initial parent study findings supported the need for an approach to understanding potential moral drivers of drug-related stigma in the rural Appalachian region of Ohio.

4.3 Dissertation Research

4.3.1 Aims

Based on the background information, theoretical frameworks, and current research gaps presented in **Chapters 1-3**, as well as the OHOP study context presented above, my specific aims were to:

Aim 1. Conduct a confirmatory factor analysis (CFA) to test the validity of 1) the Moral Foundations Questionnaire (MFQ) and 2) the Assumptions of Vulnerability Scale (AoV) in a sample of PWUD in rural Appalachian Ohio.

Aim 2. Examine associations of moral views with uptake of MOUD among PWUD in rural Appalachian Ohio and assess whether internalized stigma mediates these pathways.

Aim 3. Use a mixed-methods approach to explore moral views related to addiction and treatment held by treatment providers, PWUD, and other community stakeholders, and how these shape their attitudes toward drug use and treatment options.

4.3.2 Participant Recruitment and Data Collection

4.3.2.1 Quantitative Recruitment and Data Collection

Participants for this proposed research were recruited through the OHOP parent study. A sample of PWUD from the original three study counties (n = 261) was recruited through respondent-driven sampling (RDS), a method of snowball sampling that is used for “hard-to-reach” populations, such as active drug users.[169] In addition, a sample of PWUD from three OHOP UH3 phase expansion counties were recruited similarly. The target sample size for the UH3 expansion counties was 166 participants; however, at the time of data analysis for this dissertation research, data from 58 participants had been collected and were included in the final combined data set, for a total of 319 participants.

Eligible participants for the OHOP quantitative survey were PWUD who were at least 18 years old and had injected any drugs or used opioids in any way within the last 30 days. Seed participants (the first people to be recruited, who then refer their peers according to the RDS

method) were recruited through contacts made during PWUD qualitative interviews, and with the help of community partners, such as local health departments and syringe exchange programs.

Eligible PWUD participants completed the quantitative survey using Audio Computer-Assisted Self Interview (ACASI) or Computer-Assisted Personal Interview (CAPI) technology. Interviews were conducted by two trained study field staff, in partnership with local public health personnel who conducted the rapid testing. During the COVID-19 pandemic, some surveys were conducted via phone when in-person data collection was paused.

4.3.2.2 Qualitative Data Collection

Both stakeholders and PWUD were recruited for qualitative interviews. PWUD participants for the qualitative aim of this proposed research were recruited in the same way that prior qualitative participants were recruited in OHOP. Community partners were contacted to assist with interview recommendations, and PWUD participating in the quantitative survey were also eligible to participate in a qualitative interview. Stakeholder qualitative participants were recruited through community contacts (e.g., partners at local health departments) and recommendations from initial key stakeholders. Some interviews from the original UG3 OHOP qualitative interview phase were also included in the qualitative sample for this research. More detail is provided in **Chapter 6**.

In-depth interviews for my qualitative research were semi-structured and lasted approximately one hour. Interview guides were tailored for stakeholder and PWUD participants. Original OHOP interviews were conducted with participants in quiet, private locations, and were audio-recorded with the participant's consent. Additional interviews for this dissertation were conducted via phone or Zoom, due to the ongoing COVID-19 pandemic. Participants were reimbursed $20 for their participation in a qualitative interview. Qualitative interviews guides for the proposed research focused on general moral views and moral predisposition, views on

substance use, and specific reasons for support or lack of support for a range of different treatment options.

Guiding Questions. Qualitative interview guides addressed the following main questions:

1. How do stakeholders conceptualize drug addiction (e.g., biomedical disease, choice, moral failing, sin/religious failing)?
2. How do PWUD conceptualize drug addiction?
3. How have stakeholders and PWUD come to hold these conceptualizations?
4. What are the attitudes and opinions of stakeholders and PWUD toward different approaches to treating drug addiction? How have these been formed?
5. Who do stakeholders and PWUD view as being most vulnerable in their communities?

4.3.3 Sample Size and Power

For my quantitative aims (1 and 2), I used a combined sample of 319 PWUD participants. For aim 2 in particular, I conducted a power analysis to test if I would be sufficiently powered for the mediation models with the dichotomous outcome that I proposed. Using G*Power 3.1[170] and following Chinn's[171] findings for power calculations with a dichotomous outcome that an odds ratio of 1.6 is roughly equivalent to a Cohen's d of 0.25 (small effect), the estimated sample size needed for 80% power to detect an effect at alpha=0.05 is 232. I chose an OR that reflected a small effect size for power calculations, in order to produce a conservative estimate. Based on these calculations, I was sufficiently powered for my analyses. For my qualitative aim (3), I compiled a sample of 25 interviews with PWUD and 20 interviews with stakeholders.

4.3.4 Key Measures

Table 2 provides an overview of the key measures for this research that I added to the base OHOP quantitative survey. See **Appendix 1** for full copies of questionnaires.

Table 2. Focal study measures and key covariates

Construct	Scale	# of Items	Variable Type	Response Options & Example
Moral Values – MFT	Moral Foundations Questionnaire	20	Predictor/ exposure	*Response options: 5-point Likert-type scale; 1) strongly agree to 5) strongly disagree* Caring subdomain – Compassion for those who are suffering is the most crucial virtue; Fairness subdomain – Justice is the most important requirement for a society; Purity subdomain – People should not do things that are disgusting, even if no one is harmed; Loyalty subdomain – People should be loyal to their family members, even when they have done something wrong; Authority subdomain – Respect for authority is something all children need to learn
Moral Values – TDM	Assumptions of Vulnerability Scale (AoV)	21	Predictor/ exposure	*Response options: 5-point Likert-type scale; 1) not at all to 5) completely* I think that the following are especially vulnerable to being harmed: - Corporate leaders - Immigrants - Authority figures - Police officers - People who use drugs - Muslims - Transgender people
Internalized Stigma	Stigma of drug use measure (from Latkin et al., 2010)[172]	5	Mediator	*Response options: 4-point Likert-type scale; very much to not at all* How much do you feel ashamed of using drugs? How much do you feel people avoid you because you use drugs?
Religiosity	Duke University Religion Index[173]	5	Key Covariate	*Response options: 5-point Likert-type scale* How often do you attend church or other religious meetings? In my life, I experience the presence of the Divine (i.e., God).
MOUD Uptake		4	Outcome	*Response options: yes, no, don't know* Have you ever gotten buprenorphine maintenance medication – like Suboxone or Subutex – from a doctor or program?

4.3.5 Analysis Plan Overview

For my quantitative aims (1 & 2), I used structural equation modeling for my analyses. Structural equation modeling (SEM) is a type of statistical analysis that allows for the examination and testing of complex models with both measured and latent variables.[174,175] While simple SEM models can also be evaluated using multiple linear regression, SEM allows researchers increased flexibility to move beyond some of the limitations of standard linear regression and has several key advantages, including the ability to: estimate models with multiple dependent variables; test complex mediation and moderation pathways; account for measurement error; perform many tests simultaneously that would otherwise have to be done step-by-step and thoroughly evaluate overall fit of a proposed model; and employ a modeling technique that "addresses questions [researchers] want answered and 'thinks' about research problems the way that researchers do."[175] SEM models rely heavily on theorized relationships between variables, and researchers need to have a strong theory-driven approach, particularly when attempting to make causal inferences. Types of SEM models include measurement models (e.g., confirmatory factor analysis), which relate measured variables to the underlying constructs/latent factors that they purport to capture, and structural models, which specify the hypothesized relationships between different constructs.[174]

Generally, for both measurement and structural models, the basic steps of the SEM process are the same: 1) specification of the hypothesized model (identifying relationships between factors/predictors/outcomes/mediators); 2) identification of the model (ensuring that the model is not under-identified; i.e., there is not enough information in the model in order to estimate model parameters); 3) estimation of the model (obtaining parameter estimates for model pathways/relationships); 4) evaluation of the model (examining fit statistics to determine how well the model fits the data); 5) re-specification of the model if needed; and 6) interpretation of model effects.[174,175] In the case of my aims, I began with establishment of my measurement

models (aim 1) and then moved to building my structural models (aim 2). More detail is included in **Chapter 5**.

For my qualitative aim (3), I used a form of qualitative analysis known as content analysis, a widely applied and flexible form of qualitative research that can be employed to organize data into “concepts” or “categories” that describe a phenomenon of interest.[176] Content analysis can be used both inductively and deductively, depending on the goal of the research—inductive methods are used in cases when there is little prior research or guiding theory surrounding a topic and the researcher wishes to use an open coding process to identify emergent concepts from the data.[176] A deductive/directed content analysis approach is more suitable for the application of existing theories to qualitative data—including “in cases where the researcher wishes to retest existing data in a new context” and when the goal is “to provide knowledge and understanding of the phenomenon under study”[176–178]—and is the method I used for my qualitative aim.

4.3.6 Analysis Overview: Aim 1

I used SAS© version 9.4[179] for all data cleaning and data management. After cleaning and preparing my analysis data set by merging quantitative survey data from original and expansion counties, I generated basic descriptive statistics and determined the response distribution of items included in my analysis.

Due to COVID-19-related delays in quantitative data collection in UG3 expansion counties, survey data for the Assumptions of Vulnerability Scale (AoV) was only available for 58 participants. Therefore, my resulting primary focus was on the validity (and subsequent structural models) that included the Moral Foundations constructs. However, I still conducted supplementary analyses using the AoV scale, which are included in **Chapter 7.**

Aim 1. Conduct a confirmatory factor analysis (CFA) to test the validity of 1) the Moral Foundations Questionnaire (MFQ) and 2) the Assumptions of Vulnerability Scale (AoV) in a sample of PWUD in rural Appalachian Ohio.

Aim 1 Hypothesis 1: Results from the MFQ in this PWUD sample will map onto 5 different factors, measuring each of the following latent constructs related to moral judgement: authority/subversion, sanctity/degradation, harm/care, fairness/cheating, and loyalty/betrayal.

I used SAS and Mplus©[180] to conduct a confirmatory factor analysis of the MFQ and AoV. After cleaning my data and generating frequencies and basic descriptives for each scale item in my dataset, I conducted an EFA to examine basic correlations between items and factor loadings for a variety of different factor structures. I then tested several different factor structures using CFA, including a 5-factor structure, specifying the appropriate items that theoretically correspond to the 5 factors of authority/subversion, sanctity/degradation, harm/care, fairness/cheating, and loyalty/betrayal; I allowed for factor correlations between these. I then examined factor loadings and model fit statistics such as Chi-square test results and RMSEA/CFI/TFI statistics (RMSEA <0.05, TLI/CFI >0.95)[174,175,181] to examine the fit of these models and determine which model provided the best fit. Depending on factor loadings, model fit, and consideration of the language and structure of scale items as administered in my study population, I removed poorly loading scale items and continued to test factor structures until I arrived at the best-fitting model.

Aim 1 Hypothesis 2: Results from the AoV in this sample will map onto two factors, measuring perceptions of vulnerability to harm/victimization of the “Other” and the “Powerful.” I repeated the process from Aim 1 Hypothesis 1 for the AoV Scale (included in **Chapter 7**). Measurement models for both scales are shown in **Figure 7** and **Figure 8**.

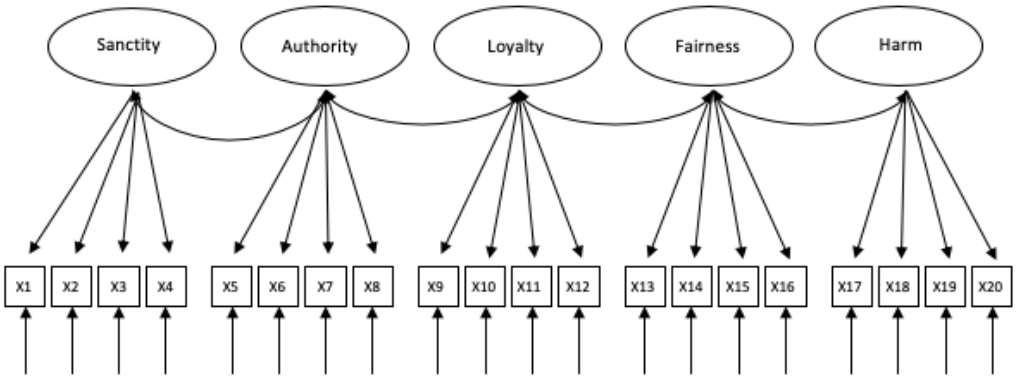

Figure 7. Hypothesized MFQ measurement model

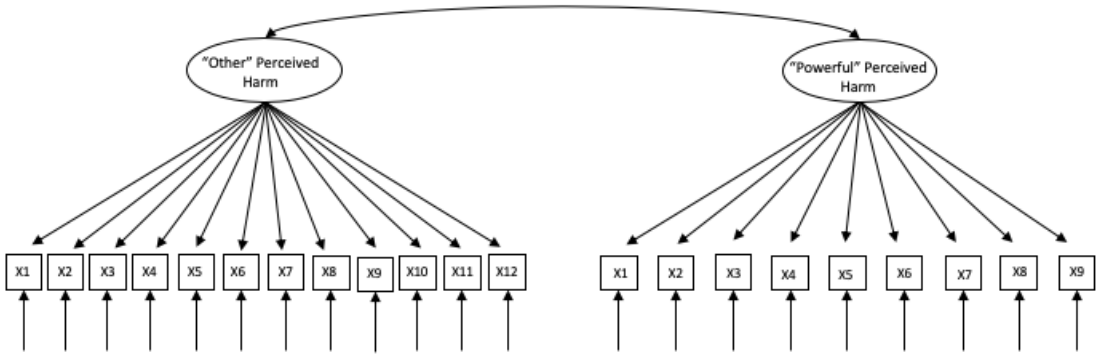

Figure 8. Hypothesized AoV measurement model

4.3.7 Analysis Overview: Aim 2

Following establishment of my measurement models for my focal predictors in aim 1, I moved to assembling a structural model in aim 2.

Aim 2. Examine associations of moral views with uptake of MOUD among PWUD in rural Appalachian Ohio and assess whether internalized stigma mediates these pathways.

Aim 2 Hypothesis 1: Endorsement of the authority, loyalty, and purity foundations will be negatively associated with uptake of MOUD. Stigma will mediate the pathway between moral foundations and MOUD; endorsement of the authority, loyalty, and purity foundations will be positively associated with stigma, which will in turn be negatively associated with MOUD uptake.

Aim 2 Hypothesis 2: Perceptions of marginalized individuals (e.g., corresponding to scale items measuring perceptions of the "Other") as victims/vulnerable to harm will be positively associated with uptake of MOUD. Stigma will mediate the pathway between perceptions of vulnerability/harm and uptake of MOUD; perceptions of vulnerability will be negatively associated with stigma, which will in turn be negatively associated with MOUD uptake. However, once again, this analysis was not conducted as the primary analysis of my first manuscript (**Chapter 5**), due to a small sample size. Results are presented instead in **Chapter 7** (Supplemental Analyses).

I used Mplus and structural equation modeling (SEM) to conduct an indirect effect analysis with bootstrap standard errors of the association between the MFT's moral foundations and uptake of MOUD. Stigma was the mediator for each of these pathways, and religion and fatalism were also included as predictors in the model, along with other key covariates (described further in **Chapter 5**). Prior to specifying my full structural model, I assessed the measurement properties of all other latent constructs, and adjusted measurement structures and items as needed. I examined model fit statistics in a similar way to CFA; I examined RMSEA and TLI/CFI values, and re-specified my model as needed. After determining my final models, I interpreted the standardized regression coefficients for the model relationships.

4.3.8 Analysis Overview: Aim 3

Aim 3. Use a mixed-methods approach to explore moral views related to addiction and treatment held by treatment providers, PWUD, and other community stakeholders, and how these shape their attitudes toward drug use and treatment options.

Following data collection, interviews were transcribed. Based on my reading of the transcripts, preliminary memos, and interview guide questions, I developed a preliminary codebook. Following Hsieh & Shannon's guidance for directed content analysis,[177] I began by drafting initial codes that stem from my interview guides and the theoretical background of my research questions. As I and another research team member read transcripts, developed

memos, and began to apply these preliminary codes to a subset of the interview transcripts, we also noted recurrent themes that did not fit into the existing codes and developed additional codes from the data to capture these concepts. Through this iterative process of testing my codebook and developing/refining codes as needed, I created a final codebook of codes that were applied to all interviews. See **Appendix 3** for the final qualitative codebook.

One other research team member and I then coded an interview independently and compared coding in order to resolve any differences and establish inter-coder reliability. All interviews were then coded using Dedoose software.[182] Following coding, I examined key themes across interviews to address the guiding research questions as well as relevant emergent themes. To help organize the data, I developed matrices based on codes that align with theoretical constructs.

4.3.8.1 Mixed Methods Combined Analysis of Qualitative and Quantitative Results:

According to Creswell & Clark's guidance for analyzing convergent parallel mixed-method studies,[159] I first analyzed qualitative and quantitative data separately. Following the separate analyses described above, I will utilized matrices and joint display tables to fully integrate and interpret my results. These joint displays are increasingly used in mixed methods research as a way to more fully integrate and compare qualitative and quantitative results. **Figure 9** presents a Procedural Paradigm for this **QUAN + qual** research, showing steps for qualitative and quantitative data collection and analysis, as well as products of data integration.

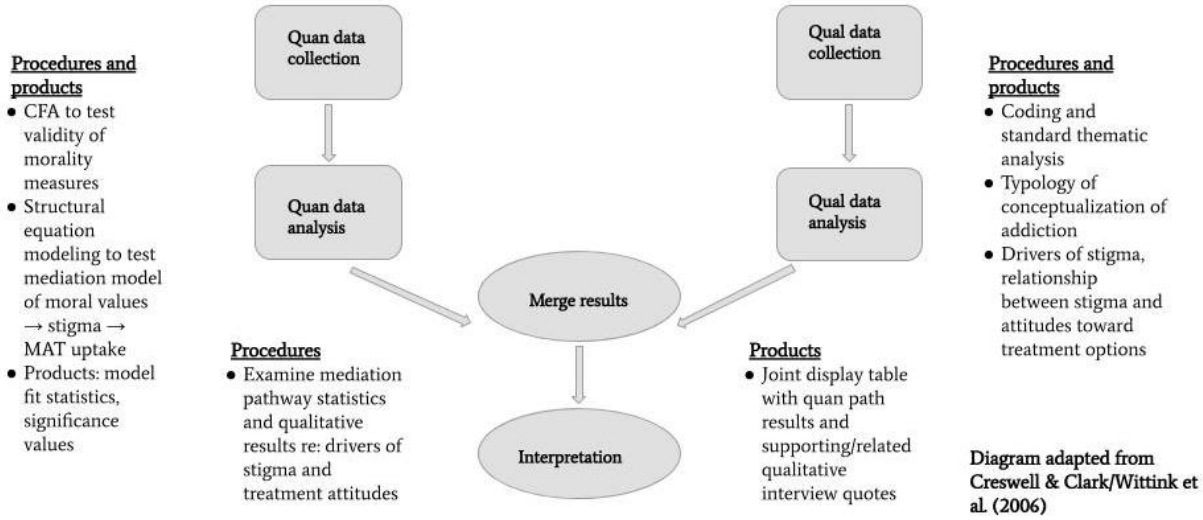

Figure 9. Convergent parallel data integration process

In order to merge and display qualitative and quantitative results together, I utilized a joint display table. Alongside the quantitative results, I presented quotes from the qualitative interviews that help to explain results from the structural equation model. More detail and final mixed-methods findings and synthesis are described in **Chapter 8**.

CHAPTER 5: EXPLORING THE RELATIONSHIP BETWEEN MORALITY, STIGMA, AND UPTAKE OF MEDICATION FOR OPIOID USE DISORDER (MOUD) AMONG PEOPLE WHO USE DRUGS: A STRUCTURAL EQUATION MODELING APPROACH

5.1 Introduction

The opioid crisis continues to take a devastating toll in the United States (US), and rural Appalachia is a particular hotspot for substance use and related deaths.[2,58,183] Over the past decade, states in the Appalachian region have consistently reported some of the highest recorded rates of drug overdose deaths in the country.[184] Numerous factors common in rural Appalachian communities, including economic distress, a history of opioid overprescribing, drug trafficking patterns, and widespread physical, sexual, and emotional trauma have fueled the epidemic.[3–14] While several evidence-based harm reduction interventions, including medication for opioid use disorder (MOUD), are available for opioid users, these are severely underutilized in rural Appalachia.[21–26]

Increasingly, drug-related stigma is being recognized as a key barrier to MOUD provision and uptake.[69,90,92,185] Qualitative research into attitudes toward MOUD in rural areas, including in our study area, suggests that views toward MOUD may be driven by general stigma surrounding drug use, due in part to perceptions that drug use is the result of a choice or personal failure and therefore requires a choice-based solution—rather than a medical solution.[69,86,92,103] The use of MOUD is often seen by both general community members and PWUD themselves as simply “exchanging one drug for another,” as the use of most psychotropic substances is considered to be “unclean.”[69] Additionally, fear related to misuse or diversion of MOUD may result in different levels of acceptability for different types of MOUD—with methadone and buprenorphine seen as less acceptable than naltrexone.[69]

To develop more successful stigma reduction efforts in rural Appalachia, a deeper focus on the cultural epidemiology of stigma, or how stigma is shaped in a particular cultural or regional context, is needed. Increasingly, stigma is understood to be morally grounded and associated with other contextual factors, such as religiosity.[119,186–189] Therefore, it is important to understand the relationship between regionally influenced characteristics, such as moral intuitions and religiosity, with substance use-related stigma and uptake of MOUD in rural Appalachian areas to scale up evidence-based treatment for substance use.

The field of moral psychology can provide a helpful theoretical framework for understanding drivers of drug-related stigma. Moral Foundations Theory (MFT) suggests that a person's overall sense of morality is based on their relative endorsement of five foundations of moral values: harm/caring, fairness, loyalty, authority, and sanctity.[38] The extent to which a person endorses each of these moral foundations has been shown to predict other characteristics and behaviors, such as attitudes toward crime victims or toward syringe exchanges.[39–41] Typically, stronger endorsement of the harm/care and fairness foundations (sometimes called the "Individualizing" foundations) has been associated with greater compassion for stigmatized populations or behaviors, while stronger endorsement of the loyalty/authority/sanctity foundations (sometimes called the "Binding" foundations for their hypothesized role in maintaining in-group cohesion) has been associated with more negative judgements toward stigmatized groups or behaviors.[190–192] More recently, MFT has been specifically applied to drug-related stigma, though among university students rather than PWUD themselves.[186,187] However, recent analyses of the suitability of the Moral Foundations Questionnaire (MFQ), the accompanying scale developed to capture endorsement of the five moral foundations of MFT, have suggested that measuring these moral foundations may be more complex in populations other than online or university samples and that the MFQ may not be an adequate measure in other circumstances.[193,194]

Therefore, the objective of this analysis was to explore the association between moral foundations and other culturally salient characteristics and uptake of MOUD among PWUD in rural Appalachia, and to explore potential mediation by internalized drug-related stigma. We also tested the functioning of the MFQ scale in a population of PWUD. We hypothesized the following:

H1: Results from the MFQ in this PWUD sample will map onto 5 different factors, measuring each of the following latent constructs related to moral judgement: authority/subversion, sanctity/degradation, harm/care, fairness/cheating, and loyalty/betrayal.

H2: PWUD who place more emphasis on the foundations of sanctity, authority, and loyalty ("Binding" foundations) would also report greater levels of internalized drug-related stigma and would be less likely to access MOUD than those who place more emphasis on the caring and fairness foundations. **Figure 10** shows the hypothesized paths and associations.

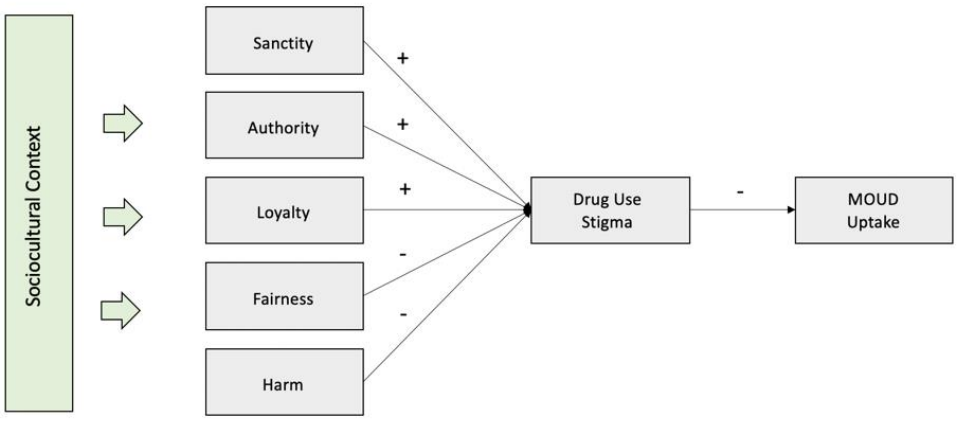

Figure 10. Application of Moral Foundations Theory to MOUD uptake – hypothesized associations

5.2 Methods

5.2.1 Study Setting & Parent Study Description: OHOP

Study surveys were part of the NIDA-funded Ohio Opioid Project (OHOP/Implementing a Community-Based Response to the Opioid Epidemic in Rural Ohio, UG3/UH3DA044822, PIs, Miller, WC & Go, VF), which aims to understand the context of opioid use and treatment services in a six-county region of rural Ohio and to work with communities to develop tailored intervention delivery plans. OHOP is a five-year, two-phase grant study and follows the Exploration, Adoption/Preparation, Implementation, and Sustainment (EAIS) model for intervention design and implementation.[168] The study is based in six counties in the rural Appalachian region of southern Ohio. These study counties are classified as “distressed counties” by the Appalachian Regional Commission,[164] and have high rates of drug overdose deaths and related infectious diseases, such as hepatitis C.[165]

5.2.2 Participants & Participant Recruitment

Participants were recruited from six counties in southern, rural Appalachian Ohio. Potential participants were recruited through the OHOP parent study, using respondent-driven sampling (RDS). Respondent-driven sampling is a method of snowball sampling that is often used for “hard-to-reach” populations, such as individuals who are currently using drugs.[169] During RDS recruitment, initial “seed” participants were recruited with the help of community partners, such as local health departments and syringe exchange programs, as well as through qualitative interviewing with PWUD. Initial study participants were then given referral coupons to use for recruitment of others in their social networks to the study.

Participants were eligible to participate in the study survey if they were at least 18 years old, if they resided in one of the six study counties, and if they had injected any drugs or used illicit opioids through any route of administration within the last 30 days. Participants opted to complete the quantitative survey using Audio Computer-Assisted Self Interview (ACASI) or Computer-Assisted Personal Interview (CAPI) technology. If preferred by participants, study

staff could also read the survey questions to a participant and enter their answers into the survey system. During the COVID-19 pandemic, data collection occurred via phone or Zoom interviews with participants; study staff administered the survey virtually and input participant answers into the computer survey. Surveys were conducted by trained study field staff. Participants were compensated $25 in gift cards for their participation in the study survey.

5.2.3 Measures

Study surveys included measures of basic demographics, drug use, route of administration, treatment history, overdose experience, stigma, general health history, health care access, sexual risk behavior, interactions with the criminal justice system, and mental health status. For the purposes of this analysis, the following measures were used.

Moral intuitions – Moral Foundations Questionnaire-20 (Short-form): Moral Foundations Theory proposes five different moral foundations present across cultures and groups: perceived harm/caring and fairness (the “Individualizing” foundations, which we also labeled the “Care” foundations), as well as loyalty, authority, and sanctity (“Binding” foundations). If triggered, each foundation theoretically produces a distinct emotional response and corresponding moral judgement,[38] and people differ in how much their individual moral intuitions align with each foundation. A corresponding questionnaire, the Moral Foundations Questionnaire, was developed by the creators of Moral Foundations Theory, and is available in both long (30 questions) and short forms (20 questions). We used the 20-item short form of the scale.[195] Scale items included questions that asked participants to indicate how much certain conditions were relevant to their thinking when they judge something to be right and wrong (such as “whether or not someone suffered emotionally” or “whether or not someone showed a lack of respect for authority”), as well as a section that asked participants to rate their agreement with morally salient statements (such as “compassion for those who are suffering is the most crucial virtue” and “people should be loyal to their family members, even when they have done something wrong”).

Internalized drug-related stigma – Latkin et al., 2010 stigma measure: Participant internalized drug-related stigma was measured using a five-item scale developed by Latkin et al. for use among PWUD.[172] Scale items included questions that asked participants how much they felt ashamed of using drugs, and how much they feared that friends or family would avoid them because of their drug use. The Chronbach's alpha of the original scale was 0.93.

Religiosity: Religiosity was measured using the Duke University Religion Index (DUREL),[173] a 5-item measure of religious activity, non-organizational religious activity, and intrinsic religiosity. Items ask participants about their attendance at religious meetings, frequency of personal time spent in religious activities, and internal spiritual beliefs.

MOUD Uptake: Prescribed MOUD uptake was measured with several binary Y/N questions that asked participants if they had ever received different types of MOUD from a doctor or program. The question was asked separately for buprenorphine maintenance medication (including Suboxone and Subutex), methadone maintenance treatment, and naltrexone shots (Vivitrol). A combined variable of any type of MOUD uptake was created from the questions about separate MOUD types, and models were run using both the combined MOUD variable and each MOUD type separately.

Additional covariates: Additional measures captured in the quantitative survey included measures of sex, race, fatalism, educational level, age, and participant insurance status.

5.2.4 Data Analysis

Data were analyzed using SAS Version 9.2[179] and Mplus.[180] To assess functionality of the primary study measures in a population of rural Appalachian PWUD, including the MFQ (*Hypothesis 1*), measurement models were established first for all key model latent constructs—fit statistics and eigenvalues were combined with theoretical knowledge and results from prior literature and evaluated to determine the optimal factor structure for each measure, and poorly fitting items were dropped from analysis.

Following establishment of measurement models, mediation models were assessed using an SEM framework (*Hypothesis 2*). Mplus was used to conduct an indirect effect analysis with bootstrap standard errors of the association between the MFT's moral foundations and uptake of MOUD, with internalized drug-related stigma as the mediator between moral foundations and MOUD uptake. Religiosity and fatalism were also included in the full model, as well as covariates including age, sex, education level, race, and insurance status.

Initially, we specified a full model with both moral foundations factors (Care foundations and Binding foundations) included, and examined stigma as a mediator of the pathway from moral foundations to MOUD uptake. However, because the Care and Binding foundations factors were highly correlated ($r>0.90$), we separated these foundations into two models and evaluated them independently. Additionally, we fit separate models with different versions of our outcome (MOUD uptake).

To evaluate model fit, Chi-square, RMSEA and Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI) fit statistics were evaluated; models were re-specified as needed until satisfactory model fit was achieved. A path diagram of the final mediation model is shown in **Figure 11.**

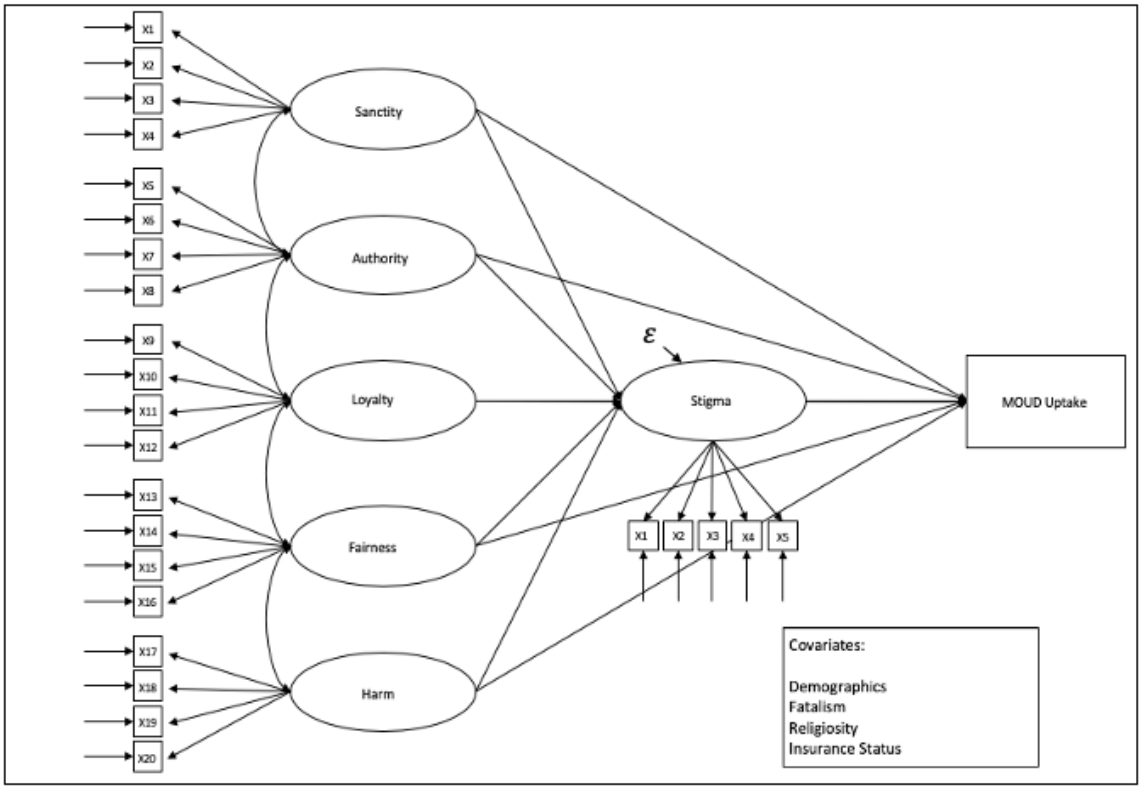

Figure 11. Mediation model path diagram

5.3 Results

A total of 261 participants from the first round of data collection (original three study counties) and 58 participants from the second round of data collection (additional three study counties) were included in this analysis, for a total sample of 319 participants (**Table 3**). The average participant age was 40 years, and the sample was split evenly between men (47%) and women (52%). A large majority of the sample identified as white/Caucasian (88%). Less than half had completed a high school-level education (42%); 30% reported less than high school completion. The most-commonly reported drug of choice used by participants was heroin (46%), followed by methamphetamine (26%) and opiate painkillers (10%). Participants reported high levels of internalized drug-related stigma, with 58% of participants indicating that they felt very ashamed of using drugs, and more than half indicating that they "very much" feared that their family would reject them for their drug use (**Table 4**). Participants also reported moderate-to-

high levels of religiosity; 50.5% of participants agreed that “[their] religious beliefs are what really lie behind [their] whole approach to life” and approximately one third of participants reported at least some involvement in organized religious activities (**Table 2**).

Table 3. Demographic characteristics of study sample (n=319)

Characteristic		Value
Age (years), mean (SD)		39.5 (9.8)
Race, n(%)		
	White	280 (88.3%)
	Black	18 (5.7%)
	American Indian	6 (1.9%)
	Mixed Race	8 (2.5%)
	Other	5 (1.6%)
Gender, n(%)		
	Male	150 (47.3%)
	Female	166 (52.4%)
	Transgender	1 (0.3%)
Education level, n(%)		
	Less than high school	96 (30.3%)
	High school diploma/GED	133 (42.0%)
	Some college	61 (19.2%)
	Associate’s degree/trade school	26 (8.2%)
	Bachelor’s degree or more	1 (0.3%)
Participant reported drug of choice		
	Heroin	147 (46.1%)
	Fentanyl	25 (7.8%)
	Opiate painkillers	33 (10.3%)
	Buprenorphine	10 (3.1%)
	Methadone	2 (0.6%)
	Prescription anxiety drugs	1 (0.3%)
	Cocaine or crack	8 (2.5%)
	Methamphetamine	84 (26.3%)
	Gabapentin	1 (0.3%)
	Clonidine	1 (0.3%)
	Other	4 (1.3%)
Ever accessed MOUD (any type), n(%)		195 (62.3%)
	Ever accessed buprenorphine, n(%)	183 (58.3%)
	Ever accessed methadone, n(%)	54 (17.1%)
	Ever accessed naltrexone, n(%)	71 (22.5%)

Table 4. Key latent variable indicator descriptive statistics (n=319)

Latent Variable Indicator/Survey Question	Response Category/Frequency					
Moral Foundations – Binding When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking? [0] = not at all relevant [5] = extremely relevant	N (%)					
	0	**1**	**2**	**3**	**4**	**5**
Whether or not someone's action showed love for his or her country	48 (15.4%)	56 (18%)	45 (14.5%)	59 (19%)	55 (17.7%)	48 (15.4%)
Whether or not someone showed a lack of respect for authority	37 (11.9%)	49 (15.8%)	38 (12.2%)	72 (23.2%)	68 (21.9%)	47 (15.1%)
Whether or not someone violated standards of purity and decency	34 (11%)	40 (12.9%)	29 (9.4%)	72 (23.2%)	87 (28.1%)	48 (15.5%)
Whether or not someone did something to betray his or her group	37 (11.9%)	39 (12.5%)	42 (13.5%)	64 (20.6%)	67 (21.5%)	62 (20%)
Whether or not someone conformed to the traditions of society	54 (17.4%)	63 (20.3%)	52 (16.8%)	76 (24.5%)	35 (11.3%)	30 (9.7%)
Whether or not someone did something disgusting	33 (10.6%)	32 (10.3%)	48 (15.4%)	62 (20%)	79 (25.4%)	57 (18.3%)
Moral Foundations – Care	**0**	**1**	**2**	**3**	**4**	**5**
Whether or not someone suffered emotionally	33 (10.6%)	32 (10.3%)	48 (15.4%)	62 (20%)	79 (25.4%)	57 (18.3%)
Whether or not some people were treated differently than others	25 (8%)	36 (11.6%)	41 (13.2%	64 (20.1%)	81 (26.1%)	64 (20.6%)
Whether or not someone cared for someone weak or vulnerable	41 (13.1%)	35 (11.2%)	35 (11.2%)	69 (22.1%)	69 (22.1%)	63 (20.2%)

Whether or not someone acted unfairly	28 (9.1%)	42 (13.6%)	35 (11.3%)	74 (24%)	70 (22.7%)	60 (19.4%)
Religiosity – Religious Practice [1] = Never [6] = More than once per week	**N (%)** **1**	**2**	**3**	**4**	**5**	**6**
How often do you attend church or other religious meetings?	144 (46.5%)	62 (20%)	54 (17.4%)	28 (9%)	17 (5.5%)	5 (1.6%)
How often do you spend time in private religious activities, such as prayer, meditation, or Bible study?	197 (63.8%)	35 (11.3%)	20 (6.5%)	17 (5.5%)	34 (11%)	6 (1.8%)

Religiosity – Religious Beliefs Mark the extent to which each statement is true or not true for you. [1] = Definitely not true [5] = Definitely true of me	**N (%)** **1**	**2**	**3**	**4**	**5**
In my life, I experience the presence of the Divine (i.e., God).	47 (15.4%)	23 (7.5%)	81 (25.6%)	55 (18%)	99 (32.5%)
My religious beliefs are what really lie behind my whole approach to life.	61 (19.7%)	42 (13.6%)	94 (30.4%)	59 (19.1%)	53 (17.2%)
I try hard to carry my religion over into all over dealings in life.	73 (23.9%)	45 (14.7%)	83 (27.1%)	58 (19%)	47 (15.4%)

Internalized stigma [0] = Not at all [3] = Very much	**N (%)** **0**	**1**	**2**	**3**
How much do you feel ashamed of using drugs?	29 (9.2%)	29 (9.2%)	74 (23.5%	183 (58%)
How much do you feel people avoid you because you use drugs?	32 (10.2%)	55 (17.5%)	101 (32.2%)	126 (40.2%)
How much do you fear you will lose your friends because you use drugs?	76 (24.3%)	45 (14.4)	82 (26.2%)	110 (35.1%)

How much do you fear your family will reject you because you use drugs?	47 (15%)	42 (13.4%)	66 (21.1%)	158 (50.5%)
How much do you think other people are uncomfortable being around you because you use drugs?	41 (13.1%)	71 (22.6%)	95 (30.3%)	107 (34.1%)

5.3.1 Measurement Models

Prior to specifying our full structural mediation model, we conducted confirmatory factor analyses using Mplus on our measures of moral foundations, stigma, religiosity, and fatalism. Final models were chosen using a combination of theory and evaluation of model fit statistics. Fit statistics for all final measurement models are found in **Supplementary Table 1**.

Moral Foundations. In our sample, many questionnaire items displayed poor loading across a variety of models, ranging from a one-factor to five-factor structure. These poor-fitting items tended to be those that used more complex language and sentence structure and may have been confusing or unclear for participants. Subsequently, we removed these items and tested the factor structure of the remaining items. By evaluating a combination of fit statistics and theoretical background, we found the most appropriate structure to be a two-factor solution, with the Care foundations (Harm and Fairness) loading on to one factor, and the Binding foundations (Ingroup, Authority, and Sanctity) loading on to a second factor. This structure was used for all subsequent structural equation models. Items included in the final measurement model and item factor loadings are shown in **Supplementary Table 2**.

Stigma. All stigma items loaded on to a single factor, with acceptable fit.

Religiosity. While the DUREL measure of religiosity was designed to measure three dimensions of religiosity—religious activity, non-organizational religious activity, and intrinsic religiosity—we found a two-factor solution provided the best fit in our study sample. Religious activity and non-organizational religious activity items loaded on to a single factor, which we

conceptualized as religious practice. Intrinsic religiosity/religious belief items loaded on to a second factor.

Fatalism. All four fatalism items loaded on to a single factor, with good fit.

5.3.2 Structural Equation Models

Following establishment of measurement models, we specified full structural equation models. We evaluated models that used all MOUD types as the outcome, as well as separate models examining buprenorphine uptake, methadone uptake, and naltrexone (Vivitrol) uptake alone. In all models, to control for potential confounding, we included religiosity (as religious practice and religious belief) and fatalism as predictors of both stigma and MOUD uptake, as well as other demographic covariates including age, sex, education level, race, and insurance status.

5.3.2.1 Care Foundations and MOUD Uptake

Acceptable model fit was achieved for all four Care foundations models, with CFI and TLI values above 0.95 and RMSEA values of 0.057 (**Table 5**). Across all models, the Care foundation was not significantly associated with stigma nor MOUD uptake, and there was no significant indirect effect of the Care foundation on MOUD uptake through the stigma path.

However, religious practice was significantly positively associated with stigma in all models and stigma was significantly positively associated with each type of MOUD uptake, indicating that as stigma scores increased, reports of MOUD use also increased. The effect size of the stigma to MOUD association varied by type of MOUD; the smallest effect (0.204) was observed for naltrexone (Vivitrol), and the largest effect (0.279) was observed for methadone.

5.3.2.2 Binding Foundations and MOUD Uptake

Slightly better model fit was obtained for all four models using the Binding variable, with slightly lower Chi-square values, RMSEA values of 0.042, and CFI and TLI values of 0.95 (**Table 6**). The same positive

relationships between religious practice and stigma and between stigma and MOUD uptake were observed. No direct or indirect effect of the Binding foundation on MOUD uptake was found.

Table 5. Direct and indirect effects and fit indices for four mediation models linking care foundations to MOUD uptake

Variable	Model 1 (Combined MOUD)	Model 2 (Buprenorphine)	Model 3 (Methadone)	Model 4 (Naltrexone)
Direct effects (S.E.)				
Harm/fairness → Stigma	0.018 (0.089)	0.018 (0.089)	0.018 (0.089)	0.018 (0.089)
Religious practice → Stigma	**0.339*** (0.169)	**0.339*** (0.169)	**0.339*** (0.169)	**0.339*** (0.169)
Religious belief → Stigma	0.008 (0.155)	0.008 (0.155)	0.008 (0.156)	0.007 (0.156)
Harm/fairness → MOUD Uptake	0.078 (0.080)	0.021 (0.079)	-0.071 (0.100)	0.014 (0.095)
Religious practice → MOUD Uptake	0.057 (0.169)	0.071 (0.161)	0.107 (0.192)	0.207 (0.177)
Religious belief → MOUD Uptake	0.007 (0.153)	-0.012 (0.146)	-0.319 (0.181)	-0.164 (0.163)
Stigma → MOUD Uptake	**0.266***** (0.083)	**0.248**** (0.081)	**0.279**** (0.099)	**0.204*** (0.099)
Indirect effects				
Harm/fairness → Stigma → MOUD Uptake	0.005 (0.023)	0.005 (0.022)	0.005 (0.027)	0.004 (0.021)
Fit indices				
CFI	0.95	0.95	0.95	0.95
TLI	0.95	0.95	0.95	0.95
RMSEA	0.057	0.057	0.057	0.057

* = 0.05 level, ** = 0.01 level *** = 0.001 level

Table 6. Direct and indirect effects and fit indices for four mediation models linking binding foundations to MOUD uptake

Variable	Model 1 (Combined MOUD)	Model 2 (Buprenorphine)	Model 3 (Methadone)	Model 4 (Naltrexone)
Direct effects (S.E.)				
Binding foundations → Stigma	-0.013 (0.089)	-0.013 (0.089)	-0.013 (0.089)	-0.013 (0.089)
Religious practice → Stigma	**0.338*** (0.166)	**0.338*** (0.166)	**0.338*** (0.167)	**0.338*** (0.167)
Religious belief → Stigma	0.013 (0.152)	0.013 (0.152)	0.013 (0.152)	0.013 (0.152)
Binding foundations → MOUD Uptake	-0.001 (0.084)	0.001 (0.082)	-0.059 (0.099)	-0.110 (0.095)
Religious practice → MOUD Uptake	0.051 (0.167)	0.071 (0.160)	0.114 (0.191)	0.208 (0.176)
Religious belief → MOUD Uptake	0.022 (0.150)	-0.011 (0.143)	-0.329 (0.179)	-0.152 (0.159)
Stigma → MOUD Uptake	**0.267***** (0.082)	**0.249**** (0.081)	**0.277**** (0.099)	**0.203*** (0.098)
Indirect effects (S.E.)				
Binding foundations → Stigma → MOUD Uptake	-0.004 (0.023)	-0.003 (0.022)	-0.008 (0.025)	-0.003 (0.020)
Fit indices				
CFI	0.97	0.97	0.96	0.97
TLI	0.96	0.96	0.96	0.96
RMSEA	0.042	0.042	0.042	0.042

* = 0.05 level, ** = 0.01 level *** = 0.001 level

5.4 Discussion

Several interesting findings emerged from our analysis of moral foundations, stigma, and MOUD uptake among PWUD in six rural Appalachian counties. First, we did not find that the Moral Foundations Questionnaire functioned as expected in our sample of rural Appalachian

PWUD (*Hypothesis 1*). While the 20-items of the Moral Foundations Questionnaire have been found in other studies to reliably load on to five factors—Harm, Fairness, Authority, Loyalty, and Sanctity— most testing in prior studies was limited to college-student and internet-based samples. Our findings align with those of Iurino & Saucier (2020), who tested the scale more extensively in 27 countries and across a wider variety of populations and found that a five-factor model was not supported.[193]

Contrary to our hypothesized mediation relationships (*Hypothesis 2*), we found no direct or indirect effect of either the Care or Binding foundations on stigma and any type of MOUD uptake. Additionally, the relationship between stigma and MOUD uptake across all types of MOUD was in the opposite direction from our hypothesized model; stigma was significantly positively associated with MOUD uptake. Finally, religiosity emerged as the strongest predictor of internalized stigma among PWUD, but the relationship was only significant for religious practices—not religious beliefs.

Several reasons may account for the differences between our hypothesized associations and our model findings. Due to the cross-sectional nature of the study survey, we were not able to establish any firm causal relationships between our independent variables, mediator, and outcome. It is likely that, especially given that our outcome measured a participant's lifetime uptake of MOUD, our results for the internalized drug-related stigma to MOUD uptake pathway are actually representative of the reverse pathway; particularly given levels of cultural stigma surrounding MOUD in our study region, PWUD may be exposed to more stigma during the process of accessing MOUD and may internalize this stigma. They may also be more likely to access MOUD as a type of last resort after hitting "rock bottom," a sentiment shared by PWUD participants during qualitative interviewing conducted at our study site.[69] If they are accessing MOUD as a last resort, they may also have more shame and internalized stigma surrounding their substance use, compared to those who have not yet felt the need to try MOUD.

Further evidence that the association between stigma and MOUD uptake is representative of the reverse pathway can be found in the difference in effect sizes for the stigma/MOUD association between differing types of MOUD. Previous qualitative work by our study team, with both community stakeholders and PWUD in our study counties, revealed that different types of MOUD are seen as more or less acceptable by both PWUD and the larger community.[69] Naltrexone (Vivitrol) is seen as the most acceptable and supported MOUD option, given its lack of potential for misuse or diversion.[69] Buprenorphine and methadone are more highly stigmatized, given their potential for use other than as prescribed and related to community fears of diversion. Methadone, in particular, is very highly stigmatized in part because methadone clinics may outwardly resemble the pill mill pain clinics that dominated the region in the nineties and early 2000s—patients have to physically go to a methadone clinic daily for their MOUD dose (versus receiving a once-monthly injection of Vivitrol, for example).[69]

Additionally, contrary to our hypotheses, we did not find an association between either of the Moral Foundations latent constructs with stigma or MOUD uptake; rather, religiosity emerged as the strongest predictor of stigma in our models. It may be that the 20-item MFQ was not appropriate for use in our specific study population and needs to be adapted for use among PWUD. A measure more appropriate for capturing moral intuitions as they relate to self-judgement may also be needed in this type of mediation analysis, in order to capture an association between morality and internalized/self-stigma—given that the MFQ items ask individuals to consider actions of *others*, rather than *themselves*, this could explain the lack of a significant association between moral intuitions and stigma. Alternatively, given the close relationship between religiosity and morality established in prior religiosity research,[117,118,152] our measures of religiosity and moral intuitions could be correlated or could be capturing a combined underlying construct—however, we did not find a strong correlation between either religious beliefs or religious practice and either of the Moral Foundations latent constructs in our study.

The interesting association between religious practice and stigma in our study models may also be capturing the complex relationship between religiosity, substance use, and stigma that has been documented in prior literature and has also emerged in our prior qualitative work in the study region.[69,119,158,196] Religiosity is generally understood as a complex phenomenon that comprises a variety of different dimensions—ranging from religious beliefs and spirituality to religious affiliation and organizational participation[196]—and that is also heavily culturally dependent.[188,197,198] Among prior studies of the effect of religiosity on stigma among PWUD and other similarly stigmatized populations, such as people living with HIV and members of the LGBTQ community, religiosity has sometimes been shown to be a protective factor for stigma and sometimes a risk factor for stigma.[188,197,199] A person's beliefs and spirituality may provide a sense of resilience and internal comfort and can buffer the effect of experienced stigma.[158,199,200] Furthermore, if a person has access to a supportive and non-stigmatizing religious organizational environment, then religious practice and participation may be a valuable source of community and social support.[197,201] However, the reverse has also been documented—religious organizations that may perpetuate stigmatizing messages can contribute to internalized stigma among members of a stigmatized population.[189] Our results suggest that there could be some elements of participation in organized religion that increase internalized stigma among PWUD—or alternatively, that existing internalized stigma prompts PWUD to seek out support from religious institutions. In either case, our results suggest the opportunity for faith-based organizations to emerge as potentially powerful influencers of stigma and shame among PWUD—and play a role in reducing this stigma and shame, through inclusive organizational norms and stigma reduction messaging. In turn, through reduction of this stigma and shame, MOUD uptake may increase.

Our study results are limited by the cross-sectional nature of data collection—we cannot establish with certainty a causal relationship between our independent variables of interest and our mediator, nor between our mediator and outcome variables. Furthermore, likely issues

surrounding participant attention span and the comprehensibility of some of our survey measures (particularly the MFQ), especially given that some surveys were conducted via phone due to the COVID-19 pandemic, meant that some questionnaire items had to be dropped from our measures—which could affect the validity of these measures. While we were careful to establish well-fitting measurement models with the remaining questionnaire items before specifying full structural equation models, more work should be done to test the validity of the MFQ and other scales specifically among PWUD populations, and measures should be adapted for suitability in this population as needed.

Taken together, our results highlight the role that religious beliefs and religious organizations could play in addressing substance use and substance use stigma in a rural Appalachian context. Particularly in many rural environments where resources may be scarce, such as in our study region, faith-based organizations already exist as key players where they may provide access to space for recovery group meetings, linkage to treatment services, and even harm reduction services. Further strengthening this connection to supportive resources for PWUD, and incorporating explicit anti-stigma work into their activities, could serve to play a powerful role in reducing drug-related stigma in rural communities.

5.5 Supplemental Materials

Table 7. Latent construct measurement model solutions and fit statistics

Latent Construct	Final Factor Structure	CFI	TLI	RMSEA
Moral Foundations	Two factors: • Care foundations (Care and Fairness) • Binding foundations (Ingroup, Authority, and Purity)	0.95	0.93	0.15
Stigma	One factor	0.98	0.97	0.12
Religiosity	Two factors: • Religious practice • Religious beliefs	0.98	0.95	0.14
Fatalism	One factor	0.999	0.998	0.035

Table 8. MFQ items and factor loadings

MFQ-20 Item	Factor/Factor Loadings Estimage (Standard Error)	
When you decide something is right or wrong, to what extent are the following considerations relevant to your thinking?	**Binding Foundations**	**Care Foundations**
Whether or not someone suffered emotionally		0.818 (0.02)
Whether or not some people were treated differently than others		0.843 (0.019)
Whether or not someone's action showed love for his or her country	0.638 (0.032)	
Whether or not someone showed a lack of respect for authority	0.708 (0.029)	
Whether or not someone violated standards of purity and decency	0.840 (0.020)	
Whether or not someone cared for someone weak or vulnerable		0.851 (0.019)
Whether or not someone acted unfairly		0.892 (0.014)
Whether or not someone did something to betray his or her group	0.862 (0.019)	
Whether or not someone conformed to the traditions of society	0.632 (0.031)	
Whether or not someone did something disgusting	0.694 (0.028)	
Read the following sentences and indicate your agreement or disagreement:		
Compassion for those who are suffering is the most critical virtue.	---	---
When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.	---	---
I am proud of my country's history.	---	---
Respect for authority is something all children need to learn.	---	---
People should not do things that are disgusting, even if no one is harmed.	---	---
One of the worst things a person could do is hurt a defenseless animal.	---	---

Justice is the most important requirement for a society.	---	---
People should be loyal to their family members, even when they have done something wrong.	---	---
Men and women each have different roles to play in society.	---	---
I would call some acts wrong on the grounds that they are immoral.	---	---

CHAPTER 6: "*SPIRITUALITY IS FOR PEOPLE WHO HAVE BEEN THROUGH HELL":* A QUALITATIVE STUDY OF RELIGIOSITY AND DRUG ADDICTION PERCEPTIONS IN RURAL APPALACHIAN OHIO

6.1 Introduction

Rural areas in the United States, particularly in the Appalachian region, continue to be burdened by an opioid crisis that shows no signs of slowing.[2] From 2018 to 2019, drug overdose deaths increased by more than four percent in the US and five of the top ten states with the highest age-adjusted rate of drug overdose recorded in 2019 are Appalachian.[2] West Virginia and Ohio led the Appalachian region in 2019 age-adjusted drug overdose death rates, with rates of 52.8 per 100,000 and 38.3 per 100,000, respectively.[2] Of drug overdose deaths in 2019, 70.6% involved opioids.[1]

While evidence-based interventions such as medication for opioid use disorder (MOUD) are available, drug-related stigma has been increasingly identified as a key barrier to MOUD uptake by people who use drugs (PWUD) in rural areas.[26,90,91] This stigma has been documented among both PWUD and non-PWUD stakeholders such as healthcare providers.[86,92,103] Serious consequences can emerge as a result, including an unwillingness to treat opioid addiction with evidence-based treatments, such as MOUD (among providers) and a reliance on abstinence-only recovery (among PWUD).[86,92,103] Qualitative research into attitudes toward drug use and MOUD use in rural areas, including in rural Ohio, suggests that stigma is culturally driven and rooted in perceptions that the use of any "mind-altering" substance (including MOUD) is undesirable and reflective of a personal failing.[69] Understanding the ways in which drug-related stigma may be influenced by a particular regional environment and norms is important for understanding the roots of substance use stigma in rural Appalachia.[95] Particularly

in rural areas, stigma is increasingly understood to be grounded in both moral and religious perceptions and norms among community members.[69,149,187]

While rural Appalachia is not a cultural monolith, the history of early settlers in the region means that religion and faith-based practices are still culturally widespread.[202] The religious roots of the region are also often closely linked with moral values and codes in rural Appalachian communities, including an emphasis on familism, kinship, and acceptance of fate.[202] Given its salience in many rural Appalachian areas, religiosity remains an important and complex cultural construct to understand in the context of drug-related stigma.[119,202] Religiosity as a concept, depending how it is defined, may include numerous different dimensions; some of the most common types of religiosity include religious affiliation (identification with a particular group), personal religious or spiritual beliefs (belief in a higher power or a sense of transcendence beyond everyday life), nonorganized religiosity (religious activities performed alone), and organized religiosity/religious practice (participation in organized rituals offered by a faith community).[196,201] Furthermore, religious institutions may also facilitate "religious socialization," or the shaping of individuals' personal beliefs by larger narratives and norms.[119] Religious socialization may be particularly salient in areas in which religion remains a strong cultural influence, and can influence attitudes and outcomes ranging from interpersonal stigma to public policy decisions.[119]

The potential protective relationship between religiosity and initiation of substance use has been well-documented,[196] but less is known about the influence of religiosity on drug- and treatment-related stigma among both PWUD and non-PWUD community members, as well as how different types of religiosity may function in shaping attitudes toward drug use and treatment.[196,198,201] Religious beliefs and supportive religious institutions may help decrease feelings of internalized stigma and promote healthy coping mechanisms among PWUD or those in recovery.[158,201,203] However, religious organizations may also perpetuate stigma, leading to

increased feelings of marginalization and isolation among already-marginalized populations, including PWUD.[119,156,189,197]

Overall, despite the potentially powerful influence of religion in shaping substance use stigma in rural areas, much remains unknown about how exactly religiosity functions in shaping views toward addiction and the recovery process, among both PWUD and non-PWUD. Additionally, Beraldo et al. call for increased qualitative work in this area in order to give a full picture of the nuanced influence of cultural context and religiosity on substance use recovery among PWUD populations.[201]

The objective of this paper is to qualitatively explore regional community values and norms, with a particular emphasis on religiosity to understand how these factors shape drug addiction and treatment views in a region of rural Appalachian Ohio. By understanding drivers of this stigma among both PWUD and non-PWUD community members, more effective stigma-reduction interventions can be developed and uptake of EBIs for substance use can be increased.

6.2 Methods

6.2.1 Study Setting and Recruitment

Qualitative interviews were conducted as part of the Ohio Opioid Project (OHOP), a five-year intervention implementation and evaluation study in rural southern Ohio (Implementing a Community-Based Response to the Opioid Epidemic in Rural Ohio). The OHOP project focuses on a six-county region of rural Appalachian Ohio and aims to explore the context of substance use and treatment services and partner with community members to develop tailored service delivery plans for study counties. This parent study is part of the larger NIDA-funded Rural Opioid Initiative (ROI), which spans eight sites across the country and aims to understand the opioid crisis in rural areas across the nation. As part of the exploratory phase of the OHOP study, study team members conducted in-depth qualitative interviews with community stakeholders (healthcare professionals, substance use treatment providers, and law

enforcement officials/judicial officials) and people who use drugs (PWUD) in the six study counties. Additional in-depth interviews were conducted with stakeholders and PWUD as part of a supplemental F31 study to explore the connection between moral intuitions, stigma, and uptake of MOUD (Understanding the Opioid Epidemic in Rural Ohio: A Mixed-Methods Analysis of Moral Values, Stigma, and Medication for Opioid Use Disorder).

Participants were recruited using purposive sampling and snowball sampling techniques. Stakeholders were identified through initial study connections with county health coalitions and health departments, and initial stakeholder interview participants made referrals to other relevant stakeholders. PWUD participants were recruited through distribution of study flyers at local syringe exchange programs, health departments, treatment programs, and other community locations such as corner stores and gas stations. Additionally, PWUD participants who expressed interest in or completed a quantitative computer-based survey for a separate part of the OHOP study were subsequently offered the opportunity to also participate in a qualitative in-depth interview.

Eligible stakeholders were at least 18 years old, worked in organizations in one of the six study counties that had involvement in some capacity with substance use, and had at least two years of experience in providing or supporting health- or drug-related PWUD services. Eligible PWUD were at least 18 years old, resided in one of the study counties, and had a history of opioid and/or injection drug use.

6.2.2 Participant Demographics

Interviews with a total of 20 stakeholders and 25 PWUD were included in this study (**Table 9**)**.** The stakeholder sample was approximately evenly split between men (55%) and women (45%), with an average age of 42 years old. The PWUD sample included a majority of female interviewees (64%), and 80% of participants reported that they had previously accessed substance use treatment of some sort.

Table 9. Sociodemographic characteristics of study participants

Characteristic	Value
Stakeholders	**N = 20**
Mean age	42 years (range 25-60)
Male (%)	11 (55%)
Female (%)	9 (45%)
PWUD	**N = 25**
Mean age	39 years (range 27-56)
Male (%)	9 (36%)
Female (%)	16 (64%)
Ever accessed treatment (%)	20 (80%)

6.2.3 Data Collection

Interviews were conducted during two rounds of exploratory data collection. The first round of stakeholder and PWUD interviews took place between February and July, 2018, in three of the study counties. The second round of stakeholder and PWUD interviews for the OHOP project, as well as the additional F31 interviews, were completed between January 2020 and December 2021, with a temporary pause between March 2020 and October 2020 due to the COVID-19 pandemic. Interviews were conducted by trained qualitative interviewers. Prior to data collection, interviewers completed coursework and/or guided trainings in qualitative data collection and analysis, and worked closely under the guidance of a study PI with more than 15 years of qualitative research expertise.

Interviews were conducted both in-person and later, during the COVID-19 pandemic, via phone or Zoom. All in-person interviews took place in quiet, private locations. Stakeholder interviews most often took place in stakeholder offices, and PWUD interviews were conducted in quiet coffee shops, parks, health department or treatment program offices, or other convenient locations.

Interviews followed semi-structured interview guides and lasted around 45 minutes to 1.5 hours each. In the case of some interviews, an additional research team member was also present (with permission from the interview participant) and took brief notes during the interview. Informed consent was obtained prior to the start of each interview, and participants completed short demographic surveys during the interview process. Interview guides during the first round of interviews probed topics of the social, economic, and historical context of the opioid epidemic, perceived drivers of drug use, stigma surrounding drug addiction and treatment options, views and emotions surrounding people who use drugs, and opinions toward different treatment types. Interview guides during the second round of interviews included some of the same questions as the first round interview guide, but focused more narrowly on perceived cultural values and norms, moral and religious views of drug use, perceptions of what it means to be “Appalachian,” and perceptions of powerful and vulnerable groups of people in the community.

6.2.4 Data Analysis

A total of 20 stakeholder interviews and 25 PWUD interviews were included in this analysis. Interviews were audio-recorded and transcribed verbatim. Study interviews from the first interview round were hand-transcribed by members of the research team. Interviews from the second OHOP interview round were transcribed with the use of Cielo transcription services, and were hand-checked for accuracy and corrected if needed by a member of the study team. A directed content analysis approach was used for codebook development and data analysis. Codebook development began with the creation of preliminary codes that stemmed from the study interview guides and the overarching research questions of interest. After transcribing and reading the transcribed interviews, two study team members created memos of key emergent themes and created additional inductive codes to capture concepts not included in the initial codebook. These two study team members then applied initial study codes to study interviews in an iterative process—team members met to resolve differences and add any additional codes needed to capture recurring themes before independently coding the remainder of the study

interviews. After memo creation and coding, team members examined patterns and themes in the data, and created matrices to examine and organize themes related to religiosity, rural Appalachian community norms, attitudes toward drug use, stigma, views toward types of treatment and recovery, and other relevant themes. All coding was done with Dedoose software.[182]

The Ohio State University Institutional Review Board approved all research activities.

6.3 Results

Below, we report the results of 20 stakeholder and 25 PWUD interviews. We report a summary of participant regional descriptions, and then describe two types of religiosities that participants discussed organically: 1) organized religious practice and 2) personal religious beliefs/faith beliefs.

6.3.1 Regional Descriptions and Perceived Community Values

Stakeholders and PWUD offered similar descriptions of the regional environment. Participants described rural southern Ohio as a region in which most people self-identified as Appalachian, and characterized Appalachian Ohio as a former industrial stronghold that struggled in recent decades with the loss of industry and job opportunities and the concurrent spread of substance use. Most stakeholders and PWUD who indicated that they had resided in the region long-term (since childhood, or at least for a decade) described living through the peak of the pain pill crisis and watching the area "go downhill" and "get worse," with people subsequently turning to heroin and methamphetamine use. A majority of PWUD also perceived the area as struggling with more crime or safety concerns, with one participant explaining that they thought this was related to drug use in the area:

> "*It used to be…that we would go to bed and leave our front doors open, you know to get cool air and stuff, and you can't do that now. I feel that the crime is because of the drug use…people are just stealing whatever to try and sell it to buy drugs and you, you just can't trust anything here now. It has really went down*." (Female PWUD)

However, a small minority of PWUD and stakeholders expressed the opposite view, and described a feeling that either drug use had "always been something that is kinda widespread" and had stayed fairly constant in the region, or that community efforts were even helping to revitalize the area, particularly in contrast to nearby cities. One PWUD participant described positive changes to their community, saying:

> *"[The area] has grown. I was walking around yesterday and looking at the area and the environment, it has grown. There is more companies, I mean, they are trying to rebuild it, is what I think. It was cleaner than I have seen it. There wasn't as much trash laying around…it looked like people started caring. They are redoing the streets and they are keeping people in work…I think it has changed tremendously since I have been here."* (Female PWUD)

When asked to describe the cultural context of the study region, both stakeholders and PWUD reflected on the "strong emphasis on family" in the community, with "tight-knit" relationships in some cases because "it seems everybody knows everybody."

A few stakeholders offered further cultural descriptions of the region that matched oft-used stereotypes about rural Appalachian culture, describing it as "[having] a history of coal, mountainous, bootstrap rugged individualism…southern, conservative in terms of people's political persuasion, and in many cases, still very religious too." Stakeholders also discussed "generational trauma" that pervaded the region, stemming partly from the loss of industries and lack of employment opportunities, and yet also suggested that mental health remained culturally stigmatized:

> "*I think there is a lot more mental health services than there used to be, but I think there is still a stigma with mental health services—[among] the Appalachian culture in general. Nobody wants…they don't want to be crazy. It's like well no, that makes me weak if I am depressed or if I have anxiety or I can't be seen [at a mental health clinic], the people who work there, they know me and they will say something. I can't have people know. I think that is part of the problem, addressing you know, the addiction to begin with*." (Public health official)

While most stakeholders presented stereotypical views of the Appalachian region similar to the descriptions above, focusing their comments on white, working-class populations with

little discussion of marginalized populations, at least one stakeholder offered a more critical reflection of Appalachia and minority populations that are at-risk in the region, saying:

> *"Members of the LGBTQ community are highly at risk in Appalachia, because of certain moral conservative values that tend to alienate and marginalize them in their communities and in their families of origin. So that's, that's a real concern. There's not a lot of support groups and organization, for those folks to kind of find the things that they need that would help them overcome some of the social determinants that expose them towards substance use and abuse and addiction and what not."* (Pastor)

6.3.2 Religiosity

In discussing substance use—whether as a personal experience or from the perspective of someone working in the treatment field—participants among both PWUD and stakeholders spontaneously revealed the strong influence of organized religion (such as churches or faith-based treatment programs) and personal religiosity/spiritual beliefs in the region.

6.3.2.1 Structural/Institutional Religion

Stakeholders and PWUD both reflected the strong influence that religion/religious institutions (overwhelmingly Christian) have in the region, even if not everyone identifies as a person of religion: "[Appalachia] is very religious…you know, many people come from a faith-based background even if they wouldn't currently identify as a person of faith religiously."

In the context of substance use and recovery, participants discussed the role of churches as host institutions for a large number of recovery meetings—most often Narcotics Anonymous (NA) or Alcoholics Anonymous (AA) groups: "There are a lot of support groups here. I mean every church, you know? You can go to AAs or NAs…you go to your meetings, you go to your groups" (Female PWUD).

Other PWUD and stakeholder participants had experience either personally attending or working with faith-based treatment and counseling programs, some of which operated independently and some of which were affiliated with local churches. The degree to which these programs were explicitly religiously Christian was not always clear from participant descriptions;

however, in the case of at least one local recovery program, an attending PWUD participant described the environment as a "a training camp for soldiers for God."

Churches and religious institutions were generally described by PWUD in a positive light in the context of recovery support and resources. Participants mentioned that churches were places that often provide resources for members of the community, such as food pantries; some also reflected on church-based NA groups that made them feel "at home" and not judged. One participant participating in a faith-based recovery program with a core element of religious practice incorporated into the program also commented that he trusted the program more because it is "not like rehab" and is not a "money mill" or "any other rehab that is billing Medicaid"; rather, the participant viewed the faith-based aspect of the program as a reason to trust it more as a "loving, nurturing environment for broken people to come and get healed."

However, some PWUD participants and stakeholders also expressed feelings of skepticism or isolation related to faith-based organizations and general organized religion. These participants sometimes expressed a view of others who attended church or identified as "religious" as hypocritical and judgmental, such as the case of one public health stakeholder who reflected: "You have got your people who go to church and your people who don't go to church…I used to go to church and I used to be that person, but they are all a bunch of hypocrites. I think that they, a lot of the older people, especially, who have gone to church their whole lives, they kinda look down on [people who use drugs]." The same stakeholder also thought that the more conservative, religious segment of the population tended to want to sweep issues like drug use "under the rug," rather than deeply and empathetically engaging with the issue.

Several PWUD also felt either stifled or not welcomed by organized churches or church-based 12-step groups (which are organized around the idea of a higher power). One PWUD interviewee indicated that they would not be comfortable setting foot in a church, even for research purposes, saying "I don't think that drug addicts or alcoholics should be there. It's not

right." Similarly, one stakeholder referenced the image of "leaving needles in church parking lots" when describing stigma toward PWUD in the community—suggesting that churches are seen as places of purity in the community, and may be seen by community members (and potentially some PWUD) as areas that are inappropriate for people who are actively using. While it is unclear whether these feelings were driven by particular stigmatizing experiences in faith-based settings or not, they still suggest either experienced or internalized stigma around substance use that could lead PWUD to avoid religious organizations.

6.3.2.2 Personal Religious Beliefs

A separate aspect of religiosity also emerged from stakeholder and PWUD interviews—the theme of personal spirituality or personal religious beliefs. Participants voiced or described these beliefs in themselves or others as fulfilling different roles in the context of substance use, and three distinct sub-themes emerged: 1) God as testing an individual; 2) God as in control; and 3) God as a source of redemption and love for the self and others.

God as testing

The theme of God testing an individual's willpower in the context of addiction emerged when participants discussed feeling like their addiction—or temptation to give into addiction—was a sort of religious or spiritual test, either from God or another spiritual figure. One PWUD participant described how he had to be vigilant and focus on his faith in order to combat the "Devil's…tricks that he has used since the beginning of time."

Another PWUD interviewee thought that God had been testing her directly and indicated that she was proud of having passed these tests, saying:

> *"I went from being a drug addict, an alcoholic, a crazy party animal to this happy person that I am today. Because, I am proud of myself today, you know. I was at the bottom of the barrel and now I am at the top of the mountain. Because God is testing me in every area that I can see today, wanting you to use this and this and this, well guess what? It ain't going to work, because I am determined to win today. To win my life back."* (Female PWUD)

While these participants sometimes expressed anger that they directed towards God for the situations that they found themselves in, they also seemed to use the belief that they were being tested by God as motivation to overcome their addiction.

God as in control

In somewhat of a contrast to the narrative of God seeking to test a person's willpower, PWUD participants also expressed the theme of God as the one in control of a person's fate—including their drug use or recovery. One participant credited intervention from God with the reason that he ended up accessing a particular recovery program after going through "spiritually and emotionally the darkest place [he] had ever been,", saying:

> *"What I can tell you is uh God actually kinda intervened…I was completely hopeless. Heroin had completely isolated me. Um, I had no one…I was sick and tired of being sick and tired, and I hit my knees and I prayed and basically cussed God for 20 minutes, you know, crying my eyes out…I just hit my knees and prayed like there was no tomorrow, because I didn't know what to do…but the result of that prayer session I can tell you is I lost my job a week later. Uhm, and, at that point, I was $2000 in debt with my dealers. I owed each of them $1000 and I didn't know what to do, I was freaking out…and long story short, the day before I was going to be homeless, I don't know, it was a, it was a holy spirit thing. The thought was put in my head to call [treatment program]."* (Male PWUD)

Despite describing setbacks and continued struggles at the time that he began praying, the participant ultimately credits God for giving him the idea to reach out to a particular faith-based recovery program, which he described as a positive experience and an inclusive community. The same participant continued to use language that expressed the same idea of God as driving his life and recovery trajectory, explaining that "it's totally a God thing" and that "we have control over what we do and the actions we take, but ultimately, [God] is the universal GPS…I have faith that everything happens for a reason." Other PWUD participants also expressed gratitude to God for their recovery programs, or indicated that they thought people needed "God and structure" in their lives in order to be successful at overcoming their addiction.

Stakeholders also provided further context for the view of God as the driving force/the one in control of addiction and recovery, as they described the pervasiveness of "fatalism" and

related beliefs in rural Appalachian culture. While most PWUD who verbalized a belief in the idea that God was in control of their path of addiction and recovery seemed to view this as a source of comfort and hope, several stakeholders situated these comments in a different light. They expressed frustration with the pervasiveness of these beliefs, saying that people in their community sometimes thought "God is going to fix everything for everybody" and that they could "pray for sobriety," but that "it just doesn't work that way."

God as redemption and love

The third narrative that emerged related to personal spirituality and addiction was that of God as a source of redemption, love, and support, particularly when individuals felt isolated from others in their community. This view of God also seemed to encourage interviewees to express compassion and acceptance for others struggling with addiction.

Participants who expressed this theme of personal spirituality as a force of love and compassion often did so in the context of expressing feelings of frustration at stigma, judgement, or rejection that they had faced from community members or family members in their lives. As one PWUD interviewee stated:

> *"You see, people don't understand that. We are all good. We are born good, whether it is in sin or whatever, whatever anybody says. We are born good. We all have good and bad in us, and I love every soul out there, okay? Everybody. And I don't think you should turn anybody away or throw anybody to the pit of hell. When someone is hurting, you are supposed to give them a hug, grab onto them and tell them you are there for them. You are not supposed to say, I don't want you in my family, because you aren't doing what I want you to do. You are not perfect, so you are not a good person. You know what? No one is perfect. There was one perfect person to ever walk on this land, and no one is ever going to be like Him…"* (Female PWUD)

In this case, the participant expresses frustration with family members who were not accepting or supportive of her when she was using drugs. By using the comparison to being "thrown to the pit of hell," the participant situates the isolating experience in a spiritual framework of condemnation, and suggests instead that people should focus on the religious call to love one another.

Similarly, another participant who felt like he spent most of his life struggling with addiction "under the umbrella of shame" and feeling like "an alien in [his] own skin" explained that through his religious experience, he came to feel that he is "a child of God…fearfully and wonderfully made" and that there was no reason to "try to fit into a super critical judgmental" community. The same participant also explicitly drew a contrast between organized/structural religion and the power of personal spiritual experience, saying:

> *"There is a difference between religion and spirituality. Religion is for people who don't want to go to hell. Spirituality is for people who have been through hell and don't want to go back. I have been to the depths of disparity – spiritually, mentally, and emotionally, financially…God took my mess and turned it into a message…There is hope out there."* (Male PWUD)

Effect of religiosity on treatment beliefs

Stakeholder and PWUD participants both revealed the effect that different forms of religious belief and structure could have on views of and access to different types of treatment for substance use. In particular, stakeholders and PWUD discussed their own and others' views of medication for opioid use disorder (MOUD), an evidence-based treatment for opioid addiction that remains stigmatized in many rural areas.

In some cases, PWUD who were using MOUD expressed support for their local recovery group options and indicated that access to organized faith-based recovery support groups, such as NA or AA meetings, was not at odds with MOUD use. One participant discussed their local NA group, saying that they did not feel stigmatized for being on MOUD because "everybody there is on Suboxone."

However, numerous stakeholders—including those in the field of substance use treatment and at least one pastor who was involved in harm reduction efforts—expressed deep frustration with the pervasive view among community members, some PWUD, and family members of PWUD that substance use is a "moral failing" and that PWUD are "inherently bad people." This view of substance use as a moral failing was also often connected with community beliefs that addiction needed to be overcome through willpower and abstinence, rather than

treated as a medical disease with medical treatments. Stakeholders indicated that they thought this narrative was heavily influenced by cultural religious norms, with stakeholders describing a culture of "religion and conservatism" in their community that led to the tendency to "[pray] for sobriety," rather than utilize scientifically grounded treatment options. One provider described this connection between regional religious views and attitudes toward MOUD, saying:

> "*When it comes to medical visits, my ethical problem with a lot of [abstinence-only treatment] places is, well, science, right? If you refuse to do [MOUD] and you refuse to let the patients go there on [MOUD], then I don't know that I am helping this person, right? Because there is a mortality difference of [MOUD] vs. praying for sobriety. I say this as a person who grew up in Appalachia, but like, the culture here is very much of you know what, you and your science can go back to the east coast and that we have our God…this is what we believe. We don't believe the use of mind-altering substances, unless of course it is tobacco or alcohol…and if you are going to do that, you are a dirty person. And the only way that is acceptable is to not use it*." (Healthcare provider)

Despite expressing some frustration with local religious norms that they perceived as potentially creating barriers to successful treatment for PWUD, some stakeholders did still acknowledge the role that religion and religious institutions could play in changing these stigmatizing narratives and creating a more inclusive environment. One participant mentioned begging a local pastor to do a sermon that would tell congregants that you "can't dehumanize people." Another participant, who was a pastor in the faith-based community himself, thought that there was work to do to create more of a narrative of compassion, rather than judgement of drug use as a moral sin:

> *"Because…prejudices abound and they're informed by cultural narratives and stories. And there's that narrative still throughout Appalachian culture, about people who use drugs. So shifting the narrative is important. The only way to do that is to bring people together and to learn one another's stories. And to generate compassion that goes beyond those initial prejudice, uninformed prejudices that people have, and moves them toward a place of actual understanding*." (Pastor)

6.4 Discussion

Results from participants in 20 stakeholder and 25 PWUD interviews revealed the strong role of cultural forces and, in particular, religious context in shaping attitudes toward addiction and stigma surrounding treatment and recovery options in rural Appalachian Ohio. In the

context of religiosity, several distinct personal religious/spiritual narratives emerged, including the idea of God as testing, God as love/encouraging empathy, and God as in control. Participants also discussed the role of religious structure/religious organizations in influencing views toward substance use and recovery. While some positive opportunities to create inclusive environments were mentioned, interviewees also described stigma perpetuated by religious institutions and expressed a frustration with how religious views could lead to a rejection of evidence-based treatments.

Our results add to the growing body of literature surrounding the role of religiosity and related moral beliefs in influencing stigma, recovery success, and coping mechanisms and related behaviors among people using drugs. Prior studies have suggested a complex relationship between religiosity and moral condemnation or stigma related to substance use. For example, Stylianou et al. found that increased religiosity resulted in stronger moral judgements and condemnations of drug use; however, Markstrom et al. found that religious beliefs, though interestingly, not organized religious attendance, was associated with increased empathy and compassion for others instead of increased moral condemnation.[119,203] Mixed results regarding the role of both personal and organizational religiosity in eliciting harsh moral judgements or compassion and pro-social behavior may be due in part to the fact that as Johnson et al. point out, even one specific religious tradition (such as Christianity in the United States) is not a monolith.[198]

Furthermore, differences emerged in both prior literature and in our current study between organized religion and personal religious or spiritual beliefs. PWUD participants in our study explicitly or implicitly revealed a difference between their experience with organized religion—which could sometimes be a place of acceptance, but was also described as an environment of hypocrisy or simply as somewhere they did not feel welcome—and their own personal religious beliefs. In discussing their own spiritual thoughts, some participants expressed feelings of hope and comfort from their perception that God was in control of their

situation. Other participants also expressed messages of empathy and compassion for others in similar situations, which they situated in religious terms of personal spiritual beliefs centered around loving others. These results align with research showing that spiritual beliefs may be associated with increased empathy and pro-sociality, as well as positive mental health outcomes and healthy coping mechanisms among individuals in recovery from substance use.[157,158,204]

While personal beliefs and spirituality can be highly individualized and variable, organized religion may include what Beraldo et al. characterize as "religious dogma," due to the fact that participation in a shared religious tradition may require participation in specific group rituals and internalization of shared group religious viewpoints.[118,198,201] Related to this, Jacobi et al. and Roth et al. explain that organized faith-based communities and structured religious groups may sometimes perpetuate stigma toward individuals who end up outside of the religious in-group—such as people who use drugs, or other individuals of marginalized status.[156,204] While some religious institutions may emphasize religious teachings that are linked to prosocial behavior towards others, such as "love your neighbor," other religious groups may emphasize religious teachings that focus on sin and judgement, and/or may encourage prosocial behavior that is directed toward members of the religious group (but not those outside of it, including PWUD).[156,204] Moreover, perceptions among faith-based communities that drug use is somehow related to moral or religious status (i.e., drug use is a moral failing, sin, or test from God) have been associated with increased stigma toward PWUD.[156] This may be especially detrimental toward PWUD in rural communities, considering that individuals in areas with limited mental health or substance use resources may often reach out to religious leaders for help, before trying to access healthcare.[156]

Against this background, faith-based settings are crucial settings for anti-stigma interventions, particularly aimed at religious leaders who may be influential in a community.[156] Beraldo et al. similarly point out that while faith-based institutions should not replace evidence-

based treatment for substance use, in rural areas where supportive resources are lacking, it may be possible to harness the existing infrastructure of faith-based groups in order to supplement medical treatment and provide even more recovery support for PWUD.[201] Particularly given existing barriers to evidence-based medical treatment for substance use, such as MOUD, intervention efforts should include plans to work with faith leaders to encourage acceptance of MOUD and other harm reduction efforts in rural communities. In cases where faith-based organizations may not be receptive to outside intervention, framing efforts through the lens of working towards a shared goal of healing and wellness in the community—salient goals for both public health professionals and religious leaders—can encourage partnerships.[205] Highlighting the work of faith-based leaders in the community who are already doing anti-stigma or harm reduction work may also help encourage other faith-based groups to consider the same.

Our results should be viewed in the context of several study limitations. As is the case in most qualitative research, we recruited a purposive, non-random sample of participants to participate in interviews; therefore, our sample may not be fully representative of the views of all stakeholders and PWUD in the region. Stakeholders and PWUD who agreed to participate were also probably different than those who declined to meet with us, so we may have missed some perspectives. Furthermore, while we recruited PWUD from a variety of recovery and treatment program types, recruitment through existing NA/AA recovery groups was one of the most successful recruitment paths; because of this, our sample may be biased toward those who express more positive views of NA/12-step/spiritually-based recovery groups. Finally, some of our interviews during the COVID-19 pandemic took place via Zoom or phone, rather than in-person. This may have led to a decreased ability of the interviewer to establish the same amount of rapport with participants as during in-person interviews, which could have led to decreased data quality. Additionally, because our interviews were conducted during two different time periods, with one round of data collection occurring during the COVID-19

pandemic, it is possible that there were pandemic-related differences in participant experience (including treatment experience, religious organization attendance, etc.) between the two sets of interviews that we did not account for and that could have affected some of the themes that emerged from the data.

Despite these limitations, our results provide insight into the influence of rural Appalachian cultural values and religiosity on attitudes toward substance use and treatment types in southern Ohio, and can inform the development of anti-stigma and treatment interventions in rural Appalachian contexts. Researchers and intervention scientists should consider the role of religious norms and religious infrastructure in these areas and work to collaborate with faith leaders and faith-based organizations in order to decrease substance use and MOUD-related stigma, and successfully increase uptake of evidence-based treatments for substance use. Furthermore, public health professionals and healthcare providers should consider the potential role that positive spiritual beliefs may play in coping with substance use and recovery, and should continue to explore religious beliefs among PWUD in rural areas.

CHAPTER 7: SUPPLEMENTARY AOV ANALYSES

As discussed in **Chapter 4**, due to the COVID-19 pandemic, quantitative data collection for the UH3 phase of the OHOP parent study was delayed several times, following Ohio State University restrictions and the resulting modifications to OHOP data collection protocols. As a result of these delays, data from only 58 participants was available for the proposed analyses that involved the Assumptions of Vulnerability (AoV) scale. The proposed aim 1 and aim 2 analyses were still conducted for this scale, but were not included in the main quantitative manuscript (**Chapter 5**).

7.1 Participants

Participants were recruited from three counties in southern, rural Appalachian Ohio. Potential participants were recruited through the OHOP partent study, using respondent-driven sampling (RDS). Participants were eligible to participate in the study survey if they were at least 18 years old, if they resided in one of the three study counties, and if they had injected any drugs or used opioids in any way within the last 30 days. Participants opted to complete the quantitative survey using Audio Computer-Assisted Self Interview (ACASI) or Computer-Assisted Personal Interview (CAPI) technology. If preferred by participants, study staff could also read the survey questions to a participant and enter their answers into the survey system. During the COVID-19 pandemic, data collection occurred via phone or Zoom interviews with participants; study staff administered the survey virtually and input participant answers into the computer survey. Surveys were conducted by trained study field staff. Participants were compensated $25 in gift cards for their participation in the study survey.

7.2 Measures

Assumptions of vulnerability – The Assumptions of Vulnerability (AoV) scale asks participants to indicate the extent to which they believe that different groups of people are vulnerable to mistreatment/harm. Participants are asked to respond to a range of groups of people, with some groups representing "typically" vulnerable/"othere-d" groups in society, and others representing "typically" powerful groups of people.

Internalized drug-related stigma – Latkin et al., 2010 stigma measure: Participant internalized drug-related stigma was measured using a five-item scale developed by Latkin et al. for use among PWUD.[172] Scale items included questions that asked participants how much they felt ashamed of using drugs, and how much they feared that friends or family would avoid them because of their drug use. The Chronbach's alpha of the original scale was 0.93.

Religiosity: Religiosity was measured using the Duke University Religion Index (DUREL),[173] a 5-item measure of religious activity, non-organizational religious activity, and intrinsic religiosity. Items ask participants about their attendance at religious meetings, frequency of personal time spent in religious activities, and internal spiritual beliefs.

MOUD Uptake: Prescribed MOUD uptake was measured with several binary Y/N questions that asked participants if they had ever received different types of MOUD from a doctor or program. The question was asked separately for buprenorphine maintenance medication (including Suboxone and Subutex), methadone maintenance treatment, and naltrexone shots (Vivitrol). A combined variable of any type of MOUD uptake was created from the questions about separate MOUD types, and models were run using both the combined MOUD variable and each MOUD type separately.

Additional covariates: Additional measures captured in the quantitative survey included measures of sex, race, educational level, fatalism, age, and participant insurance status.

7.3 Data Analysis

7.3.1 Aim 1: AoV Factor Analyses

Prior to specifying full structural models, I used Mplus to conduct an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA) of several different potential scale structures in order to examine the factor structure of the AoV scale. **Table 10** shows the hypothesized factor loading pattern of the scale categories, with four "targets" that were hypothesized to load on a factor capturing perceived vulnerability of the "Other," and the other three targets hypothesized to load on a factor capturing perceived vulnerability of the "Powerful."

Table 10. Hypothesized factors & survey items

Hypothesized Factor	Hypothesized Items/Target Categories
"Other" Perceived Vulnerability	- Muslims - People who use drugs - Transgender people - Illegal immigrants
"Powerful" Perceived Vulnerability	- Police - Corporate leaders - Authority figures

However, results from an EFA and subsequent CFA tests of different factor structures led to some changes from the hypothesized factor structure. While two distinct factors did emerge from the data, two of the "target" groups unexpectedly loaded on factors opposite of the hypothesized pattern: "illegal immigrants" loaded onto the "Powerful" factor along with corporate leaders and authority figures, and "police" loaded onto the "Other" factor, along with Muslims, PWUD, and transgender people. Ultimately, the best-fitting model still had a less-than-satisfactory RMSEA value—potentially due to the small sample size. CFI and TLI statistics were satisfactory (**Table 11**).

Table 11. Fit statistics for final AoV measurement model

Latent Construct	Final Factor Structure	X^2	CFI	TLI	RMSEA
AoV – Perceptions of vulnerability	Two factors: • Other • Powerful	367***	0.90	0.89	0.16

7.3.2 Aim 2: AoV Structural Equation Modeling

Following establishment of a measurement model for the AoV items (in addition to satisfactory measurement models for other latent constructs; see **Chapter 5** for more details), I then used Mplus to conduct an indirect effect analysis with bootstrap standard errors of the association between perceptions of vulnerability and uptake of MOUD, with internalized drug-related stigma as the mediator between vulnerability perceptions and MOUD uptake. Religiosity and fatalism were also included in the full model, as well as covariates including age, sex, education level, race, and insurance status.

To evaluate model fit, Chi-square, RMSEA and TLI/CFI fit statistics were evaluated; models were re-specified as needed until satisfactory model fit was achieved. A path diagram of the final mediation model is shown in **Figure 12.**

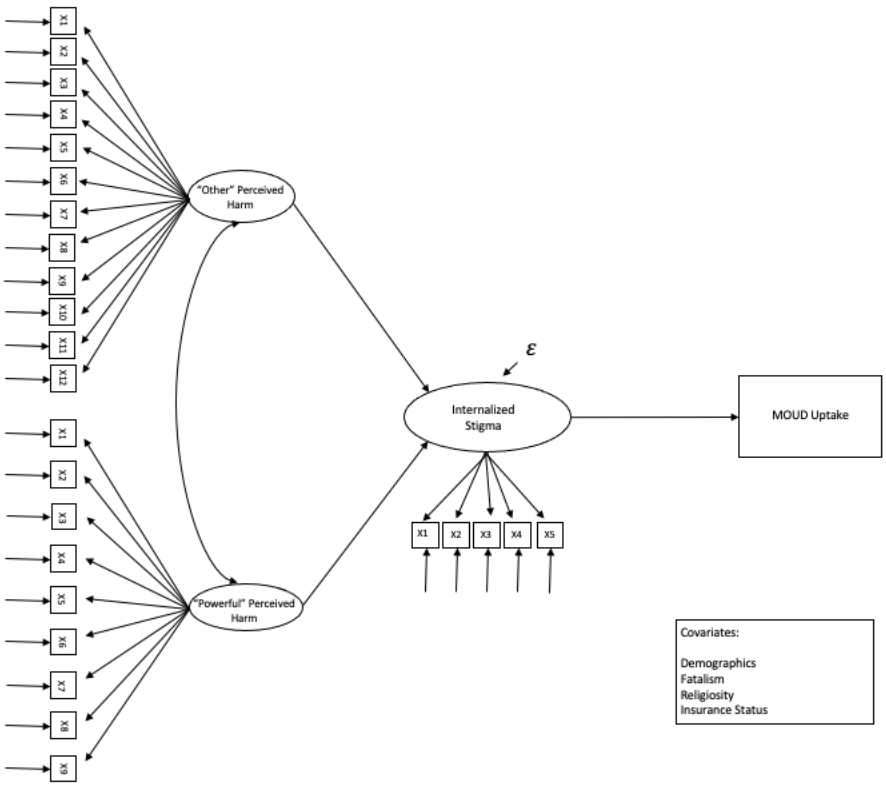

Figure 12. TDM/AoV mediation model path diagram

Table 12. Final AoV SEM mediation model results

Variable	Model 1 (Combined MOUD)
Direct effects (S.E.)	
Other → Stigma	-0.048 (0.654)
Powerful → Stigma	-0.087 (0.545)
Religious practice → Stigma	1.59 (1.114)
Religious belief → Stigma	-0.696 (1.121)
Fatalism → Stigma	-0.079 (0.529)
Other → MOUD Uptake	0.503 (0.605)
Powerful → MOUD Uptake	0.091 (0.341)
Religious practice → MOUD Uptake	0.614 (1.157)
Religious belief → MOUD Uptake	-0.719 (1.102)
Fatalism → MOUD Uptake	-0.083 (0.492)
Stigma → MOUD Uptake	0.064 (0.327)
Indirect effects (S.E.)	
Other → Stigma → MOUD Uptake	-0.003 (0.202)
Powerful → Stigma → MOUD Uptake	-0.006 (0.191)
Fit indices	
CFI	0.93
TLI	0.93
RMSEA	0.062

Results from the SEM mediation model revealed no significant direct or indirect effects of perceptions of vulnerability on stigma or MOUD uptake (**Table 12**). However, there was a significant correlation between religiosity and perceptions of vulnerability, but only for religious belief—not religious practice. Religious belief was significantly positively associated with

perceptions of vulnerability of the “Other” (r: 0.441, p=0.005), and was also significantly positively associated with perceptions of vulnerability of the “Powerful” (r: 0.405, p=0.009).

Several possibilities may explain these results. First, differences between expected latent construct factor structure and the final factor structure that emerged from the CFA process could indicate that the scale needs to be further adapted/adjusted for suitability in a population of PWUD, particularly as scale instructions or language could still have been slightly confusing to understand. Additionally, given that PWUD were responding to questions about some targets that may have more salience in their lives or may tap into a deeper history of lived experience than others (e.g., “Police”), these targets could have been capturing something other than just perceptions of vulnerability of these groups. A small sample size for analysis may also have contributed to a lack of significant direct or indirect effects from the full mediation model.

Interestingly, religious belief was significantly correlated with perceptions of vulnerability for both the “Other” and the “Powerful,” but religious practice was not. This may provide further evidence of the influence that personal religious beliefs can have in shaping general perceptions and attitudes toward others, whether in an “in-group” or an “out-group.”[118]

CHAPTER 8: SYNTHESIS, DISCUSSION, AND IMPLICATIONS

The goal of this dissertation is to explore how moral values and other sociocultural factors are associated with drug-related stigma and, in turn, MOUD uptake among PWUD (Aims 1 and 2), as well as to explore moral conceptualizations of drug- and drug-treatment-related stigma among PWUD and non-PWUD community members in a rural Appalachian context (Aim 3). Aims 1 and 2 used results from a quantitative survey of PWUD, administered using respondent-driven sampling in six counties in rural Appalachian Ohio. Aim 3, a qualitative study, drew upon 45 interviews with PWUD and non-PWUD community stakeholders from the same six Ohio counties. Together, results from these three aims provide a deeper understanding of the potential role of the moral and religious sociocultural context in influencing attitudes and stigma surrounding substance use and substance use treatment options in rural Appalachia. These results can also inform the planning and development of more effective stigma reduction efforts and more successful partnerships between public health interventionists and community organizations in the field of substance use treatment.

8.1 Summary of Findings

8.1.1 Aims 1 and 2

I analyzed quantitative survey data from 319 PWUD in six study counties in rural Appalachian Ohio. Study participants completed surveys that collected data on drug use, treatment history, stigma, general health history, health care access, risk behavior, mental health status, personal beliefs, and basic demographics. For my research, I examined measures that captured participant moral values (as captured by two different scales—the Moral Foundations Questionnaire and the Assumptions of Vulnerability scale), internalized drug-

related stigma, religiosity, fatalism, and MOUD uptake. I used structural equation modeling to examine the function of the two measures of morality in a population of PWUD in rural Appalachia. Following specification of measurement models of these moral intuitions constructs, as well as measurement models for all other key latent constructs, I assessed full mediation models using an SEM framework to examine the relationship between morality, internalized drug-related stigma, and MOUD uptake.

Results from aims 1 and 2 revealed that measures of moral intuitions—particularly the MFQ—did not function as expected in the study population, and may need to be adapted in order to be appropriate for this population. However, religiosity did emerge as a significant predictor of drug-related stigma, though only for religious practice—not religious beliefs. Stigma was significantly associated with MOUD uptake, which may reflect exposure to stigma when accessing MOUD and/or differential levels of acceptability surrounding different types of MOUD.

8.1.2 Aim 3

For aim 3, I analyzed data from 45 interviews with PWUD and non-PWUD community stakeholders in six study counties in rural Appalachian Ohio. Interviews focused on perceptions of the social, economic, and historical context of the drug epidemic, perceived drivers of drug use, stigma surrounding addiction and treatment options, views and emotions surrounding PWUD, perceived cultural values and norms, moral and religious views of drug use, and opinions toward different treatment types.

In both stakeholder and PWUD interviews, religion emerged as a salient theme that shaped views on addiction and recovery. Participants differentiated between structural/organizational religion and personal religious/spiritual beliefs. While organized religious institutions (Christian churches, in this case) were sometimes described by participants as helpful groups that provided resources to those in need or hosted recovery groups, other participants expressed negative views of local religious institutions and thought that they were unwelcoming or stigmatizing towards PWUD, and that they may be partly responsible for

reinforcing community narratives that framed addiction as a moral failing. In discussing personal religious beliefs, three narratives emerged: God as testing an individual, God as in control of fate, and God as a source of redemption and love in the context of addiction. Overall, participants in active addiction or recovery often drew on personal spirituality to provide comfort, support, and hope, and also sometimes framed empathetic views toward other PWUD in terms of nonjudgmental religious messages of loving others.

8.1.2 Mixed Methods Integration of Findings

Interestingly, findings from both the quantitative and qualitative studies included in this dissertation revealed the importance of religion in shaping stigma and attitudes surrounding addiction and substance use treatment options. To examine and integrate qualitative and quantitative findings, I used a mixed-methods joint display table, shown below (**Table 13**). Quantitative pathways are organized with supportive qualitative evidence, to provide more context for significant quantitative findings.

Table 13. Synthesis of quantitative and qualitative findings

Quantitative Pathway	Quantitative Pathway Results	Qualitative Supporting Quote(s)
Religious practice → Stigma (all models)	**β = 0.34, p<0.05**	*"You have got your people who go to church and your people who don't go to church…I used to go to church and I used to be that person, but they are all a bunch of hypocrites. I think that they, a lot of the older people, especially, who have gone to church their whole lives, they kinda look down on [people who use drugs]."* (Stakeholder) *"I don't think that drug addicts or alcoholics should be [in church]. It's not right."* (PWUD) *"There is a difference between religion and spirituality. Religion is for people who don't want to go to hell. Spirituality is for people who have been through hell and don't want to go back."* (PWUD)
Religious belief → Stigma (all models)	NS/no association	*"You see, people don't understand that. We are all good. We are born good, whether it is in sin or whatever, whatever anybody says. We are born good. We all have good and bad in us, and I love every soul out there, okay? Everybody. And I don't think you should turn anybody away or throw anybody to the pit of hell. When someone is hurting, you are supposed to give them a hug, grab onto them and tell them you are there for them. You are not supposed to say, I don't want you in my family, because you aren't doing what I want you to do. You are not perfect, so you are not a good person. You know what? No one is perfect. There was one perfect person to ever walk on this land, and no one is ever going to be like Him…"* (PWUD)
Religious belief ~ Fatalism	**ρ = 0.18, p<0.05**	*"Well, it's funny how God works, because it's totally a God thing. And I know this for myself. There is no other way to put this. Yeah, we have control over what we do and the actions we take, but ultimately, he is the universal GPS. We have free will, so we have choices we can make, but the ultimate purpose that he has for our lives, the destination, he can re-route us based off of our choices."* (PWUD)
Stigma → MOUD Uptake		

Buprenorphine	**β = 0.25, p<0.01**	*"I think doctors keep people on too high of a dose for too long…I just, I just, I don't agree with how doctors do it, but I'm not a doctor."* (PWUD) *"I mean I conquered heroin. I've conquered so many things, you know? And [buprenorphine] is like this little thing keeps me just locked to it almost. I don't know. Um, just because I don't wanna, I don't wanna be like that- I don't wanna be like that forever."* (PWUD) *"I think a lot of it is tied up with the history of pill mills. Because I mean, unfortunately you know, it's changing, but for the past you know, 10 years, up until maybe 3 or 4 years ago, I mean there are, and there still are Suboxone clinics where you just go, you pay cash for your prescriptions, and you leave. Um, it's just like the pill mills were. That has given it a bad name as well. So, whether you're doing the right way or trying to do it the right way, it really doesn't matter, because for a lot of people that's the vision."* (Stakeholder) *"It depends on what the client wants. A lot of the times, because of the social stigma, they are kinda scared of buprenorphine at first. So, you know, if they want abstinence-based or faith-based, you know when we talk to the client and what they want, we kinda refer them to the program that would best suit their needs."* (Stakeholder)
Methadone	**β = 0.28, p<0.01**	*"When I would take [my daughter], if she went to the clinic, the methadone clinic, and I'd take her up there in the mornings and you'd hear people talk and stuff about they've been going to that clinic for 20 years. I mean, I thought that it was a way to wean you off of it, not keep you right where you are or increase it when it's not working anymore."* (PWUD) *"Majority of the town is, people judge you…I think there may be a doctor in [town] that they go to for Suboxone, but as far as a methadone clinic or a suboxone clinic here, there is none."* (PWUD) *"We still have a lot of resistance in the community [to medication-assisted treatment] and even, unfortunately, through our court systems right now. Things are starting to get better…but right now, we have no methadone services in our county at all."* (Stakeholder)

		"I don't agree with it. I knew some people in Columbus on methadone and they could still get high. They were still getting high on it." (PWUD)
Vivitrol	**β = 0.20, p<0.01**	*"The pills [are] a bad idea. Now the shot I agree with because it helps alcoholics as well."* (PWUD) *"Vivitrol, it works pretty good. Suboxone, that's kind of just like replacing a drug for a drug, cause you can get high off Suboxone and you can get high off methadone."* (PWUD) *"I think Vivitrol would be one [to try]. And Suboxone, no because it's harder to get off of. Everybody says it's not hard to get off of, but it is."* (PWUD) I: *"So, are people more open to Vivitrol than Suboxone?"* P: *"Oh, yes, by far."* (Stakeholder) *"I love the Vivitrol, it helped me a lot."* (PWUD)

As shown in the table above, the distinction between religious practice and personal religious beliefs was evident in both the quantitative and qualitative results. Organized religious practice was significantly positively associated with internalized drug related stigma across all quantitative models, but there was no significant association between personal religious beliefs and internalized drug-related stigma. In discussing religion in their own lives in qualitative interviews, PWUD and stakeholders explicitly or implicitly expressed the view that organized religious institutions were sometimes "hypocritical" and could perpetuate stigma toward PWUD.

These results are supported and explained by the existing literature on the role of different types of religiosity on prosocial behavior and moral judgements, including perceptions of drug addiction. Religiosity is a complex phenomenon that includes a variety of different dimensions; however, two of the most commonly described types of religiosity include organized religious practice and personal spirituality/belief in the supernatural.[117,118,152] Empirical lab-based studies have revealed a difference in how these dimensions of religiosity can affect judgements and behavior—for example, lab-based studies that primed study participants with either

"religion" primes (organized religion) or "God" primes (aimed at tapping into personal spirituality) found that primes related to organized religion resulted in prosocial behavior only toward members of a participant's "ingroup" (e.g., members of their own religious group), whereas primes related to personal spirituality resulted in increased prosocial behavior toward the participant's "outgroup" (e.g., someone not included in the participant's own religious group).[155] Similarly, other studies have shown evidence that religiosity based on organized religious practice is associated with a willingness to provide help to family members and close friends, but is not associated with a willingness to provide help to strangers.[118]

Evolutionary psychologists have hypothesized that different types of religiosity may have served different roles during human social evolution and group development. Organized religion, with shared rituals, holidays, symbols, and other practices, may have helped to facilitate within-group trust and cooperation, and could have also allowed individuals to easily identify other members of their particular group.[118] Personal spiritual beliefs, on the other hand, may have been selected for due to their utility in solving the problem of cheating/noncooperation in larger communities and societies—if individuals believed that a supernatural agent was watching their actions even if other people were not, they may have been less inclined to behave in ways that were detrimental to group cooperation.[118] This emphasis on behaving in a "virtuous" way even when outside of a small group is reflected in the type of "Golden Rule" teachings that are found in most major world religions, and this emphasis on virtuous/fair behavior toward others (even people outside of an immediate in-group) may have resulted in greater empathy and generally prosocial behavior towards members of outgroups.[118] In the context of views toward PWUD and judgements related to drug use, this could provide an explanation for the different effects of religious organizations and personal spirituality on addiction views and narratives. If religious organizations perpetuate stigmatizing messaging that may result in PWUD being viewed as non-ingroup members, then it is unsurprising that PWUD

would express feelings of skepticism toward these organizations or of considering themselves unwelcome in these spaces.

Together, these results suggest that religiosity could play an important role in shaping perceptions of addiction, as well as influencing pathways of addiction recovery. Particularly in rural areas in which substance use treatment resources may be lacking, opportunities exist for partnerships between public health entities and faith-based organizations, in order to reduce religious-based stigma toward drug use and incorporate support for evidence-based interventions in a faith context.

8.2 Future Directions

Several directions for future research are suggested by the findings from this dissertation. Given the challenges that emerged surrounding validation of/establishment of measurement models for the measures of moral intuitions in aim 1, future work should focus on adapting existing measures of moral intuitions for PWUD populations. Once measures have been validated for use in this population, more research should examine whether the Moral Foundations Questionnaire is an appropriate measure of morality in general—given that other recent studies have suggested that it may not function as expected in many contexts or be the most useful measure of morality, despite its widespread application.

Future research should also continue to explore the influence of religiosity and other sociocultural factors on substance use addiction and treatment views, as well as recovery pathways. Findings from this dissertation can be used to inform future stigma reduction and EBI-uptake intervention development, as well as to guide development of community partnerships between public health researchers and faith-based organization leaders.

8.3 Study Strengths, Limitations, and Positionality

8.3.1 Study Strengths

This research had several key strengths that lend to the validity of study results. First, despite the challenges that can arise from conducting transdisciplinary research, this research was heavily grounded in theory and drew on a strong base of prior moral psychology, social psychology, and public health theory and empirical literature; this allows results to be situated in a large body of prior work and interpreted in the context of similar studies while still providing a novel study approach and population. Moreover, this dissertation research emerged from almost four years of prior work in rural Appalachian Ohio. This formative work allowed me to develop research questions and conceptual models from a combination of both existing theory/literature and primary data collection and in-person observation. Additionally, this allowed me to draw upon existing community partnerships established through our study team, as well as more easily establish trust with research participants. Besides ensuring higher-quality data, these existing relationships meant that I was able to reach an adequate quantitative sample size for my first two aims, as well as recruit a large number of qualitative participants for my third aim.

The mixed-methods study design of this research is also a key strength. Mixed-methods work allows researchers to combine research paradigms, data types, and analysis techniques in order to provide a deeper understanding of a research question.[159,162] By triangulating both quantitative and qualitative results in a convergent parallel design, I was able to more fully understand the complex phenomena that may underlie the associations between religiosity, stigma, and MOUD uptake that emerged from quantitative models.

8.3.2 Study Limitations

There are also several limitations that should be considered when interpreting the results of this research. First, the cross-sectional nature of the study design means that I am limited in drawing any firm causal conclusions; this was particularly evident when interpreting results of

mediation models in aim 2. While qualitative data can help provide a case for causality in a mixed-methods study design, this remains a key limitation, particularly for a mediation analysis.

Delays and data collection changes due to the COVID-19 pandemic are also a limitation for all aims of this dissertation research. During the first year of the pandemic, quantitative and qualitative data collection were both paused for several months; when they did resume, data collection shifted to virtual modalities for a period of time. Because of this, a smaller-than-expected quantitative sample was available from study expansion counties, and this sample included several quantitative measures that I added after the first round of quantitative data collection (including the Assumptions of Vulnerability scale). This meant that I was unable to conduct all of my planned analyses with a large sample size. Changes in the method of data collection likely also resulted in lower data quality, as participants sometimes struggled to focus through a long quantitative survey or qualitative interview over the phone (particularly when completing measures that might have already presented comprehension problems, like the Moral Foundations Questionnaire). The pandemic itself may also have resulted in changes in some of the variables that I examined, such as stigma and religious practice, due to increased social isolation and disruption of regular activities.

Finally, this research is limited due to the inability to capture some key measures that may influence the main constructs of moral values, religiosity, stigma, and MOUD uptake among PWUD. Due to data collection delays, a measure of participant political affiliation was only able to be included for a small number of quantitative surveys. Particularly given the current political polarization present nationally in the US, the potential influence of political beliefs on a variety of attitudes—including drug-related views—and suggestions from prior literature that some measures of morality (such as the MFQ) may be capturing political affiliation rather than moral intuitions, it would have been ideal to be able to capture political affiliation and include this in my analyses.

8.3.3 Positionality

Increasingly, researchers in the social sciences and related fields are encouraged to describe their positionality, defined by Holmes (2020) as "an individual's world view and the position they adopt about a research task and its social and political context" and something that can be influenced by "political allegiance, religious faith, gender, sexuality, historical and geographical location, ethnicity, race, social class, and status, (dis) abilities and so on."[206] Researchers are encouraged to take a reflexive approach in their research, in which they should "acknowledge and disclose their selves in their work, aiming to understand their influence on and in the research process."[206] Here, I examine my research lenses, potential influences on the research process, and position in relation to research participants.

I approached this research through the lens of a public health graduate student with a background in substance use research. Because of my position as a student of public health, I am an advocate for evidence-based interventions and evidence-based harm reduction efforts to address substance use. This underlying lens could have affected my ability to be a neutral and unbiased data collector and could have influenced how participants interacted with me or what answers they gave to my questions, particularly when conducting qualitative interviews with participants. However, I underwent substantial qualitative research training prior to conducting qualitative interviews, during which I practiced maintaining neutrality as much as possible. I also underwent a process of debriefing with my research advisor and research team after each round of interviews and compared interview findings with other team members who were also collecting data in the field. This process helped to ensure that I was not projecting my beliefs too much onto the data collected in the field.

Other potential influences on this research may have resulted from my age, race, gender, and religious beliefs—particularly as some of these may have influenced my relationship with research participants. In most ways, I was an outsider in my position to research participants, as I am an academic researcher who does not reside in the study region

and who does not have lived experience with substance addiction. However, in my position as a white woman who was also raised in a rural Appalachian region, I was somewhat of an insider to some participants. My position as an outside academic researcher could have meant that there was a power dynamic in interviews with PWUD; however, due to my age and gender I often felt that there was a fairly equal status during PWUD interviews. If anything, the power dynamic during stakeholder interviews was reversed; in fact, due to safety concerns as a young female researcher, there were some stakeholders I declined to meet with during my time in the field, which probably meant that there were some stakeholder viewpoints that were not captured in my interviews. During interviews with PWUD, my position as an outsider also provided some advantages—participants were typically eager to share details of their substance use experience that they might not have shared with someone who was also a PWUD, because they did not assume that I already knew this information. They also seemed incredibly open to sharing personal details and sensitive information with me, perhaps because they did not have to worry about seeing me again, as I was not part of their social circle or community.

Lastly, it is possible that my position as an atheist analyzing data related to religion and religious beliefs could have impacted how I interpreted qualitative data and some of the conclusions I drew; however, debriefing with study team members to ensure that I was not bringing my personal views into data analysis and study interpretations was important.

8.4 Conclusion

This dissertation combined public health and moral psychology theory and methods to explore the connection between morality, stigma, and evidence-based treatment attitudes and uptake in a rural Appalachian context. Findings revealed the importance of religiosity on stigma and attitudes among PWUD and non-PWUD community members, and also highlighted the need for better measures of morality among this population. Together, study results suggest new avenues for stigma reduction interventions and community partnerships to address opioid use in rural Appalachia.

APPENDIX 1: RELEVANT RDS SURVEY MEASURES

The next section asks you some questions about your views.			
Part 1. When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking? Please rate each statement using this scale: **[0] = not at all relevant (This consideration has nothing to do with my judgments of right and wrong)** **[1] = not very relevant** **[2] = slightly relevant** **[3] = somewhat relevant** **[4] = very relevant** **[5] = extremely relevant (This is one of the most important factors when I judge right and wrong)**			
MFQ_01	MFQ01	Whether or not someone suffered emotionally	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)

MFQ_02	MFQ02	Whether or not some people were treated differently than others	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)
MFQ_03	MFQ03	Whether or not someone's action showed love for his or her country	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)

MFQ_04	MFQ04	Whether or not someone showed a lack of respect for authority	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)
MFQ_05	MFQ05	Whether or not someone violated standards of purity and decency	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)

MFQ_06	MFQ06	Whether or not someone was good at math	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)
MFQ_07	MFQ07	Whether or not someone cared for someone weak or vulnerable	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)

MFQ_08	MFQ08	Whether or not someone acted unfairly	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)
MFQ_09	MFQ09	Whether or not someone did something to betray his or her group	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)

MFQ_10	MFQ10	Whether or not someone conformed to the traditions of society	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)
MFQ_11	MFQ11	Whether or not someone did something disgusting	Not at all relevant [0] ((This consideration has nothing to do with my judgments of right and wrong) Not very relevant [1] Slightly relevant [2] Somewhat relevant [3] Very relevant [4] Extremely relevant [5] (This is one of the most important factors when I judge right and wrong)

Part 2. Please read the following sentences and indicate your agreement or disagreement: **[0] Strongly disagree** **[1] Moderately disagree** **[2] Slightly disagree** **[3] Slightly agree** **[4] Moderately agree** **[5] Strongly agree**			
MFQ_12	MFQ12	Compassion for those who are suffering is the most crucial virtue.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]
MFQ_13	MFQ13	When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]
MFQ_14	MFQ14	I am proud of my country's history.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]
MFQ_15	MFQ15	Respect for authority is something all children need to learn.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]
MFQ_16	MFQ16	People should not do things that are disgusting, even if no one is harmed.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]
MFQ_17	MFQ17	It is better to do good than to do bad.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]

MFQ_18	MFQ18	One of the worst things a person could do is hurt a defenseless animal.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]
MFQ_19	MFQ19	Justice is the most important requirement for a society.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]
MFQ_20	MFQ20	People should be loyal to their family members, even when they have done something wrong.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]
MFQ_21	MF*Q21	Men and women each have different roles to play in society.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]
MFQ_22	MFQ22	I would call some acts wrong on the grounds that they are unnatural.	Strongly disagree [0] Moderately disagree [1] Slightly disagree [2] Slightly agree [3] Moderately agree [4] Strongly agree [5]

The next sections ask you some more questions about some of your personal views. Please read the instructions for each section and choose the answer that best aligns with your views.

Different people may see different groups or things as being generally more or less likely to be mistreated. In other words, we often think of some types of people as being especially vulnerable to harm, or especially likely to be treated badly. Please read the following statements and express your beliefs and thoughts for each section below.

I think that the following are especially vulnerable to mistreatment:

			Not at all vulnerable to mistreatment	Slightly vulnerable to mistreatment	Moderately vulnerable to mistreatment	Very vulnerable to mistreatment	Completely vulnerable to mistreatment
AOV_01	AOV01MUS	Muslims	1	2	3	4	5
AOV_02	AOV01AUTH	Authority figures	1	2	3	4	5
AOV_03	AOV01PWUD	People who use drugs	1	2	3	4	5
AOV_04	AOV01TRANS	Transgender people	1	2	3	4	5
AOV_05	AOV01CORP	Corporate leaders	1	2	3	4	5
AOV_06	AOV01POL	Police officers	1	2	3	4	5
AOV_07	AOV01ILL	Illegal immigrants	1	2	3	4	5

I think that the following are especially vulnerable to being harmed:

			Not at all vulnerable to being harmed	Slightly vulnerable to being harmed	Moderately vulnerable to being harmed	Very vulnerable to being harmed	Completely vulnerable to being harmed
AOV_08	AOV02POL	Police officers	1	2	3	4	5
AOV_09	AOV02TRANS	Transgender people	1	2	3	4	5
AOV_10	AOV02AUTH	Authority figures	1	2	3	4	5
AOV_11	AOV02MUS	Muslims	1	2	3	4	5
AOV_12	AOV02ILL	Illegal immigrants	1	2	3	4	5
AOV_13	AOV02PWUD	People who use drugs	1	2	3	4	5
AOV_14	AOV02CORP	Corporate leaders	1	2	3	4	5

I think that the following are especially vulnerable to victimization:

*			Not at all vulnerable to victimization	Slightly vulnerable to victimization	Moderately vulnerable to victimization	Very vulnerable to victimization	Completely vulnerable to victimization
AOV_15	AOV03TRANS	Transgender people	1	2	3	4	5
AOV_16	AOV03CORP	Corporate leaders	1	2	3	4	5
AOV_17	AOV03PWUD	People who use drugs	1	2	3	4	5

AOV_18	AOV03ILL	Illegal immigrants	1	2	3	4	5
AOV_19	AOV03POL	Police officers	1	2	3	4	5
AOV_20	AOV03AUTH	Authority figures	1	2	3	4	5
AOV_21	AOV03MUS	Muslims	1	2	3	4	5

The next five questions ask how you feel about your drug use.

STG_01a	STGSHAME	How much do you feel ashamed of using drugs?	1. Very much *[3]* 2. Somewhat *[2]* 3. Just a little*[1]* 4. Not at all *[0]*
STG_01b	STGAVOID	How much do you feel people avoid you because you use drugs?	1. Very much *[3]* 2. Somewhat *[2]* 3. Just a little*[1]* 4. Not at all *[0]*
STG_01c	STGFREND	How much do you fear you will lose your friends because you use drugs?	1. Very much *[3]* 2. Somewhat *[2]* 3. Just a little*[1]* 4. Not at all *[0]*
STG_01d	STGFAMLY	How much do you fear family will reject you because you use drugs?	1. Very much *[3]* 2. Somewhat *[2]* 3. Just a little*[1]* 4. Not at all *[0]*
STG_01e	STGUCOMF	How much do you think other people are uncomfortable being around you because you use drugs?	1. Very much *[3]* 2. Somewhat *[2]* 3. Just a little*[1]* 4. Not at all *[0]*

This section will ask you about any addiction treatment you have received.

ADT_01	ADTEV	Have you ever gotten any treatment or help for an addiction problem?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_02 *(Ask If ADTEV = 1).* Which of the following kinds of addiction treatment or help have you gotten in your lifetime? Have you…			
ADT_02a	ADTEVSH	*(Ask If ADTEV = 1)* …Ever gone to self-help groups like NA–Narcotics Anonymous, AA–Alcoholics Anonymous, Celebrate Recovery, Rational Recovery, etc.?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_02b	ADTEVCOU	(Ask If ADTEV = 1) …Ever gone to outpatient counselling from a provider or program?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_02d	ADTEVDET	*(Ask If ADTEV = 1)* …Ever been in detox?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_02c	ADTEVRES	*(Ask If ADTEV = 1)* … Ever stayed overnight at a residential or inpatient drug treatment, not including detox?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_02e	ADTEVSOB	*(Ask If ADTEV = 1)* …Ever stayed overnight at a sober house?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_02f	ADTEVBUP	*(Ask If ADTEV = 1 and [SCRHEREV= 1 or SCRFENEV = 1 or SCRSYNEV = 1 or SCRBUPEV = 1 or SCRMTDEV = 1 or SCROPKEV = 1])* …Ever gotten buprenorphine maintenance medication – like Suboxone or Subutex – from a doctor or program?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*

ADT_02g	ADTEVMM	*(Ask If ADTEV = 1 and [SCRHEREV= 1 or SCRFENEV = 1 or SCRSYNEV = 1 or SCRBUPEV = 1 or SCRMTDEV = 1 or SCROPKEV = 1])* …Ever gotten methadone maintenance from a clinic?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_02h	ADTEVXNT	*(Ask If ADTEV = 1 and [SCRHEREV= 1 or SCRFENEV = 1 or SCRSYNEV = 1 or SCRBUPEV = 1 or SCRMTDEV = 1 or SCROPKEV = 1])* …Ever gotten naltrexone shots – like Vivitrol – from a doctor or program?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_02i	ADTEVBIN	*(Ask If ADTEV = 1 and [SCRHEREV= 1 or SCRFENEV = 1 or SCRSYNEV = 1 or SCRBUPEV = 1 or SCRMTDEV = 1 or SCROPKEV = 1])* …Ever gotten buprenorphine shots – like Sublocade – from a doctor or program?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_03	ADT30D	*(Ask If ADTEV = 1)* In the last 30 days, have you gotten any treatment or help for an addiction problem?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_04. In the last 30 days, which of the following kinds of addiction treatment or help have you gotten? Have you…			
ADT_04a	ADT30SH	*(Ask If ADT30D = 1 and ADTEVSH = 1)* …gone to self-help groups like NA–Narcotics Anonymous–or AA–Alcoholics Anonymous?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_04b	ADT30COU	*(Ask If ADT30D = 1 and ADTEVCOU = 1)* …gotten outpatient counseling from a provider or program?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*

ADT_04c	ADT30RES	*(Ask If ADT30D = 1 and ADTEVRES=1)* … Stayed overnight at a residential or inpatient drug treatment?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_04d	ADT30DET	*(Ask If ADT30D = 1 and ADTEVDET= 1)* …been in detox?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_04e	ADT30SOB	*(Ask If ADT30D = 1 and ADTEVSOB=1)* …Stayed overnight at a sober house?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_04f	ADT30BUP	*(Ask If ADT30D = 1 and ADTEVBUP=1)* …gotten buprenorphine maintenance medication – like Suboxone or Subutex – from a doctor or program in the last 30 days?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_04g	ADT30MM	*(Ask If ADT30D = 1 and ADTEVMM=1)* …Gotten methadone maintenance from a clinic in the last 30 days?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_04h	ADT30XNT	*(Ask If ADT30D = 1 and ADTEVXNT=1)* …Gotten naltrexone shots – like Vivitrol – from a doctor or program in the last 30 days?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*
ADT_04i	ADT30BIN	*(Ask If ADT30D = 1 and ADTEVBIN=1)* …Gotten buprenorphine shots – like Sublocade – from a doctor or program in the last 30 days?	1. Yes *[1]* 2. No *[0]* *3.* Don't know *[3]*

ADT_05	ADT6MOP	*(ASK IF ADTEVCOU =1)* In the past 6 months, how many days did you go to any outpatient counseling for substance use problems? Don't include 12-step or self-help group meetings or regular medication treatment visits. It's OK if you don't remember the exact number of days. Your best guess is fine.	*□□□ days* *(000-180)*
ADT_06	ADT6MINP	*(ASK IF ADTEVRES =1 OR ADTEVDET=1)* In the past 6 months, how many nights did you stay in an inpatient or residential drug treatment unit? It's OK if you don't remember the exact number of nights. Your best guess is fine.	*□□□ nights* *(000-180)*
ADT_07	ADT6MBUP	*(ASK IF ADTEVBUP =1)* In the past 6 months, how many days did you take buprenorphine – like Suboxone or Subutex – prescribed to you by a doctor or program? It's OK if you don't remember the exact number of days. Your best guess is fine.	*□□□ days* *(000-180)*
ADT_08	ADT6MMM	*(ASK IF ADTEVMM =1)* In the past 6 months, how many days did you get methadone maintenance from a clinic? It's OK if you don't remember the exact number of days. Your best guess is fine.	*□□□ days* *(000-180)*

ADT_09	ADT6MXNT	*(ASK IF ADTEVXNT =1)* In the past 6 months, how many times did you get naltrexone shots – like Vivitrol? It's OK if you don't remember the exact number of times. Your best guess is fine.	☐ *times* *(0-6)*
ADT_09b	ADT6MBIN	*(ASK IF ADTEVBIN =1)* In the past 6 months, how many times did you get buprenorphine shots – like Sublocade? It's OK if you don't remember the exact number of times. Your best guess is fine.	☐ *times* *(0-6)*

The following section asks you some questions about religious practices.

DURI_01	REL01	How often do you attend church or other religious meetings?	1. Never 2. Once a year or less 3. A few times a year 4. A few times a month 5. Once a week 6. More than once/week
DURI_02	REL02	How often do you spend time in private religious activities, such as prayer, meditation, or Bible study?	1. Rarely or never 2. A few times a month 3. Once a week 4. Two or more times/week 5. Daily 6. More than once a day
The following section contains 3 statements about religious belief or experience. Please mark the extent to which each statement is true or not true for you.			
DURI_03	REL03	In my life, I experience the presence of the Divine (i.e., God).	1. Definitely not true 2. Tends not to be true 3. Unsure 4. Tends to be true 5. Definitely true of me
DURI_04	REL04	My religious beliefs are what really lie behind my whole approach to life.	1. Definitely not true 2. Tends not to be true 3. Unsure 4. Tends to be true 5. Definitely true of me
DURI_05	REL05	I try hard to carry my religion over into all other dealings in life.	1. Definitely not true 2. Tends not to be true 3. Unsure 4. Tends to be true 5. Definitely true of me

APPENDIX 2: QUALITATIVE INTERVIEW GUIDES AND DEMOGRAPHIC SURVEYS

F31 PWUD Interview Guide

Interview guide objectives [do not read aloud]: ***This interview guide is for people who use drugs (PWUD). The goal of the interview guide is to gain a better understanding of moral intuitions related to addiction and treatment, and how these moral intuitions shape attitudes and internalized stigma toward drug use and treatment options.***

Introduction: Thank you for agreeing to speak with me today. As previously discussed, I'm going to ask you questions today related to your general community and your perceptions of the area, as well as some questions about your experience with substance use and treatment options in your community. All of these questions are voluntary—you can skip any question you do not want to answer, and you can end the interview at any point. If you have any questions for me as we go through, you can stop me at any point.

Any questions before we begin?

1. To start, tell me a bit about yourself – are you from this area?
    a. [If from the area] Tell me about your experience growing up here. Does your family live here?
    b. [If not from the are] How long have you lived here? What brought you here? Do you have any family in the area?

I'd like to ask you a few questions about your general thoughts about your community and your perceptions of people who live here in your community. These are intentionally a bit broad/vague to allow you to answer with whatever comes to mind, so just do your best.

2. How would you describe the typical person that lives in this community/region?
    a. How would you describe their personality?
    b. How would you describe their lifestyle?
    c. How would you describe the "culture" in this area, in your own words?

3. What do you think people's values are in this area?
    a. What are your most important values? I.e., what's most important to you?
    b. How do your values align with other people's values in the community?
    c. Have your values developed or changed over time, if at all?

4. When you think about your community, who would you say is the most vulnerable in the community?
    a. What makes these people vulnerable?
    b. What types of things are they vulnerable to? In other words, what types of bad things might happen to them?
    c. What words come to mind first when you think about how to describe these people?

5. When you think about your community, who would you say has the most power in the community?

a. What makes these people powerful?
b. What words come to mind first when you think about how to describe these people?

6. What about society at large today – who do you think the biggest victims in society are now?
    a. What makes these people victims? What types of things are they vulnerable to?
    b. Who are they victims of?
    c. How do you feel when you think about them?

Now I'd like to ask you a few questions about drug use in the area, and your own experience with drug use and treatment.

7. How has drug use changed in the area, since you've lived here?
    a. What kinds of things in your community do you think have contributed?
    b. Who/what do you think is most at fault for drug use in the region?

8. When was the first time in your life that you learned about drug addiction [note: not the first time you personally used drugs]?
    a. Describe how you first learned about drugs/drug addiction. Where was this? What were you told/what did you learn?
        i. Family members?
        ii. Friends?
        iii. School?
        iv. Other?

9. Describe your personal experience with drug use.
    a. When did you start? How old were you?
    b. What did you use? How did you use it?
    c. What prompted your use the first time?
    d. What happened after that? [narrative about use]

10. We know that how people talk about and think about addiction can have important consequences. How would you describe in your own words what drug addiction is?
    a. What's your reaction when someone says drug addiction is a biomedical disease?
    b. What's your reaction when someone says drug addiction is a choice?
    c. What's your reaction when someone says drug addiction is a moral failing or a sin?
    d. Have your views changed over time, if at all? What events/experiences/messages changed your views?

11. How do you feel when you think about someone else with drug addiction? What emotions come up first/the most? *(e.g., angry, sympathetic, sad, frustrated, etc.)*

12. Who in your community do you think is hurt the most by drug addiction?
    a. Tell me more about this. In what ways are they harmed?

13. Do you think that PWUD are successfully getting help for drug use in your community?
    a. What are some are the reasons why people might not enter treatment for drug use?

14. What kind of treatment for substance use do you think should be offered most?
    a. What kind of treatment do you think is most effective?
    b. What kind of treatment do you think is fair?

15. What kinds of treatment options have you yourself tried for substance use, if any?
    a. Probe – ask them to describe path to treatment/diff treatment options

16. What do you think of medication for opioid use disorder (MOUD) or medication-assisted treatment (MAT), such as Suboxone, methadone, or Vivitrol?
    a. Have you ever used any type of medication-assisted treatment, like suboxone, vivitrol, Subutex, methadone, etc.?
    b. If yes: how did you decide to try this out?
    c. If no: are there reasons you would or would not be interested in trying MAT?

17. What do you think of NA or AA groups for substance use?
    a. Same probes as above

18. What do you think of syringe exchange programs?
    a. Same probes as above

Thank you again for talking with me today. Your insights will help us work better with community members to improve substance use care in southern Ohio. Is there anything else you would like to share with me today?

Do you have any questions for me?

Thank you for your time.

F31 Stakeholder Interview Guide

Interview guide objectives [do not read aloud]: ***This interview guide is for key stakeholders, who are <u>treatment providers or other community stakeholders who work in a substance use-related or -adjacent field</u>. The goal of the interview guide is to gain a better understanding of moral intuitions related to addiction and treatment, and how these moral intuitions shape stigma and stakeholder attitudes toward drug use and treatment options.***

Introduction: Thank you for agreeing to speak with me today. As previously discussed, I'm going to ask you questions today related to your general community and your perceptions of the area, as well as some questions about substance use and treatment options in your community. All of these questions are voluntary—you can skip any question you do not want to answer, and you can end the interview at any point. If you have any questions for me as we go through, you can stop me at any point.

Any questions before we begin?

1. To start, tell me a bit about yourself – are you from this area?
    a. [If from the area] Tell me about your experience growing up here. Does your family live here?
    b. [If not from the are] How long have you lived here? What brought you here?

2. Tell me a little bit about your organization and your specific job.
    a. How long have you been in this role? How did you come into it?
    b. What population/populations do you largely work with? Do you work directly with PWUD?
    c. Tell me about your experience working with PWUD. Can you describe the typical person who uses drugs?

I want to ask you a few more questions about your experience living in this region and community, generally. Some of these are intentionally a bit broad or vague, so feel free to just tell me anything that comes to mind.

3. What do you think it means to be Appalachian?
    a. How would you describe Appalachian culture in this area?
    b. What are some things you like about it?
    c. What are some things you don't like about it?
    d. Do you identify with any of those things personally?

4. What do you think people's values are in this area?
    a. What are your most important values? I.e., what's most important to you?
    b. How do your values align with other people's values in the community?
    c. How have your values developed or changed over time, if at all?

5. When you think about your community, who would you say is the most vulnerable in the community? [By that, I mean what groups of people who are more at risk of being victimized in some way—whether by other people, or society at large, etc.]
    a. What makes these people vulnerable?

b. What types of things are they vulnerable to? In other words, what types of bad things might happen to them?
c. What words come to mind first when you think about how to describe these people?

6. When you think about your community, who would you say has the most power in the community?
    a. What makes these people powerful?
    b. What words come to mind first when you think about how to describe these people?

7. What about society at large today – who do you think the biggest victims in society are now?
    a. What makes these people victims? What types of things are they vulnerable to?
    b. Who are they victims of?
    c. How do you feel when you think about them?

Now I'd like to ask you a few questions about drug use in your community and in this region.

8. What do you think about the current opioid/drug epidemic overall? What kinds of things do you think are driving the epidemic?
    a. What kinds of things in your community do you think have caused the increase in drug/opioid use?
    b. Are there any other things that you think might be contributing? E.g., local or state policies, economic conditions, etc.
    c. Who/what do you think is most at fault for drug use in the region?

9. When was the first time in your life that you learned about drug addiction?
    a. How did you learn what drug addiction was? Describe how you first learned about drugs/drug addiction. Where was this? What were you told/what did you learn?
        i. Did you learn about it from family members?
        ii. Did you learn about it from friends?
        iii. Did you learn about it in school?
        iv. Did you learn about it from any other source?
    b. How did you learn it was a problem in your community? Describe how you first learned this.
    c. Describe any personal experience you had related to drug addiction, for example, a family member or friend who dealt with addiction. How did you first learn about this? How did you feel? What was your reaction?
    d. Have your feelings about drug addiction changed over time? Describe any changes (if any). What do you think prompted your views or feelings to change? Walk me through any events that were important for this.

10. How do you feel when you think about someone with drug addiction? What emotions come up first/the most? *(e.g., angry, sympathetic, sad, frustrated, etc.)*
    a. How do you feel when you think about someone you know personally with drug addiction?

b. How do you feel when you think about someone on the street/a stranger with drug addiction?

11. How would you describe in your own words what drug addiction is?
    a. What's your reaction when someone says drug addiction is a choice?
    b. What's your reaction when someone says that drug addiction is the product of a person's environment?
    c. What's your reaction when someone says drug addiction is a disease? (In other words, drug addiction is often described as a biological condition/brain disease).
    d. What's your reaction when someone says drug addiction is a moral failing or a sin?

12. How have your views about drug addiction changed over time, if at all?
    a. What events/experiences/messages changed your views?

13. Who in your community do you think is hurt the most by drug addiction?
    a. Tell me more about this. In what ways are they harmed by drug addiction?
    b. [More probes here]

14. Do you think that PWUD are successfully getting help for drug use in your community?
    a. What services and programs are available? How has this changed over time?
    b. What are some are the reasons why PWUD might not enter treatment for drug use?

15. What do you think would stop the epidemic?

16. What kind of treatment for substance use do you think should be offered most?
    a. What kind of treatment do you think is most effective?
    b. What kind of treatment do you think is fair?

17. What do you think of medication for opioid use disorder (MOUD) or medication-assisted treatment (MAT), such as Suboxone, methadone, or Vivitrol?
    a. What do you think about Suboxone?
    b. What do you think about methadone?
    c. What do you think about Vivitrol?
    d. What do you think about **people** who use MOUD?

18. What do you think of NA or AA groups for substance use?
    a. How effective do you think they are?
    b. What do you like about them? What do you dislike about them?
    c. What do you think about **people** who go to these groups?
    d. What do others in your community think about them?

19. What do you think of syringe exchange programs?
    a. How effective do you think they are?
    b. What do you like about them? What do you dislike about them?
    c. What do you think about **people** who use syringe exchange programs?
    d. What do others in your community think about syringe exchange programs?

Thank you again for talking with me today. Your insights are helpful as we think about ways to support community efforts to address substance use in southern Ohio. Is there anything else you'd like to share with me today?

Do you have any questions for me?

Thank you for your time.

Original OHOP PWUD Interview Guide

Interview guide objectives: This interview guide is for PWID. The goal of the interview guide is to gain a better understanding of the context of opioid abuse, injection drug use, service utilization, and barriers to services in rural Ohio PWID populations.

<u>Intro:</u> Thank you so much for talking with me today. As you know, we're interested in learning more about drug use in [County name], so I have a few questions for you. Everything you tell me will be kept confidential and we will not share your name with anyone besides study staff. Stop me at any time if you have any questions for me as we go through, if anything is unclear, or if you would prefer to skip a question.

We would like to hear about your experience with opioids and other drugs, so that we can help develop programs and policies that may make services that you actually want to use more available to you. Your participation may help to make things better for people in your situation, and those who come along after you – so we appreciate the time that you are taking to talk to us.

Any questions before we begin?

Background/Intro

1. I would like to start by getting to know you a little better.

Probes:

a. Where did you grow up? **[If not from the area]:** *How long have you been in this area?*

b. Tell me about your family and friends.

- *Who do you get help or advice from, when you need it?*

c. How do you support yourself, financially?

- **[If they work]:** *What do you do for work?*

d. Tell me about where you live right now? How happy are you with your living situation?

2. How has this area changed while you have lived here?

3. How has drug use in this area changed while you have lived here?

Probes:

a. Tell me about any changes in the number of people using drugs to get high?

b. Tell me about any changes in what people are using?

c. Tell me about any changes in the kinds of people who are using?

d. Tell me about reasons you think these changes have happened?

Drug Use – History and Current Use

Now I'd like to ask you some questions about drug use.

4. To begin with, tell me about the first time you used a drug aside from alcohol to get high – it could be pain pills, marijuana, or something else.

Probes:
a. How old were you?

b. Who were you with? Where were you? Where did you get the drugs from?

c. How was the drug used? (e.g., Swallowed? Snorted? Smoked? Injected?)

d. How did you get involved with other drugs after that?

If the participant has not yet discussed opioid use:
5. Tell me about any experiences you have had with using an opioid – like a pain pill or heroin – to get high? If yes:

Probes:
a. How old were you, the first time?

b. Who were you with? Where were you? Where did you get the drugs?

c. How has your opioid use changed since you first started?
i. How regularly do you use prescription opioids now? What do you use? Where do you get them from?
ii. How regularly do you use heroin now? Where do you get the heroin?

6. Tell me about the first time you injected a drug.

Probes.
a. How old were you?

b. Where were you? What drug did you use? Who, if anyone, were you with? Who prepared it? Who injected you?

c. Why did you do it? What was going on in your life at the time?

7. What drugs are you injecting currently?

[Note: probes a-e below are for <u>each</u> substance mentioned]:

Probes:

a. Tell me about the most recent time that you used it. Where did you get it from? How much did you use?

b. Who else was there? Where were you? Is this your ideal place? Why did you use drugs there?

c. Whose syringe did you use? **[if not their own]:** *Who used it before you did? Who used it after you did? What type of syringe was it (e.g., insulin, other than insulin, removable needle?)*
[if purchased]: *How much did it cost?*

d. What did you do, if anything, to protect yourself from harms? (e.g., things like HIV, hepatitis, overdose, or abscesses?)
i. How did you clean your skin? How did you stop the bleeding after you injected? Does this vary by the type of drug you're using, e.g. black tar heroin, pills, etc.?

e. How has your use of this drug changed over time?

f. How often are you rushed when you are injecting? What are the typical ways that you get ready to inject, stop injection site bleeding, and clean up after you inject?

8. You mentioned that you inject **[list all substances mentioned from question 7].**

Probes:
a. **[If haven't mentioned fentanyl]:** *Have you ever used any drugs containing fentanyl or carfentanil?*
i. Did you realize before or after you took the drug that it contained fentanyl/carfentanil?
ii. Were you trying to find a drug that contained fentanyl/carfentanil, or were you unaware?
iii. How did you know/how were you aware that it had fentanyl/carfentanil?

b. How are the drug preparations different across the drugs (e.g., pills, heroin, fentanyl, carfentanil, methamphetamine, cocaine, etc.)?

c. What type of equipment do you use for different drugs? Is the amount of water you add different?

d. Do you need to inject more or less frequently depending on the drug? Can you explain?

e. Can you tell me any instances when you have injected pills? Can you describe the type of pill? How does the type of process you use differ from powder?

9. Tell me more about any experiences you have with sharing any equipment (syringes, etc.) with others.

Probes:
a. **[If yes]:** *What are the reasons you shared equipment? Do you ever feel judged by people when you share equipment? If so, by whom? What do they say/do?*

[If No]: *What are the reasons that you avoid sharing equipment?*

b. Where do you primarily get clean needles? How much do they cost? How easy is it to get to the location? Tell me about any other challenges to getting clean needles?

c. Tell me a little about whether and how you plan ahead to have new syringes and clean injection equipment like filters or cookers?
i. Tell me how you store new syringes? How many new syringes do you usually have on hand? What do you usually use as filters? What do you usually use as cookers? Tell me how you store the filters or cookers?

Risk Behaviors

10. Now I'd like to ask you about your experience with overdosing, which includes if you passed out, turned blue, or stopped breathing from using drugs. Have you ever overdosed? **[If yes]:** Tell me about the most recent time that you overdosed.

Probes:
a. What happened?

b. Where were you?

c. Were you alone or with others? Who?

d. What did people do? Was EMS or 911 called?

e. Were you taken to a hospital? Are people worried about being arrested if 911 is called for an ambulance?

f. Was Narcan (or naloxone) used? If yes, who gave the Narcan/naloxone first?

g. What drug(s) were you using?

11. Tell me about your most significant experience with <u>someone else</u> overdosing? **[If unclear:** In other words, the experience that affected you the most?]

Probes:
a. Where were you?

b. What did people do? What did you do? Was EMS or 911 called?

c. Was Narcan/naloxone used? **[If yes]:** *Who gave the Narcan/naloxone first? Do you currently have Narcan/naloxone with you or at home? If you wanted to get Narcan/naloxone, do you know how to get it?*

d. What drug/drugs were involved?

12. Tell me about anyone else in your family that has had any experience using drugs to get high? Anyone else in your living situation?

Probes:
a. Drug use? Opioid use?

We know that men and women may experience many things differently, including things like friendships and other social relationships, responses to health issues, and so on.

13. Thinking about your experience with opioids, tell me about anything that you feel may be different about your path to drug use because of the fact that you're a woman/man?

Probes:
a. Tell me about women/men (opposite gender) you know who use drugs. How did they start? How do you think their path to using drugs differs from yours?

b. We have been talking how your drug use compares to other women/men (opposite gender). More generally, how does drug use among women compare to drug use among men?

Sexual Partners/Behaviors

Next, I'd like to ask you some questions about sex, your sexual partners, and things like condom use. Again, you can choose not to answer questions if you don't want to.

14. Tell me about any sexual relationships you currently have.

Probes:
a. How many partners do you have? How long have you been involved with these partners?

b. What do you do, if anything, to protect yourself from STDs?

c. How often do you use condoms in these relationships?
i. **[If condoms always used]**: *Tell me the reasons you (your partner) use a condom.*
ii. **[If condoms inconsistently used]**: *Tell me about the reasons when a condom is used versus when one is not used.*
iii. **[If condoms not used]:** *Tell me the reasons that you (your partner) do not use a condom.*

15. Men and women often exchange sex for things like drugs, housing, food, and other things. Tell me about any experiences you have had with exchanging sex (either yourself or a partner)?

Probes:
a. **[If yes]:** *Tell me about the people that you do this with? Are they men, women, or both?*

b. What do you do, if anything, to protect against STDs? Against pregnancy?

c. Is this type of exchange what you would like to do? If not, what makes it difficult to do what you'd like to do?

Interaction with Law Enforcement/Laws and Policies

Now I'd like to ask you some questions about your interactions with police (local police, sheriff deputies, state police, DEA).

16. Tell me about the last time that the police stopped you.

Probes:
a. What were the reasons that they stopped you? Where were you? What were you doing?

b. How did they treat you? What happened in the end?

c. Tell me about any experiences you have had with being beaten by the police?
i. What happened?

d. Tell me about any times you called the police for help? If so: Tell me about the last time you called the police for help. How did they respond? What were the reasons that you called them?
i. How did they treat you? What happened in the end?
ii. How typical is this of the police, sheriffs, or other law enforcement?

e. What do you think about the police, generally?

f. Tell me about any experiences you have had when you needed the police, but didn't call them? What are the reasons that you didn't call?

g. Can you tell me about any experiences in jail?
i. What was/were the charge[s]? How were you treated for withdrawal? Did you get any substance use disorder treatment in jail?
ii. How was the transition after being released, in terms of your drug use? What happened?

Sometimes, state laws and policies just aren't communicated well to people. I'd like to ask you a few questions about state laws and policies related to drug use.

17. Tell me what you know about the state's laws related to possession of drug paraphernalia?

Probes:
a. Do you have any experiences related to these laws?

18. Tell me what you know about the state's laws related to getting or using naloxone (Narcan)? About calling 911 if someone overdoses?

Probes:
a. Do you have any experiences related to these laws?

Services/Healthcare

Now I'd like to talk to you about your experiences with health providers, and other community services. To start, I'd like to ask about how you get healthcare and what your experience has been.

19. Do you have health insurance?

Probes:
a. **[If yes]:** *What kind?*

b. **[If no]:** *What do you do if you're sick or injured?*

20. How do you decide when it's time to go to a health care provider?

21. Where do you usually go when you need health care (hint: private doctor, clinic, ER, etc.)?

Probes:
a. How do you feel about this place? How do you feel about the staff members who work in the health care office? How do you feel about your health care provider?

22. Tell me about your most recent interaction with any doctor or other health care provider.

Probes:
a. When did you go? What led you to see a doctor or health care provider?

b. How did you get there?

c. How did you feel about your experience in the waiting area?

d. How did you feel about the people you interacted with before you saw your provider?

e. How did you feel about the provider? (hint: comfort level, communication style)

f. How, if at all, did the topic of drug use come up?
i. **[If drug use was discussed]:** *How did the conversation go? What topics did you discuss? Did they discuss the possibility of substance use treatment? What did you like about the conversation? What didn't you like about it?*
ii. **[If drug use was not discussed]**: *Would you have wanted to talk with your provider about drugs? What kept you from discussing it? What would you have wanted to say or ask?*

g. Is this typically where you go to seek care? **[If yes, move on. If no]:** *What are the reasons you chose to go this place versus your normal place? How does this differ from your normal place?*

23. Have you ever decided that you needed care, but didn't go? Tell me about the reasons you didn't go.

Probes:
a. Insurance?

b. Transportation?

c. Could not make an appointment?

d. Afraid/concerned about how the doctor would treat you?

24. Where do you usually get your prescriptions filled?

Probes:
a. How do you feel about the pharmacy staff at this place?

25. Tell me about any experiences you have had being tested for HIV, hepatitis, or sexually transmitted diseases (such as chlamydia, syphilis, herpes, gonorrhea, etc.).
[Note: probes a-f should be asked for each separately: Hepatitis, HIV, and other STDs]

Probes:
a. **[If tested]:** *What are the reasons that you got tested? Did you ask for the testing, or was it automatically offered to you?*

b. Where did you get tested? What are the reasons that you went to that specific place?

c. What type of test did they give you? How long did it take? How were you treated by health care providers?

d. Who told you your results? Tell me about any resources or treatment that they connected you to?

e. If you tested positive, have you ever sought treatment from a provider? Tell me about that experience?

f. [**If never tested]:** *Tell me about any thoughts you have had of getting tested. What, if anything, is keeping you from getting tested? What might make it easier for you to seek testing? Have providers ever talked with you about testing?*

g. Have you ever gotten the vaccine for hepatitis B?
i. **[If yes]:** *where were you? Did you request it or did the provider offer it to you?*
ii. **[If no]:** *Tell me how interested you would be in getting the hepatitis B vaccine?*

h. Have you ever gotten the vaccine for hepatitis A?
i. **[If yes]:** *where were you? Did you request it or did the provider offer it to you?*
ii. **[If no]:** *Tell me how interested you would be in getting the hepatitis A vaccine?*

i. Are you aware of HIV PrEP?

i. **[If yes]:** *Would you be interested in using it? Why or why not?*
ii. **[If no]:** *If a daily pill or monthly injection were available that could protect against HIV infection, would you be interested in using it? Why or why not? Would your friends who inject with you be interested?*

26. Tell me about any times you went to a clinic or got treatment that could help you with drug use? (e.g. detox center? recovery center? Primary care office?)

Probes:
a. **[If Yes]:** *Tell me about your experience.*
i. What type of clinic was this? What did they offer—talk therapy, faith-based services, Medication assisted treatment—methadone, etc.? Did options include inpatient or outpatient services? Short-term or long-term services?
ii. Where was this? How far of a drive?
iii. How long ago was this?
iv. How well were you able to get the services you needed?
   i. Did you receive medications (methadone or buprenorphine/suboxone) if you wanted them?
   ii. Were you offered suboxone or methadone? Did you take it? **[If no]:** *What are the reasons you did not take medications??*
v. Have you ever obtained suboxone or methadone from someone other than a provider? Can you tell me more about this? What led to this?

b. Tell me about any times you ***wanted*** *to access a detox center or drug treatment program, but weren't able to. What got in the way?*
i. Insurance?
ii. Transportation?
iii. Hours the center or program was open?
iv. Waitlist/availability?
v. Affordability?
vi. Afraid/concerned about how staff would treat you?

c*. Tell me about any other experiences you have had receiving drug-related services. What kind of clinics or providers did you go to?*

d. Tell me about your interest in accessing methadone or suboxone treatment in the future.
i. **[If interested]:** *Why are you interested? Is there anything that might make it easier for you?*
ii. **[If not interested]:** *What makes you feel that way?*

27. Tell me about any times you got a needle or syringe from a syringe exchange program?

Probes:
a. Tell me about your experiences getting needles or syringes from a syringe exchange program? This could include you going yourself, or getting them from someone who went to a syringe exchange program.
i. **[If getting from someone else]:** *Why didn't you go yourself? Awareness/hours/access/concern about how program staff would treat you?*

b. How did you first hear about it?

c. How often do you use it? How many syringes do you typically turn in and how many can you get?

d. What do you like about it? Tell me about any challenges to using it? What other services do you think it should offer? How could it be made better?

28. Sometimes people can be hurt by people they know, or people they don't know. Have you ever been hurt by someone in your life?

Probes:
a. Have you ever been hurt physically?
b. Have you ever been hurt sexually?

29. Sometimes people feel sad and depressed at times in their life. Have you ever felt this way and gotten help for those feelings?

Probes:
a. Tell me more about this. What led to this?
b. Were you able to successfully get help?

30. What other services would you be interested in receiving?

Probes:
a. What locations would you prefer to go to?

Women with experience with Neonatal Abstinence Syndrome (NAS): I'd like to ask a few questions about your experience with pregnancy and neonatal abstinence syndrome.

31. How did you feel when you first found out that you were pregnant? How did others in your life react? (Hint: health care providers, family, friends)

32. What did you do? Tell me about any attempts you or your partner made to access any help or services?

Probes:
a. When your healthcare provider found out that you were pregnant, what did they do?

b. If you were on an opioid prescription, what did they do about it? If they made changes, did they cut it off immediately, refer you to a clinic to manage your opioid prescription during your pregnancy or make a plan to taper you off?

33. Where did you deliver your baby? What was the experience like? (Hint: treatment by healthcare staff, etc.)

Probes:
a. How did you find out that your child had neonatal abstinence syndrome?

b. How did you feel when you found out? What happened next?

Later we will be conducting a survey on topics similar to what we discussed today. Once, again this will help us to understand drug use in the area and potential ways to help with services. Participants would receive $25 to meet us and complete this survey on a computer provided by us.

34. Is this something you would be interested in participating in?

At this point we are trying to figure out locations that people would be comfortable coming to, to complete the survey.

35. In general, where would you feel comfortable meeting us? Where would others feel comfortable meeting us? Any location we use will allow us to have a private, confidential conversation.

Probes:
a. Would you feel comfortable meeting us at the health department?
b. Would you feel comfortable meeting us at a church?
c. Would you feel comfortable meeting us at a hospital?
d. Would you feel comfortable meeting us at a treatment center?
e. Would you feel comfortable meeting us at the American Legion?

36. In general, what days would be good to meet us, to complete a survey? What general time of day would be good for you?

37. We have talked about many things today. I really appreciate your willingness to share your thoughts. Is there anything else that you feel that I should know or that we haven't covered but you feel is important for us to know?

<u>Conclusion:</u> Thank you so much for talking with me today – we really appreciate it. If you have any concerns, please don't hesitate to reach out at the number provided on the consent form!

Original OHOP Stakeholder Interview Guide (Example: Healthcare Providers)

Interview guide objectives: This interview guide is for key stakeholders, who are healthcare providers. The goal of the interview guide is to gain a better understanding of the context of the opioid epidemic, attitudes toward PWID, perceptions of service organizations, and challenges to service delivery/ideas for improvement.

Intro: Thank you so much for talking with me today. As you know, we're interested in learning more about your experience with the opioid epidemic in your area, so I have a few questions for you. Once again, everything you tell me will be kept confidential and will not be linked to you in any way. Of course, if you have any questions for me as we go through, if anything is unclear, or if you would prefer to skip a question, please don't hesitate to stop me at any point.

Any questions before we begin?

***To keep things consistent, I want to ask first what term you would usually use to describe people who inject drugs. For example: "people who inject drugs," "injection drug users," "injectors," etc. That way, I can use that for the rest of the interview. [Note to interviewer: use whatever language provided in place of "PWID" throughout the guide.]**

1. What services do you/your organization provide? Tell me about what you do on a normal day at work.

Probes:
a. What population/populations do you largely work with? Do you work directly with PWID?

2. How often do you personally interact with PWID?

Probes:
a. Tell me about your most recent interaction.

b. What is it like taking care of people who inject drugs? Has this changed in the past few years? Can you describe how?

c. How does working with PWID differ from working with other clients?

3. Do you know of other organizations that work with PWID?

Probes:
[If more than 5 organizations listed]:
a. What services do these organizations provide?

b. Of these, which would you consider to be the most important key players?

[If less than 5 organizations listed]:
b. How did you learn about them? Do you work with them, or do you know others who work with them? Do you interact with them in any way? Tell me more about this.

c. How do you feel about these interactions?

d. How do you feel about these organizations? Do you think they are effective, or not? What services do you think are helpful? Are there ways in which you think they could be made more effective?

4. From your experience interacting with PWID, what do you think are some of the reasons people might start abusing and injecting drugs?

Probes:
a. How would you describe the typical person who injects drugs?

b. What do you think drives people to start misusing drugs?

c. Where do you think they're getting their drugs from?

5. What kinds of things in your community do you think have caused the increase in drug/opioid abuse?

Probes:
a. Are there any other things that you think might be contributing? E.g. local or state policies, economic conditions, etc.

b. What do people in your community think about the issue, e.g. how much it occurs, why it is occurring in your community, or what the consequences are? Do you think these perceptions are accurate, or not?

6. Do you think that PWID are successfully getting help for drug use in your community?

Probes:
a. Do you think that PWID are getting the treatment or healthcare services that they need? Why or why not?

b. What do you think might make it difficult to get treatment? (i.e., is this a problem with availability of services, or a problem with people being able to access the services that are available?)

7. How would you say your organization has been impacted by the opioid epidemic? How has your typical day changed?

Probes:
a. Over what time period have you noticed any changes? The last year? Several years?

b. How do you think your observations compare with how the opioid epidemic has been seen in the media?

c. What do you think the biggest impact on your work has been?

8. Has the population of people that you see changed over the past 5 years? If so, how?

Probes:
a. Are they getting older or younger? Are there more men, or women?

b. Do they have health insurance?

9. How do you screen for substance use among patients in your practice? What about HCV? HIV?

Probes:
a. Do you have any formal policies in your facility/practice?

b. What would need to be different, to get more people screened/tested?

10. What do you know about HIV and HCV among PWID? What do you think your colleagues know?

Probes:
a. What might help increase awareness among healthcare providers?

11. What happens with patients in your practice who are identified as having an opioid use disorder?

Probes:
a. Do you manage them yourself, or do you refer out? Where?

b. What barriers do you experience in getting them treated for the health problem that they came to see you for? What barriers do you experience in getting them treated for their opioid use?

c. What's the success rate with linking them to specialty care?

d. Are there local options for them?

e. What are your thoughts about offering HCV treatment in your clinic? HIV treatment?

12. Are you comfortable talking to your opioid-using patients about drug use services?

Probes:
a. Would you be comfortable talking about buprenorphine or methadone treatment?

b. Would you be comfortable talking about syringe exchange programs?

c. What other services might you talk about? Why or why not?

d. What makes it difficult to talk about drug use services with your patients? What might make it easier?

There are a lot of different laws and policies about drug use in each different state, and even organizations may not know about all the different laws.

13. How do you find out about laws and policies related to drug use, or changes to laws/policies in Ohio?

Probes:
a. What can you tell me about Ohio's laws/policies about drug possession?
i. About possession of needles or other paraphernalia?
ii. About Good Samaritan laws if someone overdoses?
iii. Other important drug use laws?

b. What do you think about these laws and policies? Are they helpful, or unhelpful?

c. Do you think most other organizations or individuals who interact with PWID have a similar level of understanding of these laws/policies, or not? How do you think they view these laws similarly or differently?

14. Do you interact with the police in the context of drug use?

Probes:
a. How/in what context do you interact with the police?

b. How does this normally go? Give me an example. (How would you describe these interactions?)

c. How would you describe the response of the police to drug use and the opioid epidemic?

15. Have you ever not been able to accommodate a drug user? (E.g., it was out of your skill area, you didn't have time, etc.)

Probes:
a. What was/were the reason(s)?

16. What do you see as the biggest challenges to addressing the epidemic?

Probes:
a. What are some challenges to your organization in particular? (e.g. staffing, resources, time, interactions with other organizations, etc.)

b. How adequately prepared have you felt for working with PWID?

c. What are some challenges to other organizations?

d. What would you like to see/what could be improved? (e.g. organizations interconnected, more resources, etc.)

i. What local resources are available that you think could play a role?

e. Are there community members who oppose or might oppose efforts to address these issues? How do you think they will show their opposition?

17. What do you think your organization could realistically do to address the opioid epidemic?

Probes:

a. What do you think is needed?

b. If there were an effort launched to increase services for PWID, would this be acceptable to your organization? What would be some limitations?

c. Do you currently have the capacity to expand? Would you and others be willing to expand your services, or is that not realistic?

d. What is the overall attitude toward handling the epidemic at your organization? How would you describe it?

18. Can you tell me a little bit about where your organization gets funding for programs, and how that works?

Probes:

a. Tell me about all the different funding streams for programs? When you get funding, is it for very specific programs, or is there flexibility?

b. Let's say that you wanted to develop a program on **[anything mentioned above in 18].** *How would you go about doing that in terms of funding? How would you achieve your program goals?*

c. Taking a step back, how are decisions made about what programs get funded? Who participates in these decisions/positions? How can providers participate?

19. Do you have any other thoughts about the epidemic, or experiences with PWID, that you'd like to share with me?

Conclusion: Thank you so much for talking with me today – we really appreciate it. If you have any concerns, please don't hesitate to reach out at the number provided on the consent form!

PWUD Interview Demographic Survey

1. How old are you?	____ years
2. What is your gender?	____F ____ M ____ Other
3. What is the highest level of education that you've completed?	____less than high school ____high school graduate ____some college ____college graduate
4. What is your employment status?	____employed full time ____employed part time ____day-to-day employment ____unemployed
5. In which Ohio county do you currently live? (adjust to each site)	___ Scioto ___ Pike ___ Jackson ___ Gallia ___ Meigs ___ Vinton ___ Other _____
In the past month, how many days did you **use any drug(s)?**	_____ days
In the past month, how many days did you **inject any drug(s)?**	_____ days
In the past month, how many days did you **use any opioids?**	_____ days
In the past month, how many days did you **inject any opioids?**	_____ days
Have you ever accessed any treatment services for opioid use?	____ yes ____ no ____ don't remember/not sure

Stakeholder Interview Demographic Survey

Demographic Information

1. How old are you?	__ __ years
2. What is your gender	__ $F_{(1)}$ __$M_{(0)}$
3a. What is your current job title?	_____
3b. What is the name of the organization you work for?	_____ _____
4a. How long have you held that specific position?	__ __ years __ __ months (if <1 year)
4b. How long have you been working for this organization?	__ __ years __ __ months (if <1 year)
5. How long have you been doing any work that involves or influences people who use drugs?	__ __ years __ __ months (if <1 year)
6. In which Ohio counties do you currently work? (check all that apply)	__ Jackson __ Pike __ Scioto __ Gallia __ Meigs __ Vinton __ Other(s) _____ _____ _____
7. Do you live in this county?	__ Yes $_{(1)}$ __No$_{(0)}$
7a. If yes: How long have you lived in this county?	__ __ years __ __ months (if <1 year)
7b. If yes: How long have you lived in the southern Ohio?	__ __ years __ __ months (if <1 year)
7c. If no: Which county do you live in?	_____

APPENDIX 3: QUALITATIVE INTERVIEW CODEBOOK

Parent Code	Child Code		Decisional Rules
"Typical Person" Description			Apply to participant's discussion of what the "typical person" is like in their community.
	"Typical Person" Personality		Apply to participant's discussion of the personality of the "typical person" in their community.
	"Typical Person" Lifestyle		Apply to participant's discussion of the lifestyle of the "typical person" in their community.
Regional Description			Apply to any descriptions of the region that don't fall into one of the sub-code categories below.
	Regional Drug Use		Apply to any discussion of drug use generally in the area, including changes in regional drug use trends over time.
	Regional/Appalachian Culture		Apply to any discussion of culture in the general area (southern Ohio), including any explicit references to/descriptions of Appalachian culture.

	Regional Driving Epidemic Event/Force		Apply this code to any discussion of events or forces that precipitate drug use in the region. Can include social, community, and larger environmental forces (e.g., physician overprescribing/pill mills, mental health, loss of indusctry, etc.).
Community Values			Apply when the participant discusses their perceptions of general community values in the region/in their community.
	Value Alignment		Apply when a participant indicates that their personal values align with larger community values.
	Value Disalignment		Apply when a participant indicates that their personal values DO NOT align with larger community values.
	Value Change/Shift		Apply when a participant discusses a change in their personal values over time.
Community Vulnerability			Apply to participant's discussion of who in the community is most vulnerable to harm.
	Positive/Empathetic View of Vulnerable		Apply when participant expresses positive and/or empathetic attitudes/opinions/emotions toward those they describe as vulnerable in their community.
	Negative View of Vulnerable		Apply when participant expresses negative attitudes/opinions/emotions toward those they describe as vulnerable in their community.
Community Power			Apply to participant's discussion of who in the community has the most power.

	Positive/Empathetic View of Powerful		Apply when participant expresses positive and/or empathetic attitudes/opinions/emotions toward those they describe as powerful in their community.
	Negative View of Powerful		Apply when participant expresses negative attitudes/opinions/emotions toward those they describe as powerful in their community.
Victims in Society			Apply to participant's discussion of who they view as the biggest victims in society.
Hurt By Drug Addiction			Apply to participant's discussion of who is harmed most by drug addiction.
Recovery or Harm Reduction Experience			Apply to participant's discussion of their experience with recovery programs or harm reduction programs.
	Counseling		Apply to discussion of counseling for drug use.
	Faith-Based Treatment		Apply to discussion of faith-based treatment programs.
	Medication-Assisted Treatment		Apply to discussion of medication-assisted treatment. Double-code with type below.

		Suboxone	
		Methadone	
		Vivitrol	
	NA/AA Groups		Apply to discussion of NA/AA groups for substance use.
	Syringe Exchange Program		Apply to discussion of syringe exchange programs.
Positive View of Treatment Option			Double code with treatment type if participant mentions a positive view of the treatment/harm reduction type.
Negative View of Treatment Option			Double code with treatment type if participant mentions a negative view of the treatment/harm reduction type.
Neutral/Mixed View of Treatment Option			Double code with treatment type if participant mentions a neutral or mixed view of the treatment/harm reduction type.

Personal Drug Use			Apply when participant discusses personal drug use in a way not covered by subcodes below.
	Genesis of Drug Use		Apply when participant discusses how they started using drugs.
	Fault for Personal Drug Use		Apply when participant discusses who/what they think is to blame for their personal drug use.
Drug Addiction Understanding			Apply when participant discusses their understanding of addiction in a way that is not covered by the subcodes below.
	First Learned About Addiction		Apply when participant discusses how/when they first LEARNED about what drug addiction is.
	Addiction Definition - Own Words		Apply when participant discusses their personal definition/understanding of what drug addiction is.
	Disease Model		Apply to discussion of the disease model of addiction.
	Choice Model		Apply to discussion of the choice model of addiction.
	Moral Failing/Sin Model		Apply to discussion of addiction as a moral failing or sin.

	Change in Drug Addiction Views		Apply to discussion of any change in the participant's (or another person's) views on drug addiction.
View of PWUD			Apply to any views/judgements of PWUD.
	Emotions Toward PWUD		Apply to any discussion of how thinking about PWUD makes the participant feel.
Stigma/Attitudes			Apply this code when participant references OR displays stigma not covered by subcodes.
	Experienced Stigma		Apply when participant discusses stigma that they have experienced (e.g., from a community member, healthcare provider, etc).
	Internalized Stigma		Apply when participant demonstrates internalized stigma surrounding drug use.
	Enacted/intragroup Stigma		Apply when participant expresses stigmatizing views toward other PWUD.
Mental Health/Trauma			Apply this code when participant references mental health OR trauma (physical, sexual, emotional, etc.) in any capacity.

	Mental Health Treatment		Apply this code when participant discusses mental health treatment, apart from barriers and facilitators to treatment.
Religiosity/Religious Beliefs			Apply when participant discusses anything related to religion/religious beliefs (theirs or others).
Jail/Prison			Apply this code whenever participant references jail/prison in the context of drug use.
Acceptance/Inclusion			Apply when participant describes feeling accepted/not judged in any setting.

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