OPIOID AGONIST THERAPY:
MEDICATION BARRIERS AND PREDICTING SUCCESSFUL RETENTION

by

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Bachelor of Arts, Trinity Western University, 2020

Thesis
Submitted in Partial Fulfillment of the Requirements for
the Degree of

MASTER OF ARTS IN COUNSELLING PSYCHOLOGY

in the

FACULTY OF GRADUATE STUDIES

TRINITY WESTERN UNIVERSITY

September 2023

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This project is dedicated to my father, Dave Cappon,
who passed during its completion.

This project is as much mine as it is his.

Without his unwavering, and often unsolicited, advice and encouragement,
I am sure that I would not have the successes I have today.

It is widely contested how to parent a child who is addicted to drugs.
My father met that indescribably difficult challenge with fierce bravery and determination.
He never stopped fighting for my return to him even when that return was deemed hopeless.

It may be cliché to say that your dad is your hero, but mine really did save my life.
His ability to make the worst of circumstances humorous, his persistent positivity, his fierce protection, and his unrelenting faith in me will forever live on within me as my guiding force.

Dad, your love carried me out of the darkest years of my life.
Thank you for always believing in me, even when I had lost all hope.

ACKNOWLEDGMENTS

First and foremost, I want to express my deepest gratitude to my thesis supervisor, Dr. Deepak Mathew. I feel truly honoured to have been guided, encouraged, and critiqued by you. Your dedication to your students is truly a blessing to all those who have the privilege of learning from you. I recognize that my clinical and research supervision demanded more time than most. Thank you for your unwavering professionalism and positivity. Your presence throughout my journey has helped me believe that my dreams are possible, regardless of the circumstances that I thought would surely hinder them. I would also like to thank my research committee for your knowledge, insights, and commitment to this project.

My appreciation and thanks are extended to other mentors and collaborators. Dr. Janelle Kwee, I recognize that without your equitable attitude and acceptance, I may have never received the opportunity to follow my academic dreams. Dr. Larissa Rossen, thank you for setting such a beautiful example of womanhood in academia. I am so grateful for your encouragement and care throughout this process. Ron Prasad, thank you for dedicating your life to helping those who suffer from addiction. Your allyship is a gift to all of us who have the honour of encountering you. To the research assistants who helped make this project possible, thank you for your time and feedback. Thank you to everyone who provided me with support throughout this project, there are many of you.

I would also like to express my appreciation for receiving funding for this project. Opioid Agonist Therapy: Medication Barriers and Predicting Successful Retention is supported in part by funding from the Social Sciences and Humanities Research Council. Thank you for believing in the importance of this topic and selecting my project to receive the funding that helped turn my vision into a reality.

I would also like to thank my mother, Bonnie Cappon, and father, Dave Cappon. I believe that being the parents of a drug addicted child is one of the most difficult realities to endure. Thank you for loving me through my years of drug addiction. Thank you for never giving up on me. Thank you for standing beside me, even when I wasn't standing beside you. Thank you for the many sacrifices that you made that allowed me to follow my dreams. Your love is the reason that I believed that I could do anything, even when the world told me no.

Finally, I would like to thank all of the participants who took part in this project. This project would not have been possible without your generous and altruistic donation of time, knowledge, and experience.

To those who share the pains of addiction.

Let our tears, hurt, and struggles bring us closer together in our pursuit of recovery and survival for our friends, family, loved ones, others, and selves.

— Liahnna Stanley

ABSTRACT

Canada is currently experiencing an opioid crisis of an unprecedented magnitude. Opioid agonist therapy (OAT) medications are the first-line intervention for opioid use disorder. Despite global efforts to increase retention, only a fraction of individuals with opioid use disorder access OAT, and the majority of those who do drop out of treatment. This mixed method project sought to identify factors that are relevant to OAT retention decisions from the subjective perspectives of individuals utilizing OAT and to test those factors as predicative of successful retention. The qualitative study resulted in fourteen factors that were perceived as influencing retention. A binary logistic regression was conducted and the final model, arrived at through purposeful selection, predicted successful retention over and above the intercept only model. Experiences of stigma, attitudes toward OAT and opioid cravings were found to be significant predictors. Attitudes toward OAT modified the effects of cravings on retention success.

Keywords: opioid agonist therapy, medications for opioid use disorder, medication-assisted treatment, opioid substitution treatment, predictors of retention, buprenorphine, methadone

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CHAPTER 1: INTRODUCTION

Due to the overwhelming and continuously growing rates of opioid overdose deaths in British Columbia (BC), Canada, this project emerged to illuminate the experiences of individuals who are seeking treatment for opioid addiction. There is an urgent practical necessity to further our understanding of opioid use disorder (OUD) treatment to better inform future interventions. The primary treatment for opioid use disorder is opioid agonist therapy (OAT) (Irvine et al., 2019). Although several types of OAT medications exist, this project focuses on methadone and buprenorphine, which are the two most prescribed medications in BC (British Columbia Centre on Substance Use [BCCSU], 2017). According to Socías et al. (2020) long-term engagement with OAT is associated with reduced mortality and suffering for people with OUD. Despite the well documented benefits of OAT, access and retention rates are extremely low. Barriers associated with retention in OAT are considered multifactorial and wide spanning (Socías et al., 2020).

Research has found limited associations between certain factors (age, substance use, dosage, legal issues, and attitudes toward the medication) and OAT retention rates (O'Connor et al., 2020). A better understanding of relevant retention factors is crucial to facilitate meaningful opioid addiction treatment. Many calls have been made to evaluate the effectiveness of OAT. These calls have been met with health system performance studies, which offer only population-level information regarding engagement in treatment (Socías et al., 2020). Through the biopsychosocial model framework employed in this study, a complex interaction of factors is considered to influence OAT retention decision-making.

In contrast to the limited-access OAT programs predominantly found in Canada (Christie et al., 2013), some low-threshold OAT programs have shown extremely high treatment retention

rates (Christie et al., 2013; Marks et al., 2020). The low-threshold structure of these programs differs dramatically from the typical limited access OAT programs in that they are easily accessible and do not emphasize a need to control the service utilizer. It is unclear what specific factors within such programs may contribute to the high OAT retention outcomes. After one low-threshold OAT demonstration project (Marks et al., 2020), participants were asked what experiential factors from the program contributed to their high OAT retention outcomes. Two factors emerged, across participants, as influential on their decisions to continue their retention in treatment. Those two factors (Marks et al., 2020) were the philosophy of the program (collaborative health care relations with unconditional positive regard) and social cohesion (bonds of care, acceptance, and mutual support amongst participants). This project further investigates these two factors as potential predictors of successful OAT retention.

The current project aimed to capture critical factors that were able to predict successful OAT retention through an emergent sequential exploratory mixed method design. To reach this aim this project first employed a qualitative exploration of what factors help and hinder OAT retention decisions from the perspectives of individuals who are currently utilizing OAT for opioid addiction and who had previously dropped out of treatment. The factors that emerged from this inquiry, the Marks et al. (2020) qualitative factors that were found to be associated with OAT retention (social cohesion and health care experience), and the O'Connor (2020) OAT retention prediction factors were then analyzed as predictors of successful OAT retention in a binary logistic regression model.

Opioid Crisis Development

This section discusses the evolution of opioid use and the current state of opioids in BC, Canada. The opium poppy, or Papaver somniferum, has been used for its ability to produce a

feeling of euphoria since as early as 5,000 years ago. Opium pharmaceuticals, like morphine, are intended for pain relief and have been considered essential medicines by the World Health Organization since 1977 (WHO, 1977). Opioid drugs bind to and activate opioid receptors in the brain. This action triggers a signal to release dopamine, which causes a feeling of euphoria (O'Connor, 2022). Heroin was originally introduced to the world as a form of treatment for morphine addiction. The use of heroin and the invention of the hypodermic needle set the stage for opioid addiction to become a major health crisis worldwide (Smith & Passik, 2008).

When a person continuously uses opioids, their opioid receptors become less responsive; this process is called building a tolerance. When tolerance occurs, individuals will typically consume greater quantitates of opioids trying to activate the mesolimbic reward system and release dopamine (O'Connor, 2022). Once tolerance is developed, discontinuing opioid use causes withdrawal symptoms. OUD is characterized as a chronic relapsing problematic pattern of opioid use leading to clinically significant impairment or distress (O'Connor, 2022).

When an individual consumes too much of an opioid the result is breathing difficulties, unconsciousness, or death. The term opioid refers to both pharmaceutical drugs and illicit drugs that act on opioid receptors in the brain. As stated in DeWeerdt (2019), when opioid pharmaceuticals were developed, the pharmaceutical companies aggressively promoted their products, intentionally downplaying the associated risk of addiction and death. The belief that opioids were only addictive when used recreationally and the intense pharmaceutical campaigning contributed to a major surge in opioid prescriptions.

The province of BC has been the epicentre of a continuing opioid crisis since April of 2016 when a provincial health emergency was declared (Irvine et al., 2019). In 2015, there were 12,263 overdose ambulance calls in BC. This number has steadily increased yearly with 2021

having 35,525 calls (BC Emergency Health Services, 2022). The opioid overdose death toll is so high in BC that it is considered the main cause of 0.38 years lost in life expectancy of the population (BCCSU, 2019). Changes to prescription opioids and the introduction of highly potent synthetic opioids (fentanyl and carfentanil) into the illicit drug supply are considered the primary causes of the opioid crisis in Canada (Irvine et al., 2019). Attempts to relieve the opioid crisis toll have been primarily pharmacological, with efforts aimed at increasing OAT access and utilization. This project is centred out of BC. The qualitative Phase 1 study gathered data primarily from Canada. The quantitative Phase 2 study gathered data primarily from The United States of America (USA) and Canada.

OAT as a Harm Reduction Approach

This section describes opioid agonist medications and their delivery in Canada. OAT medications are considered a harm reduction treatment. They are intended to prevent withdrawal symptoms and reduce cravings for opioid drugs. They are considered the first-line treatment for OUD and are available by prescription (Irvine et al., 2019). Notably, OAT medications are opioids themselves. Methadone and buprenorphine are long-acting opioids that replace shorter-acting illicit opioids. OAT has been shown to supress illicit opioid use, improve mental and physical well-being, and reduce mortality (O'Connor et al., 2020). The public health response to the opioid overdose crisis has been largely focused on increasing OAT access and retention (Irvine et al., 2019).

Harm reduction refers to policies, programs, and practices that intend to minimize negative health and the social impacts of drug use. Harm reduction is a public heath approach that enables safe drug use by providing support to individuals using drugs (O'Connor, 2022). Treatment goals in harm reduction models range from abstinence to reduced drug use (Marks et

al., 2020). Harm reduction approaches have been met with heavy opposition from the addiction treatment community, political parties, and society at large. Supporters of harm reduction propose that, for individuals who cannot or will not stop drug use, the best outcome is safer drug use (O'Connor, 2022). In contrast to other countries that continue to struggle with the harm reduction approach, "the Canadian Government officially adopted harm reduction as the framework for their National Drug Strategy in 1987" (O'Connor, 2022, p. 29; see also Government of Canada, n.d.).

As stated in Eibl et al. (2017), OAT is accessible in three primary settings in Canada. The three settings OAT is available at in Canada are (a) provincially funded addictions programming clinics that have coordinated inclusion of other services (doctors, counsellors, pharmacists, social workers, and case managers), (b) doctors' offices that have limited capacity to provide comprehensive care, where physicians receive fee-for-service compensation, and (c) federal and provincial corrections facilities. OAT ingestion is typically observed, meaning that someone watches as the patient ingests the medication. Observation is intended to ensure that OAT is consumed by the person it is prescribed for and not diverted (given away or sold). After a stabilization period, where dosing is increased to reach the correct dosage, people are eligible to receive take-home doses, although this privilege is dependent on numerous factors (Eibl et al., 2017).

There are two main OAT medications. The BC guidelines for prescribing (BCSSU, 2017) recommend buprenorphine/naloxone (common brand name Suboxone) as the first-line medication for OUD. Methadone is the recommended second-line treatment. Both medications are opioid agonists, with methadone being a full opioid agonist and buprenorphine being a partial opioid agonist. Both medications are habit forming and controlled substances with the potential

for misuse (Eibl et al., 2017). Participants in this project included individuals utilizing either methadone or buprenorphine. Notably, buprenorphine and methadone can be prescribed for reasons other than opioid addiction. This project focuses on participants who self-identify as having opioid addiction as their reason for OAT utilization. In an effort to synthesize research and practice, a cascade of care framework has been adopted by OUD researchers and practitioners. The next section positions this project within an OUD cascade of care framework.

Opioid Use Disorder Cascade of Care Framework

After over a decade of successful management of HIV, the HIV field created a framework for public health called the HIV cascade of care, which monitors progress across treatment settings and across different populations (Williams et al., 2019). Thereafter, this cascade of care framework was adapted and applied to other medical disorders. Due to the intensifying opioid epidemic, there have been calls to develop and utilize such measures to allow for improvement and tracking of quality care and to identify the best used practices (Williams et al., 2018).

According to Williams et al. (2022), the cascade of care framework tracks individual clients and populations through the sequential stages associated with improving clinical outcomes and system-level outcomes. It allows for measurement of patient flow through care systems and helps identify process breakdowns that are often missed by single outcome measures. Developing a common understanding of care domains will aid comparative analyses to identify current shortcomings and inconsistencies in care.

Adopting a cascade of care framework could provide many benefits including guiding "improvement of accreditation standards for treatment programs, data collection and reporting, treatment planning and monitoring of key targets, and implementations of strategies to improve

outcomes and reduce opioid overdose mortality" (Williams et al., 2018, p. 3). Further, this framework could identify the current gaps in the care process for individuals with OUD and bring to light meaningful tools for goal setting, progress measurement, treatment resources, and increase the use of evidence-based care processes (Williams et al., 2018).

The OUD cascade of care model, as proposed by Williams et al. (2019) has four interrelated domains that regard all persons who have, or are at risk of having, OUD. The four domains are (a) prevention, (b) identification, (c) treatment, and (d) recovery. This project is situated within the treatment domain. It is widely acknowledged that among people with OUD, successful OAT initiation and retention are milestones found to have the greatest impact on lowering risk of mortality (Williams et al., 2019). Research has consistently shown that many patients who receive OAT only do so for 30 to 60 days, falling way below the minimum threshold thought necessary to sustain benefit, 6 to 12 months (Williams et al., 2019).

The treatment domain in the OUD cascade of care model has four stages. The four stages are (a) engagement in care, (b) OAT initiation (administered OAT at least once), (c) retention (continue for over 180 days), and (d) remission is reached once the person no longer meets past-year criteria for OUD (Williams et al., 2019). Utilizing the OUD cascade of care framework will be beneficial through a united model utilized by clinicians, researchers, and policymakers. In support of this framework, this project positions itself within the treatment dimension of care, aiming to uncover and analyze barriers to retention that can predict retention outcomes. Williams et al. (2019) suggests several pressing research questions that can help move the field forward. Among them are "identifying barriers to treatment engagement and retention" (Williams et al., 2019, p. 16). This project aims to discover factors that can predict retention outcomes.

Project Purpose and Significance

This project emerged in response to the puzzling reality of opioid misuse and treatment in Canada. In an effort to mitigate the overdose death toll, access to OAT has become increasingly easier. However, only a fraction of people who have OUD ever access OAT and more than half who do drop out of treatment. Although there exists a large body of research that investigates opioid addiction recovery and related phenomenon, the widespread implementation of long-term medication assisted recovery calls for efforts to be aimed at understanding opioid addiction recovery within this context.

The current literature has only been able to identify limited associations between certain factors and OAT retention rates. This project intends to answer the call to evaluate engagement in OAT treatment (Socías et al., 2020). Most studies that intended to answer this call have done so through population-level quantitative means. This modality is limited to theories imposed by researchers prior to analysis. In contrast, some studies have answered this call through subjective qualitative exploration. This modality is limited in its ability to generalize to the larger OAT utilizing community. The current project is founded on the belief that it is necessary to ask the afflicted population about their experiences in order to formulate useful lines of inquiry. Further, proposing that identifying factors from real experiences, and then testing those factors as influential on retention outcomes in a larger population, will result in the most useful interventions for those afflicted.

Therefore, the purpose of this project is twofold; first, to identify factors that help and hinder OAT retention from the subjective perspectives of individuals who are currently accessing OAT and second, to test those factors as predicative of OAT retention success in the larger opioid addicted population. This project utilizes a biopsychosocial framework (Engel, 1977). The

OAT biomedical model, without psychosocial considerations, addresses the physiological level of functioning in isolation. This project allows for subjective factors to emerge as relevant to OAT retention and as such, is inclusive of multiple domains that may contribute to retention decisions. This multiple domain approach is aligned with a counselling psychology perspective in that it takes a holistic client-centred approach to understanding OAT retention barriers and considers the psychosocial context in which individuals function as relevant to treatment outcomes.

This project extends our understanding of opioid addiction treatment by identifying factors that influence OAT retention. The findings from this project encompass both individual-level and population-level experiences with OAT, which could inform counselling clinicians and OAT prescribing physicians on factors relevant for best practices. This project is also expected to inform policymakers about the needs of OAT utilizers. This project uncovers uninvestigated OAT experiences that if targeted could increase retention rates. In doing so, these findings contribute to the ongoing theory development that is underpinning responses to the overdose epidemic.

CHAPTER 2: LITERATURE REVIEW

This chapter discusses the literature on OAT and retention. First, the shift in OAT treatment from a detoxification model to a long-term maintenance model is outlined. Second, the current state of OAT retention success is discussed. Third, the theoretical approach employed in this project is described. Fourth, OAT retention and factors associated with retention are presented. Fifth, low-threshold OAT programs are described in contrast to the predominant biopsychosocial OAT treatment model employed in Canada. In conclusion, there is a summary of this project and the research questions being pursued.

Detoxification and Maintenance Treatments

This section describes the two different OAT treatment schedules. According to Rettig and Yarmolinsky (1995), methadone was approved, first, in the USA by the Food and Drug Administration in 1947. Methadone was found to have similar effects to morphine but was potentially longer acting. Clinical research discovered that methadone could be used to help opiate withdrawal syndrome by substituting methadone for morphine and tapering the dose down over a 7-to-10-day period. Although methadone was originally intended to be a short-term withdrawal medication, in 1965 it was discovered that long-term methadone utilization was useful for treating heroin addiction. Therefore, there are two types of OAT treatment schedules: detoxification and maintenance. Detoxification involves use of OAT as a substitute for a narcotic drug while decreasing the doses to a drug free state. Detoxification withdraws a person who is dependent on opioids from the use of opioids. OAT maintenance involves using OAT, at a relatively stable dose, for a long period of time to maintain the physiological state produced by addiction and thus, prevents the person from going into opioid withdrawal at a physiological level (Rettig & Yarmolinsky, 1995).

The BCCSU is responsible for the education and training pathway for prescribing OAT in BC (BCCSU, 2017). In 2017, the BCCSU released a comprehensive guideline manual for the clinical management of OUD. The BCCSU strongly recommends against withdrawal management (detoxification), even though some patients express a preference for it. Whenever possible long term opioid agonist treatments should be given over opioid detoxification treatment (BCCSU, 2017, p. 33).

Although methadone effectively reduces withdrawal symptoms, studies show that when methadone is used for detoxification, most people return opioid use (Amato et al., 2013; Luty, 2003). Clinical trials show return to illicit opioid use rates ranging from 53.1% to 66.7% at one month, and 61.1% to 89.2% at six months after methadone tapers (BCCSU, 2017; Kleber et al., 1985; Tennant et al., 1975). Likewise, most individuals who detox using buprenorphine/naloxone will return to opioid use after the taper has ended (BCCSU, 2017, p. 19). The BCCSU (2017) guide states that once patients are stabilized, if they continue to request a taper off opioids, tapers can occur slowly under close supervision, while receiving ongoing addiction care, which includes re-initiation of OAT if return to opioid use occurs. When designing taper schedules, the taper should last 12 months or longer (BCCSU, 2017, p. 33). According to the BCCSU (2017) manual,

> Withdrawal management alone is not an effective treatment for opioid use disorder, and offering this as a standalone option to patients is neither sufficient nor appropriate. Rates of dropout and relapse to opioid use are high, regardless of treatment modality used. Furthermore, the risk of serious harms, including fatal and non-fatal overdose and HIV and hepatitis C transmission, are higher for individuals who have recently completed withdrawal management compared to individuals who receive no treatment. (p. 19)

Pharmaceutical treatments for addiction disorders have an unpleasant history. New drugs are commonly announced as breakthroughs in treatment that are later found to create problems themselves. These have historically included alcohol, opium, morphine, cocaine, cannabis, barbiturate and non-barbiturate sedatives, amphetamines and other psychostimulants, LSD, and tranquilizers (White, 2009). The shift in OAT, from a short-term detoxification medication to a long-term maintenance medication, conflicts with many people's beliefs about addiction recovery (Renner, 2012). Individuals who are committed to abstinence-based recovery models have argued that the ongoing use of opioid medication is incompatible with real addiction recovery and perpetuates pathological reliance on drugs (Renner, 2012*).* Considering the current long-term conceptualization of OAT and the current focus, in research and practice, to increase retention rates (Socías et al., 2020), questions arise as to the consequences of utilizing OAT on patients' biopsychosocial lives. It is essential to understand the experiences of individuals trying to recover from opioid addiction while utilizing OAT, to understand what factors are contributing to unsuccessful retention decisions.

Maintenance Therapy

Since the shift from a detoxification model to a maintenance model, a key indicator of treatment success is continued OAT retention (O'Connor, 2022). The benefits of OAT are believed to become more distinctive over time (Marks et al., 2020). This section outlines the current state of long-term OAT utilization, since long-term use is suggested as the best OUD treatment (BCCSU, 2017). Despite actions to increase retention, rates of retention are extremely low. It is estimated that in most settings less than 30% of people with OUD utilize OAT, and less than 50% of those who do utilize it remain in treatment for more than six months (Socías et al., 2020).

The length of time (retention) individuals should remain on OAT is controversial (Kleber, 2007). Although individuals do better on it than those who stop, there is heavy political opposition to maintenance medications, which produces problems with opening clinical sites, economic support, and social opposition (Kleber, 2007). Maintenance medication is often viewed as perpetuating addiction or being immoral. There is no optimal OAT retention time, each patient's needs should be assessed individually (BCCSU, 2017; Kleber, 2007). OAT treatment goals and schedules are ambiguous. Some individuals want to lower their dose rapidly and become abstinent from all drugs (detoxification) while others want to reduce illicit drug use through a maintenance OAT schedule (Bojko et al., 2016). Misaligned OAT expectations and goals, between medical providers and clients, make utilizing OAT difficult (Bojko et al., 2016).

Despite OAT retention being regarded as an important outcome measure, there is no clear consensus over what constitutes retention in research literature (O'Connor et al., 2020). A large body of research has used retention as the primary outcome measure at a variety of follow up periods. Due to the ambiguous nature of retention in the literature comparing retention influences across studies is difficult (O'Connor et al., 2020). In health outcome research, long-term treatment is considered retention greater than six months and has been associated with better health outcomes (O'Connor et al., 2020). This project uses twelve months or longer OAT retention as a criterion for the successfully retained treatment outcome variable in the Phase 2 study.

Biopsychosocial Theoretical Approach

In this project illness and wellness is conceptualized through the biopsychosocial model framework. The biopsychosocial model (Engel, 1977) was created as an alternative to a reductionistic biomedical model. The biomedical model conceptualized body and mind as

separate, where somatic symptoms were understood in isolation from psychological and social factors. Engel proposed that people's psychosocial factors contribute to the manifestation of an illness and contribute to their treatment response. Engel (1977) states,

> To provide a basis for understanding the determinants of disease and arriving at rational treatments and patterns of health care, a medical model must also take into account the patient, the social context in which he lives, and the complementary system devised by society to deal with the disruptive effects of illness, that is, the physician role and the health care system. This requires a biopsychosocial model. (p. 132)

Engel (1977) outlines hierarchical interconnected levels in which an individual exists, with each level being distinct but also influenced by other levels. For all chronic diseases, like substance addiction, The WHO has recommended care that addresses health across a continuum of biological, psychological, social, and spiritual needs (WHO, 2015). The biopsychosocial model hypothesizes that addiction treatment cannot be viewed narrowly, it must consider biopsychosocial factors in combination over time.

The goal of OAT is typically to move individuals toward abstinence but many stay on OAT for long periods of time, sometimes indefinitely. Within a biopsychosocial framework, OAT addresses the physiological level of functioning by continued (after illicit drug use ceases) medication-assisted activation of opioid receptors in the brain. Viewing OAT as the answer to OUD in isolation, as a medication without psychosocial considerations, represents a return to the reductionistic biomedical approach to health and wellness. The biopsychosocial perspective proposes a multitude of factors as potentially relevant barriers to treatment.

Paradoxically, the predominant OAT treatment model in Canada is regarded as a biopsychosocial approach. Although this project conceptualizes OAT retention factors through a

biopsychosocial framework, it is necessary to distinguish this project's use of the model from the biopsychosocial OAT treatment model. The biopsychosocial OAT treatment model requires a biopsychosocial assessment of clients. This assessment includes medical history, family history, information about client's social situation (supports and stressors), a physical examination that attends to signs of opioid use (needle tracks, abscesses, etc.), urine drug screening, an extensive laboratory assessment, documentation of all communication between client, prescriber, and physician, and documented treatment goals and plans that is signed by the participant (College of Physicians and Surgeons of British Columbia [CPSBC], 2014).

The biopsychosocial OAT treatment model requires the forementioned biopsychosocial assessment of stability to determine if clients will be granted take-home dose privileges. One requirement for assessment of biopsychosocial stability (CPSBC, 2014) is that "patients should have demonstrated social, cognitive and emotional stability as confirmed by attending all scheduled appointments, no missed doses, improved social relationships or returning to work or school" (p. 22). Although this OAT treatment framework considers biopsychosocial factors in relation to treatment decisions, it does not appear to offer treatment in psychosocial realms. It appears the framework presented as a biopsychosocial treatment approach only offers biomedical treatment while assessing for the presence of psychosocial wellness factors to make decisions about such treatment. This project focuses on literature from outside the biopsychosocial OAT treatment approach to inform its inquiry. The biopsychosocial model of illness and wellness utilized in this project is that proposed by Engel (1977). In the context of this project, the biopsychosocial model serves as a framework for identifying the multicontextual factors that may be influencing OAT retention at any given time.

Retention Factors Research

This section outlines the current research findings on factors associated with OAT retention outcomes. When considering research that examines OAT retention, research that examines OAT drop out must also be included. Staying in treatment and dropping out of treatment are inseparable phenomenon (O'Connor et al., 2020). O'Connor et al. (2020) performed a systematic review of randomized controlled trials (RCTs) and observational cohort studies that reported on retention rates and factors associated with retention in OAT (methadone or buprenorphine). The review included 67 studies (four RCTs and 63 observational cohort studies; $N = 294,592$), which all assessed factors associated with OAT retention or dropout. The median retention rate was approximately 58% (19.1%–86%) at six months, 57% (11.7%–94%) at one year and decreased to 38.4% (13.7%–82%) at three years (O'Connor et al., 2020). The aim of their study was to identify both protective factors that support retention in OAT and risk factors for dropout.

Synthesis of results was difficult, due to the heterogeneous nature of studies (treatment setting, type of OAT, risk factor assessment, outcome measures, and duration of follow up). O'Connor et al. (2020) found limited evidence to support the influence of several factors on retention. Specifically, age, substance use, type of OAT, legal issues, and attitudes toward OAT were the main factors found to be associated with OAT retention.

Increasing age was associated with increased retention in 26 of 43 studies (O'Connor et al., 2020). Substance use, especially cocaine and heroin, were found to have a negative impact on OAT retention. Amphetamine use was also found to have a negative impact on OAT retention (O'Connor et al., 2020). In methadone prescribed participants, higher dosages were consistently observed to be protective. There were mixed results regarding dosage in buprenorphine studies. Notably, two of three methadone studies found that take home privileges were associated with

increased retention (O'Connor et al., 2020). Current and previous legal issues was investigated in 17 studies, 11 studies showed reduced retention associated with criminal activity (O'Connor et al., 2020). Age and current legal issues are investigated as potentially relevant predictor variables in the current project by their inclusion in the Phase 2 quantitative study variable selection procedure.

O'Connor et al. (2020) found that positive attitudes toward OAT were associated with increased retention in five of six studies. This finding is of particular interest to this project, due to its relation to the shift in OAT from a detoxification program to a long-term maintenance treatment. Research shows that clients and staff in OAT programs hold abstinent clients in a positive regard (i.e., seen as independent, effective, and prosocial). In contrast, clients and staff view OAT utilizing clients as passive and antisocial (Brown et al., 1975; Kayman et al., 2006). Negative attitudes toward OAT held by others may cause individuals accessing OAT to feel excluded and incapable of assimilating into conventional society (Radcliffe & Stevens, 2008).

Negative attitudes toward OAT held by OAT utilizers themselves may influence their treatment trajectory. Kayman et al. (2006) conducted the first study that investigated clients' attitudes toward methadone in relation to their treatment retention. Kayman et al. (2006) had participants in a New York hospital-affiliated methadone program (N = 338) take a survey regarding their opinions about methadone and then tracked participation in the methadone program over the course of a year. They found that negative attitudes toward methadone at the time of treatment admission predicted termination within one year of enrollment (Kayman et al., 2006). Frank (2011) suggests that OAT clients internalize abstinence/morality-based addiction recovery ideology which contributes to the poor retention rates and poor reputation of OAT. For many who access OAT, there is an interpersonal struggle around the compatibility of utilizing

OAT as a maintenance medication and their beliefs in abstinence-based addiction recovery (Ronel et al., 2011). In the current project, attitudes about OAT are considered as a potentially meaningful predictor variable in the Phase 2 quantitative study's variable selection procedure.

Another factor that has been explored in association with OAT retention is employment, but the findings are mixed. O'Connor et al. (2020) systematic review found five of 16 studies showing an association between employment and increased OAT retention. In contrast, some research shows the opposite to be true, with employment being associated with decreased retention. Socías et al. (2020) conducted an analysis of OAT retention trajectories in Vancouver, BC, Canada. They drew data from two ongoing prospective cohort studies of people who use illegal drugs ($N = 438$). They analyzed potential predictors of OAT retention for four retention trajectories (consistently high, consistently low, increasing, and decreasing). This study took place in the location of the current project. Their potential predictors included age, sex, race, HIV serostatus, history of mental illness, substance use patterns, recent overdose, unmet health or social service needs, homelessness, employment, and incarceration. Being employed was found to be the only cross-cutting predictor of consistently low OAT retention (Socías et al., 2020).

Socías et al. (2020) suggests that the necessity to attend pharmacies for supervised dosing may interfere with employment schedules, making it difficult to remain employed or gain employment while utilizing OAT. Employment may also be related to low OAT retention due to medical coverage in BC (Socías et al., 2020). Employed individuals are typically not eligible for income assistance or other provincial drug plans providing free access to OAT medications (Socías et al., 2020). Thus, in regions that only offer free OAT access to low-income individuals, employment may be a predictor of low retention. Employment in the current project is

considered as a potentially meaningful predictor variable by including it in the Phase 2 quantitative study's variable selection procedure.

Low-Threshold OAT Programs

In contrast to the OAT treatment model predominately utilized in Canada (Christie et al., 2013), low-threshold programs are designed to reduce barriers to entry, be patient-centred, and take a nonpunitive approach to drug use (Marks et al., 2020). This section will discuss two programs that adhered to low-threshold OAT treatment philosophy.

In Saint John, New Brunswick, Canada, a low-threshold/high-tolerance methadone clinic was evaluated for its treatment retention (Christie et al., 2013). The program was low-threshold because it allowed open client referrals (any source including self-referral), minimized intake assessments, and only required a basic psychosocial evaluation for admittance (Christie et al., 2013). The program was high-tolerance because they did not mandate counselling, urine tests were scheduled and not random, and they had no involuntary discharge policy relating to drug use. Thus, the results of the drug tests did not affect the client's ability to remain in treatment (Christie et al., 2013). There were 179 participants in the program initially and 95% ($N = 170$) were still retained after one year (Christie et al., 2013).

Marks et al. (2020) established the first OAT demonstration project in Durban, South Africa. The demonstration was designed as an advocacy tool, intending to showcase the quality-of-life improvement amongst low-income heroin users when utilizing OAT. They provided methadone to 54 participants over an 18-month period. The project was designed to be low threshold, there was little expectations on participants (few biological screenings, acceptance of poly-drug use, no psychosocial requirements, and easy access to take-home doses). When

participants missed 30 consecutive doses they were considered as dropped out of the program but encouraged to re-join.

The Durban program by Marks et al. (2020) also resulted in high OAT retention rates. Retention at six months was 81%, with significant reduction in heroin use and significant improvements in mental health. Retention at one year was 74%, with significant improvements in participants quality of life. They conducted qualitative inquiry to explore the factors underlying the high retention and to develop recommendations for policy development and OAT program structure. Qualitative inquiry included interviews, focus groups, discussions, oral histories, and ethnographic observations which all involved the participants of the program. These findings are of particular interest to this project, as they have the potential to offer qualitative insight into the individual decision-making factors that contributed to high OAT retention rates, which is aligned with the goals of the Phase 1 study in this project. The two most important retention factors identified as associated to OAT retention success, by the participants, were the philosophy and architecture of the project (healthcare experience) and social cohesion (Marks et al., 2020). In the next sections, these factors are explored in relation to the Durban program and to other programs.

Health Care Experience. When a patient seeks medical care, they typically interact with physicians and other health care workers. This section describes the experience of health care in relation to OAT retention outcomes.

***Durban Program*.** Marks et al. (2020) states that the philosophic and programmatic architecture of their project was aimed at attracting participants through meeting their needs and by empowering people to make well-informed conscious decisions about their drug use. Staff (a physician, nurse, social worker, and a counsellor) interacted with participants with unconditional

positive regard and collaboration. Participants expressed that being able to set their own goals and feeling free of judgment encouraged them to return daily (Marks et al., 2020). One theme that emerged was the importance of having a non-judgmental space to talk freely about drug related behavior. Participants reported the lack of condemnation for drug use allowed for them to interact honestly with staff and each other. This openness was viewed as key to their desire to participate and spend time with other clients and staff (Marks et al., 200). One participant (Marks et al., 2020) stated,

> I think for most of us, this is the first time we have been treated as human beings. We have always been discarded by society. In this OST [opioid agonist therapy] project, we do not feel looked down upon. We have been able to start to respect ourselves and feel positive about our futures. We also feel free to be honest about what is happening in our lives, even if we are using. This is different from other rehabs I have been to where you are expected to be clean. (p. 6)

Other OAT Programs. OAT clinics are unlike other healthcare facilities in that they offer little to no patient confidentiality (Anstice et al., 2009). People accessing OAT have reported feeling humiliation, shame, and embarrassment about dosing in public (Anstice et al., 2009). Institutional stigma has been commonly reported in methadone programs, where negative attitudes and beliefs toward methadone are reflected in organization's policies, practices, or cultures (Anstice et al., 2009; Harris et al., 2012). People accessing OAT report hearing condescending or distrusting remarks from pharmacists and other health care workers (Harris et al., 2012).

Cooper and Nielsen's (2017) review of stigma during pharmaceutical opioid treatment states that the relationship between clients and health care workers appears to be influential on

treatment outcomes. Individuals report appreciating pharmacists who accommodate their needs and commented negatively about being patronised and treated with suspicion. Individuals who attend pharmacies for non-OAT reasons stated that they wanted the "normal" people separated from the "drug-takers" in the pharmacy, so they did not have to be exposed to such people. In qualitative interviews with OAT participants, methadone clinics were described as stigmatizing, with staff sitting behind bullet proof glass. OAT participants also described the relationship between themselves and health care providers as "social control" where a power imbalance is evident when medical staff enforce strict rules such as those requiring random urine tests.

Madden et al. (2021) also conducted a systematic review of stigma toward OAT. They concluded that OAT utilizers experience related stigma from healthcare providers, peers utilizing OAT, the general public, and that stigma is embedded in policy. Policies regarding prescribing regulations, such as supervised consumption, reinforce existing stigmatizing beliefs about opioid addicted individuals and are not necessary for effective treatment (Pasman, 2022). Yarborough et al. (2016) concluded that the desire to avoid OAT methadone clinics due to associated stigma is a major theme in participants decision to switch from methadone to buprenorphine, which typically requires less pharmacy attendance. Woo et al. (2017) concluded that stigma resulted in participants reluctance to continue OAT.

Individuals accessing OAT experience unique social difficulties due to these stigma and attitudes regarding OAT. Despite findings that professionals and recovery communities are shifting their attitudes toward OAT, the topic still provokes strong reactions amongst professionals, in recovery circles, and influences public debate (White, 2007). In many countries, where OAT has been made available, the delivery of OAT is often regimented and authoritarian and typically takes place in medical settings (Marks et al., 2020). The existence of OAT within a

socially turbulent and strict medical environment raises questions as to the consequences of such factors on treatment outcomes. Despite research into general factors associated with OAT retention, there is little evaluation of individual sense-making around the attractiveness or appropriateness of OAT (Marks et al., 2020).

Social Cohesion. When an individual seeks recovery from a substance use disorder, they typically interact with peers who are also seeking recovery. This section describes the experience of social cohesion in relation to OAT retention outcomes.

***Durban Program*.** Marks et al. (2020) found social cohesion to be the other most important factor for keeping participants retained in treatment. The participants grew bonds of care, acceptance, and mutual support. Although the participants varied greatly in demographic factors and in treatment goals, they reported a feeling of unity that was crucial for them staying in the program (Marks et al., 2020). Through joint activities, group sessions, and engaging in volunteer work together bonds were formed and reinforced. Marks et al. (2020) states, "they had all suffered the consequences of social exclusion and the project provided a refuge from this" (p. 7). Participants described a mutual connectedness and sense of belonging that enforced their treatment retention. A public health specialist named Michael Wilson observed the program in Durban (Marks et al., 2020) and stated,

> I realised this community is really unique in ways that I hadn't seen before … There is a sense of deep respect and transparency and camaraderie among participants. There is an eagerness to see each other be the best. There's a spirit of sharing, whether its water from the fountain, cigarette, or food money. There is a desire to volunteer and to make their community into a better place, and there's a sincere interest in each other and in each other's goals. They're using the community they built with one another, the knowledge

> that they've acquired, and the confidence that they've built, as a real launching pad to achieve truly honourable and significant life goals. (p. 7)

Other OAT Programs. Some research has examined cohesion in recovery communities, linking cohesion to satisfaction and self-efficacy (Marks et al., 2020). Literature is sparce that speaks specifically to social cohesion within OAT programs. Social cohesion has not been investigated as an explanatory factor for OAT retention rates (Marks et al., 2020). Perceived peer support was investigated as a predictor of methadone treatment dropout. In contrast to the finding in Marks et al. (2020), that peer support increased treatment participation, Sarasvita et al. (2012) found that perceived peer support increased the likelihood of treatment dropout.

Drawing from general recovery community social cohesion literature, Ronel et al. (2011) noted that there is a sense of group coherence and belonging in recovery communities. This belonging and coherence is helpful when facing stigma from non-addicted populations and can be adopted into methadone maintenance groups (Ronel et al., 2011).

However, individuals who access OAT embark in a unique transition compared to most individuals who enter drug addiction recovery and become abstinent. People utilizing OAT transition from illicit opioid dependence to licit opioid dependence (Doukas, 2011). Monico et al. (2015) found that one of the primary issues with individuals accessing OAT's engagement in recovery communities is the members view that the medication means the individual is still using drugs and is treated as such. Thus, social cohesion amongst peers in recovery communities is more challenging for individuals who utilize OAT.

Social considerations relevant to OAT retention expand past healthcare experiences and peer relationships. Zhou and Zhuang (2014) systematic review of methadone maintenance treatment in mainland China concluded that five studies found individuals with better family support to be

retained in methadone treatment longer. Likewise, a qualitative study that interviewed 14 OAT service users and eight OAT service providers, explored facilitators of treatment retention concluding that social support was a meaningful facilitator (O'Connor, 2022).

One objective of the current project is to further explore the findings from Marks et al. (2020) by investigating social cohesion and health care relationships as predictors of OAT retention. This objective was met by adding these factors as potentially meaningful predictor variables in the Phase 2 quantitative study's variable selection procedure.

Medication Factors

The unique process of accessing OAT raises other questions relevant to this project. Specifically, how does the unique OAT utilizing process influence retention? Individuals accessing OAT differ from individuals who recover from opioid addiction without utilizing it in that they have to navigate the additional challenges that come with taking the medication. In this regard, access to the medication, OAT program requirements, physical effects of the medication, and physical effects of continued opioid receptor activation become important to consider.

Access to the medication itself is well documented as an issue. Demand for OAT continues to exceed supply and prescribing resources in the USA and Canada (Davis & Carr, 2019; Eibl et al., 2017). Utilization of OAT usually involves strict requirements, individuals are often required to visit a clinic daily to participate in witnessed consumption and provide frequent urine specimens (Russel et al., 2022). After some time, OAT utilizers are typically granted gradual take-home OAT doses (carries). In Canada and the USA, it usually takes more than eight months to a year for an OAT utilizer to be provided one week's worth of take-home OAT medication (Russel et al., 2022). Strict program requirements and limited access options are a significant

barrier to OAT utilization. All of Canada and the United States are in still in desperate need of expanded access to OAT (Davis & Carr, 2019; Eibl et al., 2017; Irvine et al., 2019).

Utilizing OAT comes with considerable physical considerations. The main reason for utilizing OAT is that it aids with withdrawal symptom severity and cravings for opioids (Mattick et al., 2009; 2014). However, utilizing OAT does not stop the withdrawal craving addiction cycle. Individuals utilizing OAT must take their medication at specific intervals to avoid opioid withdrawal and cravings. Fareed et al. (2010) conducted a literature review investigating the effects of methadone on cravings for opioids. Of the 16 articles included, seven studies reported methadone as reducing cravings, four reported continued risk of cravings, one study reported increased cravings, and four studies reported a neutral effect on cravings. Tsui et al. (2014) found that craving for opioids significantly predicted return to illicit opioid use among a cohort of patients treated with buprenorphine.

Individuals utilizing OAT often experience side effects such as perspiration, sensations of cold, akathisia, headaches, drowsiness, dysphoria, tiredness, dizziness, obstipation, nausea, diarrhea, euphoria, and vomiting (Peddicord et al., 2015; Soyka et al., 2008). Soyka et al. (2008) found that intensity of withdrawal symptoms was strongly correlated with drop out of treatment for both methadone and buprenorphine groups. However, side effects were not associated with drop out for either group.

Considering the unique context of accessing maintenance medication while striving for freedom from active addiction, quality of life becomes an important consideration. Some research shows that long term OAT utilization is associated with improvements in health-related quality of life (Mitchell et al., 2015; Nosyk et al., 2015). Studies that investigated quality of life

over six months of methadone treatment (Chou et al., 2013; Padaiga et al., 2007; Rouhani et al., 2012) all found that quality of life improved in various domains over the course of treatment.

The current study sought to further investigate the influence of medication related factors. This aim was met by adding access to OAT, withdrawal symptoms, cravings for opioids, side effects, and quality of life as potentially meaningful predictor variables in the Phase 2 quantitative study's variable selection procedure.

Chapter Summary and Research Questions

Medication for addiction recovery has been controversial for decades. OAT was initially developed as a short-term detoxification medication. Short-term OAT detoxification models showed little success. The dominant model for OAT has shifted to a long-term maintenance model. As a maintenance medication, OAT is intended to maintain the physiological states produced by opioid addiction long term. The shift in delivery models represents a subsequent shift in associated ideology and practice. However, there is heavy political, moral, and cultural opposition to the maintenance approach which has hindered the scale-up of OAT (Marks et al., 2020).

When considering the long-term implementation of OAT in the context of pervasive social stigma and negative attitudes toward OAT, questions arise regarding how retention rates are affected by conflicting messages and beliefs. A better understanding of the factors that are barriers to individuals' retaining OAT successfully is crucial for the future of opioid addiction treatment. There has been little critical analysis of the sense-making that individuals attribute to the attractiveness or unattractiveness of OAT (Marks et al., 2020). There have been numerous calls to monitor and evaluate the effectiveness of OAT, which have been met by health system performance studies. Although valuable from a public health perspective, most of these offer

only population-level data regarding engagement. These methods are limited in their ability to capture the individual level motives of engagement and disengagement (Socías et al., 2020).

This project conceptualizes OAT retention through a biopsychosocial framework, looking at all components of an individual's experience as potentially influential on their OAT decisions. This project proposes retention factors of interest by drawing from population-level studies and qualitative research. The population-level studies propose employment, attitudes towards OAT, OAT type, substance use, age, and current legal issues as relevant barriers to OAT retention. The qualitative study (Marks et al. 2020) concluded that program participants regarded social cohesion and collaborative healthcare relationships as integral to their decisions to continue OAT (successful retention). Thus, social cohesion and collaborative healthcare relationships are also proposed as potentially meaningful predictors of interest in relation to successful retention rates in the current project. To my knowledge, no current research analyzes healthcare relationships as a predictor of OAT retention. This project also proposes medication related factors as factors of interest. Access to OAT, withdrawal symptoms, cravings for opioids, side effects, and quality of life are proposed as potentially meaningful predictors of interest in relation to successful retention rates in the current project.

Predictors of interest were further identified through qualitative semi-structured interviews with participants who were utilizing OAT for opioid addiction and who had a prior treatment drop out incident. Participants were asked to reflect on factors that they perceive as hindering their retention and factors they perceive as helpful to their retention. The research question posed was what helps and what hinders individuals desire to retain OAT treatment? Analysis of these interviews followed the Enhanced Critical Incident Technique (ECIT) protocol, which allowed for critical factors to emerge as relevant across participant experiences. This

design allowed for unanticipated factors to emerge as critical barriers to OAT retention. It is apparent from the low initiation rates, high dropout rates, and continuously rising incidents of overdoses and deaths, that current OAT programs need improvement. Qualitative inquiry allows for an in-depth understanding of current OAT utilization experiences and how those experiences relate to retention decisions.

Based on the emergent factors, a logistical regression model was formulated with the dichotomous outcome variable being OAT retention. The OAT retention variable has two groups, (1) successful retention (greater than twelve months), and (2) unsuccessful retention (less than four months with prior dropout incident). The research question posed is, can the factors explored in this study predict successful OAT retention? The mixed method approach employed is an emergent sequential exploratory design, where qualitative data is collected and analyzed first, followed by quantitative data. The qualitative findings were used to help inform the model development for the quantitative inquiry. The next chapter outlines all the methods utilized in this project in detail.

This project sought to further our understanding of OAT retention by illuminating the experiences of individuals who utilize it and analyzing those experiences as predictors of retention. This project will contribute to the ongoing theoretical development that is underpinning opioid addiction treatment, exploring the reasons behind low retention in OAT programs. These findings could aid health professionals and social service providers in facilitating meaningful care for individuals with opioid addiction issues.

CHAPTER 3: RESEARCH METHODS

This chapter first, outlines my philosophical worldview in application to this project. I operate from the belief that one's worldview impacts their decisions throughout the research process. Second, a personal statement about this project is offered. Third, the overarching project research design is summarized. Fourth, the participant selection criteria and recruitment procedures are stated. This project employed a mixed method sequential exploratory design. Therefore, the fifth and sixth sections outline the Phase 1 (qualitative) and Phase 2 (quantitative) studies respectively. Each phase's section outlines the utilized method, data collection procedures, analytic process, and sample description. In conclusion, ethical considerations are discussed.

Research Paradigm: Philosophical Worldview

Guba (1990) described a worldview as "a basic set of beliefs that guide action" (p. 17). My intention here is to describe the core characteristics of my worldview and how they influenced my research approach. I identify myself as a pragmatist. The philosopher John Dewey was a founder of pragmatist philosophy, and he promoted pragmatist beliefs by conceptualizing human experience through two inseparable questions (Morgan, 2014): what are the sources of our beliefs? And what are the meanings of our actions? The answers to these questions are cyclical in that, the origins of our beliefs arise from our previous actions and the sources and outcomes of our actions are founded in our beliefs (Morgan, 2014). Pragmatists believe that there is no boundary between life and research. Research is simply a conscious effort to effectively respond to problematic situations (Morgan, 2014).

Although Dewey's philosophy aimed to synthesize the dualism between realism and idealism, a pragmatist research approach does not seek to synthesize the distinction between

post-positivist and constructivist paradigms. Instead, pragmatists recognize the value in both paradigms and their ability to produce different approaches to research (Morgan, 2014). Pragmatists concern themselves with solving practical problems in the world, without limiting themselves to a choice between postpositivist and constructivist philosophical beliefs (Feilzer, 2010). The application of pragmatist assumptions does not require a particular research method or methods mix; nothing is excluded as a possibility. Simply, pragmatist thinking aims to interrogate a particular topic with the most appropriate method (Feilzer, 2010).

Having identified myself as a pragmatist researcher, I will now discuss this stance in relation to this project. I approached this project with the real-world question, why are people not retaining OAT long-term? I did not intend to investigate OAT in the biomedical sense nor its utility for treating OUD. OAT is well established as the first line treatment for OUD (Irvine et al., 2019). My research question is positioned around why it is not being commonly retained by people with opioid addiction challenges. My project is seeking to understand why people utilizing OAT make retention decisions.

Due to the low population level OAT retention rates, my question is intended to be answered at a population level, not just an individual one. This means that the question I'm posing here is, are there common factors contributing to low OAT retention (longevity) within the opioid addicted population? To answer this question, I utilize both quantitative and qualitative methods. Pragmatists do not concern themselves with the quantitative/qualitative divide, they suggest the most important question is if the research approach can help the researcher find out what they want to know (Feilzer, 2010). In this project, I acknowledge the value in both approaches. I employ qualitative inquiry to help develop a model regarding OAT retention decisions. I also use past quantitative findings and past qualitative findings to inform

the emergent model. In this project the question that is answered through qualitative inquiry is what helps and what hinders individuals desire to retain OAT treatment? Then, through quantitative means, factors are tested for their ability to categorize participants into their respective successful or unsuccessfully retained groups. The question that is answered through quantitative means is do the identified variables predict successful OAT retention?

I intended to find common factors, across participants, to answer the population level question of what factors are contributing to OAT retention outcomes. Thus, I operate from post-positivist assumptions in both phases of this project (qualitative and quantitative). This post-positivist stance allowed for the pursuit of regularities and patterns at the population level. In doing so, I proposed that participants' unique experiences are not the entire focus of this project. Instead, I focused on experiences that are both individual and common. Due to the inconsistency and gaps in current literature on OAT retention barriers and facilitators, it was necessary to first identify constructs before testing them. The research design I employed is exploratory sequential mixed method, which allowed for outcomes from the qualitative phase to be used as variables for the following quantitative phase (Feilzer, 2010).

Post-Positivist Paradigm Assumptions

My pragmatist approach to my research question led me to believe that operating from post-positivist assumptions would work best. The goal of post-positivist research is inherently to gather explanations that lead to prediction and control of a phenomenon (Ponterotto, 2005). This is achieved through emphasizing cause-effect linkages in one objective reality shared by participants, thus, producing generalizable findings. For the first phase (qualitative) of this project, my post-positivist position is characterized by attempts to minimize researcher subjectivity to minimize influence on the perceptions, beliefs, and experiences of the

participants. As stated in Mathew (2019), contextual influence on participants experiences is acknowledged but the aim is to understand their experiences as clearly as possible. Epistemologically, the quest for objectivity is demonstrated through establishing rigour in data collection and analysis procedures (Mathew, 2019). Strict adherence to an interview guide and credibility checks shows the valuing of objectivity, matching post-positivist assumptions. The second phase of this project (quantitative) also adheres to post positivist assumptions through its method.

Personal Statement of Researcher Position

Although this project attempts to limit researcher bias, I believe it is necessary to disclose my personal position to provide some context for the reader. My decision to do so is well supported by my pragmatist research position, which asserts that there is direct continuity between life and research. Although my personal feelings and opinions were prevented, as much as possible, from influencing the research process, they have been influential in my decision to conduct research on this topic.

There are normative processes associated with designing research. We review literature, find gaps, and create studies in the pursuit of unknown truths. If we are honest with ourselves, we must admit that the guiding motive for research inquiry is birthed in the hearts and minds of those conducting the research. Why do we choose specific topics? Why do some researchers spend their careers searching for answers to one seemingly impossible question? For me, that answer is found in my personal journey, long before my research one.

The development of this project was deeply informed by my own personal experiences, both as a recovered drug addict and as a person who has loved ones in active addiction. I am intimately familiar with the hopelessness and despair that accompanies drug addiction. I have

cried the desperate plea for redemption that comes from the mouth of someone who believes their life is irreparable. I was fortunate enough that my plea was met by well-informed and well-intentioned people who showed me a path to both recovery from active addiction and peace in my internal world.

This project was largely birthed from my desire to answer the pleas of others who struggle with addiction, with meaningful and useful information. I became a member of the drug addiction recovery community long before maintenance medications, such as OAT, were commonplace. Since OAT's uptake, I have witnessed a subsequent disruption in the unity of the recovery community. A discussion of the philosophical tension between maintenance medication and traditional recovery beliefs is well outside the scope of this report. I will not attempt to discuss that debate here except to state that I position myself directly in the middle of it.

I live with the familiar guilt associated with being recovered when so many of my people remain in active addiction. I have lost innumerable friends and clients to opioid overdoses. I have desperately searched for nonexistent words to comfort the grieving mothers, fathers, sisters, brothers, and friends of those who have lost their lives to addiction. I have responded to countless overdoses, each time praying for God's grace after administering naloxone to lifeless bodies. I am no stranger to the bleak and futile war of addiction.

I believe wholeheartedly in the holistic healing power of abstinence-based recovery, and I understand that we, as addicts, need all the aid possible as we continue to lose so many lives. It has been my observation that OAT utilization is characterized by an endless stop and restart cycle. I know people who utilized OAT long term and live happy and fulfilling lives, but these people are largely in the minority. I have sat in recovery meetings where individuals utilizing OAT are so intoxicated from their OAT medication that they are, literally, falling on the floor. I

have consoled friends who are seeking freedom from addiction while feeling imprisoned by an opioid agonist medication that they believe is tarnishing their quality of life. All this to say, I do not hold a personal position for or against OAT as a long-term medication. Instead, I assert myself in the position of supporting treatments that help individuals meet their personal goals.

Although this project does not require this disclosure of my addict identity, my decision to do so is well described by Nouwen (1972): "His service will not be perceived as authentic unless it comes from a heart wounded by the suffering about which he speaks" (p. xvi). Since the day I left active addiction, my subsequent personal and professional decisions have largely been fuelled by the desire to help others who struggle with the same affliction. My journey is well described by Linehan (2020),

> There and then I made a vow to God that I would get myself out of hell and that, once I did, I would go back into hell and get others out. That vow has guided and controlled most of my life since then. At that point, I didn't know what I would have to do to fulfill that vow. But I was determined. (p. 73)

This project is intended to be an investigation into OAT from addicts' perspectives for addicts' futures. My hope is to communicate our experiences with OAT so that those in positions of power can make informed decisions that will shape our futures in effective ways.

Research Design

This study utilized a mixed method approach with both qualitative and quantitative research methods. Within the context of my research, the method followed the question. Little is known about the barriers that influence OAT retention decisions. Employing a qualitative approach allowed for an exploratory investigation into factors that influence OAT decision-making and for subsequent conceptual development. My choice of qualitative method allowed

for unanticipated factors to emerge as critical to OAT retention across participant experiences. The quantitative phase allowed for further investigation of those factors as meaningful by their ability to predict successful OAT retention, within the general opioid addicted population. Notably, in addition to the qualitative factors found in Phase 1, identified factors from current literature were also investigated as potentially meaningful predictors of successful OAT retention.

Informed by Hanson et al. (2005), this project employed a sequential exploratory mixed method design. Sequential exploratory mixed method is characterized by collecting and analyzing qualitative data first, followed by quantitative data. This project began with qualitative semi-structured interviews that were then analyzed to produce resulting themes. The resulting themes were then used to inform variables of interest for the quantitative Phase 2 survey study. After variables were selected and measurement scales selected and created, surveys were used to collect data which was analyzed using statistical analysis. Qualitative data was collected first in my project because it informed the quantitative design. My project's design is emergent, meaning that the results from the qualitative study informed the model construction variables for the quantitative study. This design is useful for exploring relationships when the study variables are not known and for testing an emerging theory (Hanson et al., 2005). The next section outlines the participant selection and recruitment procedures. The two following sections outline the procedures and analysis for both Phase 1 (qualitative) and Phase 2 (quantitative) of this project respectively.

Participants

To be included in the Phase 1 qualitative study of this project participants had to be currently accessing OAT (methadone or buprenorphine) and self-report as having an opioid

addiction. Participants had to report having a minimum of one experience, during their OAT utilizing history, where they had dropped out of treatment less than six months after initiation. Participants had to be nineteen years old or older. Prior to being interviewed, all participants were asked six screening questions to which they had to respond yes to in order to participate. The questions were: (1) are you nineteen years or older? (2) are you currently taking OAT? (3) have you ever started taking OAT and then stopped prior to six months retention? (4) are you willing to talk about your experiences? (5) do you identify as having opioid addiction issues? And (6) are you able to correspond over email for one follow-up interview in the next four to nine months? The final qualitative study included 19 participants.

The Phase 2 quantitative study of this project included participants that fit two separate criteria for the successfully and unsuccessfully retained outcome variable groups. The successfully retained group includes participants who were currently accessing OAT (methadone or buprenorphine) and self-reported as having an opioid addiction. Participants had to report having been retained in OAT for twelve months or longer and be nineteen years old or older. Participants in the unsuccessfully retained group had to report dropping out of OAT treatment within four months prior to survey completion time. The time frame for the unsuccessfully retained group was determined by participant availability. Participants in this group also had to self-report as having an opioid addiction and be nineteen years old or older.

Three screening questions were asked prior to survey completion and had to be answered "yes" in order to proceed with the survey. The questions were: (1) are you nineteen years old or older? (2) do you identify as having opioid addiction issues? And (3) do you belong to one of the following two groups? (group 1: currently taking OAT and have been taking OAT without

stopping for a year or longer or group 2: recently stopped taking OAT). The final quantitative study included 273 participants.

Participant Recruitment

Participants were recruited using advertisements on social media addiction recovery forums. Searches were conducted on Facebook and Reddit for subgroups that included any of the keywords: recovery, methadone, Suboxone, Sublocade, medication assisted recovery, opioid agonist, heroin, opiates, and addiction recovery. Moderators and group facilitators were contacted and asked for permission to post recruitment posters. A snowball sampling process was employed, asking individuals if they knew anyone else who would be interested in the study.

Phase 1 and Phase 2 advertisements differed. The Phase 1 advertisement noted that OAT utilizing participants were being sought for a study and that participation involved one semi-structured 90-minute (approximate) interview and one follow up email correspondence interview. See Phase 1 advertisement (Appendix A). The Phase 2 advertisement noted that OAT utilizing participants were being sought for an online survey that would take approximately 25 minutes to complete. See Phase 2 advertisement (Appendix B). In all recruitment and informed consent procedures participants were reminded that they are being asked about their OAT medication decisions and experiences. They were asked not to participate if they did not have the characteristics mentioned in the inclusion criteria listed above. In addition, participants were reminded that their responses are confidential and anonymous and that they can end their participation at any time. All participants in Phase 1 received a $25 CAD Amazon e-gift card. Participants in Phase 2 had the option to enter a draw for one of three $25 CAD Amazon e-gift cards.

Phase 1: Qualitative Research Method

The purpose of this study was to explore what factors help individuals desire to retain OAT and what factors hinder such a desire. ECIT is an exploratory qualitative method that best answers questions regarding what helps or hinders a specific experience or activity (Butterfield et al., 2005; 2009). A secondary reason for choosing ECIT is that it aligned well with post-positivist research assumptions (McDaniel et al., 2020). ECIT allowed for critical factors to emerge as relevant across participant experiences, requiring some degree of shared experience with applicable factors. That is, common factors influencing OAT retention is the focus. The research question posed was what helps and what hinders individuals desire to retain OAT treatment?

Qualitative Phase 1: Research Design

In 1954, John Flanagan created the critical incident technique (CIT) which was later developed into ECIT (Butterfield et al., 2009). There is currently some debate over ECIT being a method versus a methodology. A method consists of techniques, procedures, or tools for research (McDaniel et al., 2020). In contrast, a methodology is the study, the description, the explanation, and the justification of methods but not the method itself (McDaniel et al., 2020). Thus, methodologies include the assumptions and principles that underpin the approach taken to inquiry (Schwandt, 2014) and justify the methods used in the study. According to these definitions, ECIT is a method. It proposes detailed techniques, procedures, and tools to conduct research (McDaniel et al., 2020). CIT as a qualitative method has its own distinctive features as it focuses on critical events, it originated from industrial and organizational psychology, data collection is primarily done through interviews, data analysis is conducted by determining the frame of reference and then forming categories from the data which are then evaluated for

specificity or generality of categories, and the narration is formulated around categories with operational definitions and self-descriptive titles (Butterfield et al., 2005, p. 483)

In this study I acknowledge the influence of interviewer effects and attempted to control for them. ECIT's credibility checks control for bias, look for uniform fidelity to increase robustness and transferability, minimize differences in perception between researchers, strengthen scope of knowledge through saturation, evaluate the degree to which participants' voices have been articulated with ramifications for the validity of truth in the analysis, control for researcher subjectivity, check results against expert knowledge, and make judgments on validity based on previous research (McDaniel et al., 2020). Quotes provided from participants in the rhetorical structure are aimed at judging their influence on the observation of an objective truth (McDaniel et al., 2020).

ECIT Study Steps and Methodological Procedure

This section explains the procedure, data collection, and analytic process of ECIT. The ECIT protocol consists of Flanagan's (1954) original five step CIT method with the addition of nine credibility checks and two interview guide questions (contextual and wish list items). This section also outlines the detailed procedures used in the current study discussed in relation to the five forementioned steps.

Step One. After the researcher has clearly identified the area of interest, created a research question, and decided that CIT is the best method, the first step of CIT is to determine the general aims of the activity of interest (Butterfield et al., 2009). To understand the general aims of the activity, Butterfield et al. (2005) stated two questions the researcher should answer: "(1) what is the objective of the activity; and (2) what is the person expected to accomplish who engages in the activity?" (p. 478).

In this study the activity was to explore the process of OAT retention decision-making among individuals accessing the medication for opioid addiction. This was achieved by exploring factors that they believed helped and hindered their OAT retention decision-making. This aim provided a frame of reference to identify characteristics specific to the activity, which was supported by participants reporting factors that related to this aim through their subjective perception.

In regard to critical incident questions, participants were asked, (1) What things have hindered you from staying on OAT? (2) What things have helped you stay on OAT? (3) Are there things that would have helped you stay on OAT in the past that were not available to you? And (4) are there things that would help you stay on OAT in the future if they became available?

Step Two. During the second step, the researcher makes plans and sets specifications. Butterfield et al. (2005) describes this process as defining the types of situations that will be observed, determining the situations relevance to the general aim of the study, understanding the extent of the effect of the incident on that general aim, and deciding who will make observations (Butterfield et al., 2005, p. 478). During this step, researchers decide what they are observing and asking, create an interview guide, train people, and determine the intentions of their questions (Butterfield et al., 2009).

In this study making plans and setting specification was achieved through creating an interview guide. See first contact screening script (Appendix C), informed consent form (Appendix D), and the ECIT interview guide (Appendix E). This guide specifies how information was collected and the relevance of observations to the aim of the study.

Step Three. After step two, data is collected via interviews. The interviewer answers any participant questions and obtains informed consent. The interviewer should be able to establish a

working relationship, effectively probe, ask questions, and allow participants to disclose contextual content. During the interview, it is crucial that the interview guide be followed so that the CIT data is gathered. “One important objective of CIT interviewing is to explore the same content areas at the same level of detail with all participants” (Butterfield at al., 2009, p. 270). Exhaustiveness/saturation is reached when “participants mention no new critical incidents or wish list items and no new categories are needed to describe the incidents” (Butterfield et al., 2009, p. 270). Once exhaustiveness is achieved, enough participants have been interviewed.

In this study, data was collected over video conference and through email. Participants received a summary of the interview questions after screening, prior to the initial interview. The initial semi-structured interview was audio recorded and conducted by the principal investigator over video conference. The interviews lasted approximately 60–90 minutes and aimed to obtain a description of what helped and hindered participants desire to access OAT. This interview strictly followed the interview guide. The interview process included informed consent procedures followed by asking the participant a contextual question, “what does good OAT treatment mean to you?” The contextual question was intended to help participants orient themselves to the aim of the study. The interviewer followed the interview guide, while asking for clarification and elaboration on factors that emerged during the process. The interviewer sought examples of critical incidents and wish list items. The interview concluded with demographic questions. The interviewer kept a running log of incidents as they were collected. Categories were created through grouping similar incidents. As the interviews proceeded, incidents were placed into existing categories or new ones were created. Data collection continued until all newly emerging incidents fit into existing categories and no new categories were needed.

The second period of data collection was the follow up email interview. Participants were sent an email by the principal investigator which allowed them to confirm, correct, and clarify the categories found by the researcher during analysis. This email follow up is further explained in the Credibility Check Seven section below.

Step Four. After interviews are complete, step four involves analyzing the data gathered. Transcripts of all interviews are created, raw data is organized, critical incidents and wish list items are extracted, and categories are created to describe the data. Interpretation of data involves three stages, "(a) determining the frame of reference, (b) forming the categories, and (c) determining the level of generality or specificity to be used in reporting the data" (Butterfield et al., 2009, p. 267).

To organize the raw data, transcripts are separated into segments and a highlighting color scheme is chosen by the researcher for identifying different components of the interview. First, the researcher identifies critical incidents and wish list items by highlighting with the chosen color "any text that appears to be a helping critical incident that is supported by examples that describe the incident along with its importance or impact on the participant as it relates to the frame of reference of the study" (Butterfield et al., 2009, p. 271). Any items that the participant did not describe the context and/or importance for, the researcher notes down to follow up with the participant in the follow up email interview.

The researcher then creates categories informed by the purpose for which the data was collected. Helping critical incidents are extracted and the researcher identifies patterns, themes, similarities, or differences (Butterfield et al., 2009). A new document is created that consists of the categories formed. After all the helping incidents have been placed into categories, the process repeats for hindering incidents and then for wish list items. This whole process repeats

for each transcript of the study. Notably, 25% of participants need to identify incidents that fit into a certain category, which is the minimum participant rate standard set by Borgen and Amundson (1984) to establish a viable category. The process of category creation, merging categories, and splitting categories continues until the critical incidents and wish list items from 90% of the transcripts have been put into categories and the category creation appears to be completed. Afterward, the titles of categories are finalized, and an operational definition is constructed for each category (Butterfield et al., 2009). The final step in creating categories is testing for exhaustiveness by placing the critical incidents and wish list items from the remaining 10% of the interviews into the developed categories. Typically, new categories won't need to be created and no changes to existing categories will need to be made. Step four is completed once all categories and operational definitions are created.

In this study, data analysis was accomplished through organization of the raw data into critical incidents and wish list items. The interviews were audio-recorded, transcribed verbatim, and stored using an encrypted external storage device. Critical incidents and wish list items were extracted from transcripts. Categories established during data collection were assessed for fit. During category assessment, patterns, themes, similarities, and differences were identified (Butterfield et al., 2009). A new document was created that detailed the categories formed. Each transcript was evaluated and helping, hindering, and wish list items were placed into categories for 90% of the transcripts. At this stage, 14 categories were constructed. Participation rates were calculated and the minimum 25% (Borgen & Amundson, 1984) participation rate for each category to be feasible was met. The categories were then finalized and operational definitions for all 14 categories were constructed based on participant comments. To finalize step four,

exhaustiveness testing was conducted through placing the critical incidents and wish list items from the remaining 10% of interviews into the developed categories (Butterfield et al., 2009).

Step Five. After analyzing the data, step five involves the researcher interpreting the data and reporting the results. It is in this step that the nine credibility checks forementioned are utilized to gain confidence in the credibility and trustworthiness of results. First, interviews are audiotaped, and the researcher works directly from the transcripts of those tapes to ensure accuracy. Second, interview fidelity is established having an expert in CIT research listen to every third or fourth interview. During this check the expert makes sure the interviewer is following the established protocols for robustness of findings. Ensuring that the CIT method is followed, the interviewer is not leading or prompting the participant, and that the interview guide is followed.

Another person, other than the person who originally extracted critical incidents and wish list items, then extracts incidents and wish list items independently. It is suggested that 25% of the transcripts are analyzed by the independent individual. The purpose of this is for the independent person to compare their extracted critical incident and wish list items to the main researchers' findings. This procedure helps eliminate subjectivity of the researcher in the reported results. Fourth, as forementioned, exhaustiveness is checked by interviewing enough participants that no new wish list or critical incident categories emerge.

The fifth credibility check is participation rates. Participant rates are calculated by counting the number of participants in each category and dividing by the total number of participants. This rate is then reported in the results. The sixth credibility check is placing incidents into categories by an independent judge. Like the third credibility check, another person besides the main researcher places 25% of the critical incident and wish list items into

categories and compares the match between their placements and that of the researcher. It is suggested that a match rate of 80% or higher is used as a guideline for this check (Andersson & Nilsson, 1964). This check helps eliminate researcher bias in categorizing of incidents.

The seventh check takes with the participants when the researcher presents the findings and the participants can confirm the critical incidents, wish list items, and categories created. The participant is asked to review the lists and answer questions regarding their position on the findings. The eighth credibility check is seeking out two or more experts in the field to gain their opinions on the categories that have been created (Butterfield et al., 2009). The final credibility check involves theoretical agreement. Theoretical agreement has two parts; (1) communicating and reporting the assumptions underlying the study, and (2) comparing the emergent categories with relevant scholarly literature (Butterfield et al., 2009). The final part of step five is to report the results by publishing the thesis and articles or presenting the results at scholarly conferences. In this study, the nine credibility checks forementioned, introduced by Butterfield et al. (2009) were employed.

Credibility Check One. This study ensured accuracy of participant reports by utilizing direct words and phrases the participants noted. Transcripts of participant's interviews allowed for retaining accuracy of their statements. The participants were provided an opportunity to confirm whether their incidents matched the categories created in the second email interview. In this study all interviews were audio recorded and transcribed. Transcripts were double checked for accuracy by comparing them with their audio recordings. This credibility check is intended to ensure accuracy and prevent the researcher from providing their own subjective account of participant statements (Mathew, 2019).

Credibility Check Two. This study ensured data was collected in accordance with the ECIT method by having two researchers listen to one interview and read two transcripts. This check ensures that the interviewer is not asking leading questions or making inferences that deviate from ECIT protocol. The feedback from both researchers was that the interviewer was consistent in keeping with the method and following the interview guide. The researchers noted that the interviewer prompted the participant at times with statements such as "you didn't know people that were on it before that, or you hadn't heard of it?" and "did you ever miss school or miss something because of side effects?" These types of probes were only utilized to help participants share examples and not to elicit incidents themselves.

Credibility Check Three. This study asked a person familiar with ECIT to extract critical incidents for 25% of the transcripts. This check is intended to ensure that the selection of critical incidents is not influenced by the researcher's subjective judgment. The concordance rate of identification of incidents between the primary researcher and the independent judge was 97%. This high concordance rate points to high credibility in identifying incidents and shows the significance of incidents to the aim of the study. Notably, the independent judge merged incidents that the primary researcher split in the final analysis. For example, when a participant stated that doctor support and their friends who were also accessing OAT helped their OAT retention, the primary researcher noted the comment as two incidents (having a caring doctor, having friends accessing OAT). In contrast, the independent judge merged the comment into one incident (having support). The separation of such comments into their own incidents was possible because of the high level of participation rates for each category and because each incident was reported with participants own examples and an explanation of how it was helpful or hindering. The independent judge did not have access all the transcripts from the study and as

such, was unaware of the high rates between participant comments that allowed for category splitting. Regardless, the 95% concordance rate for this check indicates high credibility of incidents.

Credibility Check Four. To ensure that an adequate amount of data was collected, transcripts were tracked upon completion for the emergence of new categories. As data was collected, incidents that emerged were fit into existing categories or new categories were created. Incidents continued to be evaluated as they emerged, ensuring categories that have been created are adequately represented and that no incidents emerge that do not fit into categories. No new categories emerged after the fourth transcript.

Credibility Check Five. In order to determine whether categories are valid, participation rates were calculated for each of the fourteen categories. Participation rates are calculated by identifying the percentage of participants who mention at least one incident belonging to that category. The more participation in a category, the higher likelihood of the category being valid. Focusing on participants instead of incidents helps to get a better representation from the sample which increases the trustworthiness of the category (Mathew, 2019). A minimum of 25% is considered an appropriate amount for determining the validity of each category (Borgen & Amundson, 1984). All fourteen categories in the study met the minimum requirement of 25%, with the actual lowest participation rate being 32%. That is, at least six of the 19 participants reported incidents that were all helping incidents, hindering incidents, or wish list items belonging to any given category.

Credibility Check Six. In order to verify the placement of incidents into categories, 25% of randomly selected incidents were placed into the categories by an independent judge. The independent judge was provided with the 14 category names and their definitions. The

independent judge was provided 78 random incidents extracted from transcripts. The concordance rate was 96%, with only three incidents being placed in alternate categories. The concordance rate indicates high confidence in the created categories.

Credibility Check Seven. In order to allow participants to verifying whether the results of the analysis match with their experience, a follow-up email was sent to each participant. The follow up email provided participants with the categories, the definitions of the categories, and the critical incidents they reported that belong to each of the categories. During this cross-checking procedure, participants can elaborate or modify the critical incidents. In this study 15 participants did not respond to the request for the second interview. Of the four who did respond, no new incidents were added. Low participant response rates, in research that involves substance misuse populations, are common (Festinger & Dugosh, 2012).

Credibility Check Eight. In order to determine the usefulness of the categories, experts in the opioid addiction recovery field were consulted. Three experts were consulted, two individuals had over ten years' experience utilizing OAT and one had over 15 years' experience working with individuals who utilize OAT. All three experts were provided the 14 categories and the corresponding category definitions. They were asked if they found the categories to be useful, if they were surprised by any of the categories, and if anything is missing based on their experience. All three experts agreed that the categories were useful, unsurprising, and nothing was missing.

Credibility Check Nine. The last credibility check is intended to theoretically validate the results. The validation process "applies to both the underlying assumptions that were used in formulating the research questions along with examining the categories to check for its agreement with the literature" (Mathew, 2019, p. 83). Due to the exploratory nature of ECIT

research, it can be expected that novel findings are present that go beyond current literature. For the current study the categories obtained were compared with literature in the field (see Discussion chapter of this report).

Rigour and Reflexivity

The nine credibility checks forementioned were developed to increase the rigour and trustworthiness of ECIT (Butterfield et al., 2009). Specifically, interview fidelity was added to ensure consistency is being maintained and uphold the rigour of the research design (Butterfield et al., 2005). ECIT's credibility checks were designed to control for bias (reflexivity), acknowledge uniform fidelity (increase robustness), eliminate differences in perception between researchers (reflexivity), acquire saturation (complete knowledge), check participant voices are accurately articulated (validity), and make judgments on validity based on previous research (McDaniel et al., 2020). The authenticity of participant's recall of events is hard to verify, thus implying a rigour weakness of ECIT (Sharoff, 2008). However, validity is partially ensured by the necessity for recall of incidents across participants. Inter-rater reliability helps make the categorization less influenced by researcher subjectivity (Sharoff, 2008). In so far as the researcher adheres closely to the ECIT protocol, with all the credibility checks, and acknowledges their paradigmatic perspective in data collection and analysis, the rigour and trustworthiness of results from their ECIT study can be regarded as strong.

Sample

The participants for this study ($N = 19$) consisted of individuals who were currently accessing OAT (methadone or buprenorphine) and who self-identified as having opioid addiction issues. The majority of the sample was located in Canada (94.7%). Participants ranged from 22 to 54 years old. The majority of participants were utilizing buprenorphine (57.9%). OAT

retention lengths ranged from 2 months to 25 years. The majority of participants were male (10 or 53%) and African American (11 or 58%). A more detailed description of the participants is included in the Results chapter.

Phase 2: Quantitative Research Method

The purpose of this Phase 2 study was to examine predictors of successful OAT retention among adult individuals who self-identify as having opioid addiction challenges. In this section, the study design and data collection method are discussed, the sample is described, the survey construction procedure is outlined, and a detailed description of measures used for all variables is provided. The measures are separated into three categories: predictor variables, demographic variables, and the outcome variable. This is followed by an explanation of the statistical analysis approach, data cleaning procedures, assumption checking procedures, and variable selection procedures. The Phase 2 study was guided by the overarching research question can the selected variables predict successful OAT retention? Notably, the specific variables to be investigated as predictors are decided upon through variable selection procedures. See Variable Selection section.

Study Design and Data Collection

This study collected data through online surveys using the Survey Monkey (http://www.surveymonkey.com) website. See Information and Participant Consent (Appendix F). See Online Survey Questionnaire (Appendix G). A quantitative analysis of the collected survey data was undertaken to meet objectives and answer the research question. Participation in the survey was voluntary and data was collected directly from survey respondents using electronic means.

Sample

The sample for this analysis was comprised of individuals who self-identify as having an opioid addiction, were 19 years old or older, and who fit into one of two group for the outcome variable. Participants had either recently dropped out of OAT or had been accessing OAT continuously for one year or longer. The participants who dropped out recently were required to provide a time frame since their last OAT drop out incident. With the intention of including participants in the unsuccessfully retained group who had the most recent dropout incident, participants with four months or more since their last drop out incident were excluded from the final analysis. The final sample consisted of 273 participants with 66 (24.2%) belonging to the unsuccessfully retained group (last dropout incident < 4 months) and 207 (75.8%) belonging to the successfully retained group (OAT retention > 12 months). A more detailed description of the participants is included in the Results chapter.

Survey Instrument Construction

Due to the sequential exploratory design of this study, it was necessary to draw from the results of the Phase 1 qualitative study prior to conducting the Phase 2 quantitative study. Variables of interest potentially relevant to successful retention prediction were identified from the Phase 1 study and included in the construction of the survey instrument utilized in the Phase 2 study. This section outlines this process.

Some predictors of interest for the Phase 2 study were drawn from past research (age, current legal issues, medication dosage, current substance use, employment, attitudes towards OAT, social cohesion, and health care experience). Factors from the Phase 1 qualitative study were considered as potentially meaningful when 50% or more of the participants noted a factor as influencing their OAT retention during their interview. Influences on retention were

considered in all three ECIT interview domains (helping, hindering, and wish list items). There were nine factors that met this 50% inclusion criteria: access to OAT, withdrawal and craving symptoms, mental clarity, experiencing stigma, doctor care, seeing life changes, information and resources, peer support, and side effects. Of the nine potential predictors from the Phase 1 study, doctor care and peer support were the only two preliminarily proposed by past literature (Marks et al., 2020). See Table 1. Notably, the context from which these factors were identified in Marks et al. (2020) was also through qualitative means. Medication related factors (access, cravings, quality of life, and side effects) were discovered as potentially meaningful predictors during the Phase 1 study and subsequently investigated for their presence in past literature.

Table 1

Survey Construction: Inclusion and Exclusion of Factors

Included	Proposed from Past Research	Proposed from Phase 1 Study	Potential Predictors Included in Phase 2 Study
Yes	Age		1. Age
Yes	Legal issues		2. Legal
Yes	Employment		3. Employment
Yes	Attitudes toward OAT		4. Attitudes toward OAT
Yes	Social cohesion	Peer support/social cohesion	5. Peer support
Yes	Health care experience	Doctor care	6. Health care experience
No	OAT dosage		
No	Current substance use		
Yes		Access to OAT	7. Access
Yes		Withdrawal and cravings	8. Craving
No		Mental clarity	
Yes		Stigma experiences	9. Stigma impact
			10. Stigma experience
Yes		Seeing life changes	11. Quality of life
			12. Social support
No		Information and resources	
Yes		Side effects	13. Side effects

Of the fifteen proposed factors, eleven were included as predictors of interest in the Phase 2 study. Dosage of OAT was excluded due to this project's inclusion of multiple types of OAT medications. Substance use was excluded due to the size of data collection required to adequately assess an individual's substance use across a variety of substances. Likewise, information and resources were excluded due to the wide scope of the factor making it challenging to measure. Lastly, mental clarity was excluded due to questions regarding mental capacities in the quality-of-life measure.

Although eleven factors were included as potential predictors for the Phase 2 study, thirteen variables were created. Stigma experiences was split into two variables, one measuring quantity of stigma experiences and the other measuring perceived impact of stigma experiences (Stuart et al., 2005). Seeing life changes was also split into two variables, one measuring quality of life and one measuring social support. This decision was based on the content of participant comments that made up the seeing life changes category in the Phase 1 study. For all variables with appropriate existing measures permission to use was obtained. Other than the thirteen predictors of interest, four demographic variables were analyzed to assess their potential influence. The demographic variables were type of OAT being utilized, ethnicity, housing situation, and gender.

One potential predictor variable, access to OAT, did not have an existing scale in literature. Therefore, a scale was created based on participant comments from the Phase 1 study. All comments that were included as items for the access category in the Phase 1 study were reviewed. Topics were extracted as critical components of OAT access. See Table 2. The resulting ten scale items were scored on a 5-point Likert scale ranging from never to very often. Two items were reverse scored to help correct for response bias. The final scale was scored on a

continuous scale by summing the total across the ten items, with increasing scores indicating decreasing access. See Potential Predictor Variables section for detailed description of the measures used.

Table 2

Access Scale Comments and Items

Topic of Comment Regarding Access	Scale Item
Pharmacy attendance frequency	To get OAT medication, I have to attend the pharmacy
Pharmacy attendance wait time	I have to wait a long time at the pharmacy to get my OAT medication
Pharmacy attendance travel distance	It takes a long time to travel to my OAT pharmacy from my house
Limited amount of take-home medication	I receive the amount of take-home OAT medication that I want (carries) ®
Physician wait time	I have to wait a long time to see an OAT physician on my appointment days
Physician appointment difficulties	I have a difficult time making an appointment to see an OAT physician
Expensive OAT costs	I think that the price of my OAT medication is reasonable ®
OAT appointments interfere with schedule	I have to rearrange my life schedule to accommodate OAT related appointments and/or pharmacy visits
Worrying about OAT prescription cancelled	I worry about my OAT prescription being cancelled because of missing an appointment or dose at the pharmacy
Difficulty accessing OAT from other locations	I worry about travelling away from my home city because I am unsure if I will be able to access OAT from another location

The final survey collected data on demographic factors (length since last dropout event, length of retention, gender, ethnicity, country, housing situation, and type of OAT), thirteen

predictors of interest (side effects, quality of life, stigma experience, stigma impact, cravings, access, peer support, health care experience, social support, attitude toward OAT, employment, legal issues, and age), and one dichotomous outcome variable (successful/unsuccessful OAT retention).

Potential Predictor Variables

Four independent variables were selected for this study based on the O'Connor et al. (2020) systematic review where limited evidence was found to support the influence of several factors on retention. Employment, attitudes toward OAT, age, and current legal issues were proposed as potentially meaningful factors. Two independent variables were selected for this study based on Marks et al. (2020) program in Durban, which established high OAT retention rates. Subsequently, they asked participants through qualitative inquiry what factors contributed to their retention. The two factors that emerged as critical to participant retention were social cohesion and health care experience.

Social cohesion in Marks et al. (2020) was used to describe the cohesion between participants of the OAT program and therefore, is renamed peer support in this study. The Phase 1 study also supported the inclusion of peer support as it was a category that had over 50% participation rate, meaning it was perceived as influencing OAT retention by over 50% of the participants.

Health care experience was also further supported by the Phase 1 study. Marks et al. (2020) describes health care experience as the participants reported positive experiences with doctors and medical staff. Doctor care emerged as a potentially meaningful predictor of OAT retention in the Phase 1 study as over 50% of participants perceived it as influential on their OAT retention. Some qualitative research has found links between health care provider attitudes

and participants OAT retention (Molfenter et al., 2015; Sharma et al., 2017), suggesting negative OAT attitudes held by health care providers are a barrier to OAT utilization. To my knowledge, no studies explore the predictability of health care experience on OAT retention.

The remaining seven predictors of interest emerged from the Phase 1 study. Side effects, seeing life changes (split into quality of life and social support), stigma (split into stigma impact and stigma experience), cravings, and access each had over 50% participation rate, indicating that over 50% of participants perceived each of these variables as influential on their OAT retention decisions.

Age. Increasing age has been found to be associated with increased retention in several studies (O'Connor et al., 2020). In the current study, age was measured as a continuous variable. Participants were asked to state their age in years. Increasing age was hypothesized to significantly increase the likelihood successful retention.

Employment. Socías et al. (2020) found employment to be associated with decreased retention. In contrast, O'Connor et al. (2020) reports that five out of 16 studies show an association between employment and increased retention. The current study measured employment using a nominal scale. The question asked was, "what is your current employment status?" Response options were (a) full-time (b) part-time (c) unemployed seeking employment (d) unemployed not seeking employment (e) retired. The five nominal responses were recoded into a dichotomous employment variable with (0) *unemployed* (unemployed seeking employment, unemployed not seeking employment, and retired) and (1) *employed* (full-time and part-time). Being employed was hypothesized to significantly decrease the likelihood of successful retention.

Legal Issues. Criminal activity is associated with reduced OAT retention (O'Connor et al., 2020). The current study measures current legal involvement as a nominal dichotomous variable with the question "are you currently on probation, parole, bail, enrolled in drug court, or involved in a child protective service case?" Response options were dichotomous: (a) yes, or (b) no. Being involved in the legal system was hypothesized to significantly decrease the likelihood of successful retention.

Attitudes Towards OAT. O'Connor et al. (2020) describes six OAT cohort studies that assessed attitudes toward OAT. Five of the six studies found that positive attitudes were associated with increased retention in the cohorts. Kayman et al. (2006) investigated clients' attitudes toward methadone in relation to their treatment retention and found that negative attitudes predicted treatment termination within one year of enrollment. The measure for the attitudes toward OAT variable in the current study is taken from Kayman et al. (2006) who abbreviated an Opinions About Methadone (OAM) scale which was originally developed by Brown et al. (1975). This abbreviated five item scale (OAM5) uses a five-point Likert scale, respondents' rate each of five items from (1) *strongly disagree* to (5) *strongly agree*. For this study, the word methadone has been replaced with OAT, depicting both buprenorphine and methadone. In Kayman et al. (2006) the scale demonstrated acceptable internal consistency (α = .69) and demonstrated predicative validity in its ability to predict premature termination from methadone treatment. In the current study, the OAM5 scale demonstrated excellent internal consistency (α = .90). Higher scores indicate higher levels of positive attitudes toward OAT. Increasingly positive attitudes towards OAT were hypothesized to significantly increase the likelihood of successful retention.

Social Support. Social support has been proposed as a meaningful facilitator of successful OAT retention (O'Connor et al., 2020; Zhou & Zhuang, 2014). The Texas Christian University Client Evaluation of Self and Treatment (CEST) is a 144-item self-rating instrument that has 16 subscales that measure patient functioning and treatment perceptions (Simpson et al., 1997). The CEST utilizes a 5-point Likert scale that ranges from (1) *strongly disagree* to (5) *strongly agree*. The scoring procedure involves summing the items for a particular subscale, dividing the sum by the number of items in the subscale, and multiplying the result by ten. The CEST was developed and researched over a 10-year period (Joe et al., 2002). The 16 subscales include domains related to treatment motivation, psychological functioning, social functioning, treatment process, social network support, and services received.

In the current study, the social support subscale of the CEST was utilized to measure social support. The subscale utilizes nine items that gauge how well family and friends serve the person as an external support network to motivate and provide support for recovery (Joe et al., 2002). One item is reverse scored. Increasing scores indicate increasing presence of social support. Joe et al. (2002) explored the reliability of the social support CEST subscale at both patient-level and program level analysis. They found the subscale to have acceptable ($\alpha = .75$) internal consistency at the patient-level and good ($\alpha = .84$) internal consistency at the program level. They also investigated the validity of the subscales, finding the social support subscale to be unidimensional and have model-fit indices suggesting that one single factor was appropriate for the scale. In the current study, the social support scale showed good ($\alpha = .88$) internal consistency. Increasing social support was hypothesized to significantly increase the likelihood successful retention.

Peer Support. Marks et al. (2020) found that participants regarded their social cohesion with peers in their OAT program as influential on their successful retention. In the current study, peer support was also measured using a subscale of the CEST (Simpson et al., 1997). The peer support subscale consists of five items, none of which are reverse scored. Items address the relationship between the participant and other participants in the same program, especially regarding the support they provide (Joe et al., 2002). Joe et al. (2002) reported good ($\alpha = .81$) internal consistency of the subscale at the patient-level and excellent ($\alpha = .94$) internal consistency at the program level. They also found the peer support subscale to be valid as it was unidimensional and had a model-fit indices that suggest one single factor as appropriate for the scale. In the current study, the peer support scale showed good ($\alpha = .86$) internal consistency. Prior to answering the items for the CEST peer support scale, participants were asked to respond to the items while thinking about other people on OAT. Increasing scores indicate increasing presence of OAT peer support. Increasing peer support was hypothesized to significantly increase the likelihood of successful retention.

Health Care Experience. Marks et al. (2020) found that participants regarded their non-judgmental and empowering health care experiences as influential on their successful retention. In the current study, health care experience was measured using the Consultation and Relational Empathy (CARE) scale (Mercer et al., 2004). The CARE questionnaire was developed to measure the patients' perceptions of relational empathy in general clinical settings. It is a well-established health care empathy measure that has been applied in several studies (Wirtz et al., 2011). The CARE measure is a 10 item, 5-point, Likert scale, with responses ranging from (1) *poor* to (5) *excellent*. The CARE score is the sum of the 10 items with 10 being the lowest possible score and 50 the highest. Hudon et al.'s (2011) systematic review reports an excellent

CARE global internal consistency score (α = .92). In the current study, the CARE scale showed excellent (α = .97) internal consistency. Increasing CARE scores indicate increasing levels of perceived relational empathy by participants from their OAT physician. Increasingly positive health care experience were predicted to significantly increase the likelihood of successful retention.

Side Effects. Although side effects are common from utilizing OAT, side effects are regarded as non-influential on retention (Peddicord et al., 2015; Soyka et al. 2008). In the current study, the Frequency, Intensity, Burden of Side Effects Rating (FIBSER) scale (Wisniewski et al., 2006) was used to measure side effects. The FIBSER is a 3-item scale that assesses side effects from treatment in three domains. The side effect burden domain is utilized by clinicians to determine if there should be changes to the patient's treatment to reduce side effects (Wisniewski et al., 2006). Therefore, side effects in the current study were measured on a continuous scale using the one item that indicates side effects burden. Wisniewski et al. (2006) assessed internal consistency of the FIBSER scale at six follow up points. They indicated excellent (α = .91 – . 93) internal consistency across time points. Although the variable of interest in the current study only includes one item, the FIBSER internal consistency score for the three items was calculated (α = .90). Increasing scores indicate increasing burden of side effects. Increasing side effects were predicted to significantly decrease the likelihood of successful retention.

Quality of Life. Long term OAT utilization has been associated with improvements in quality of life (Mitchell et al., 2015; Nosyk et al., 2015). However, the influence of quality-of-life changes on retention rates is unknown. In the current study, the Quality-of-Life Scale (QOLS) was used to measure quality of life. The QOLS originally contained 15-items (Flanagan,

1982). One item was added (independence, doing for yourself) after research that asked individuals with chronic illness about their quality-of-life perception (Burckhardt & Anderson, 2003). The resulting 16-item scale was utilized in this study. The QOLS utilizes a seven-point response scale: (7) *delighted*, (6) *pleased*, (5) *mostly satisfied*, (4) *mixed*, (3) *mostly dissatisfied*, (2) *unhappy*, and (1) *terrible*. The scale measures satisfaction with each of the sixteen items. The QOLS is scored by summing the scores on each item. Scores range from 16 to 112 with increasing scores indicating increasing quality of life. The 15-item scale showed good to excellent (α = .82 – .92) internal consistency and had high test-retest reliability over a 3-week period (Burckhardt & Anderson, 2003). Other researchers have reported similar reliability estimates for the 16-item scale (α =. 82 – .88) and high test-retest reliability (*r* =. 84) at a 4-week interval (Burckhardt et al., 1992). In the current study, the 16-item scale showed excellent (α =. 94) internal consistency. Increasing quality of life was predicted to significantly increase the likelihood of successful retention.

Cravings. The findings regarding the effect of OAT on cravings is mixed, some studies report that it reduces cravings, some reported continued risk, and others report no effect or increased effect (Fareed et al. 2010). The relationship between cravings and retention rates is unknown. However, cravings for opioids have been shown to predict return to illicit opioid use (Tsui et al., 2014).

In the current study, the Penn Alcohol Craving Scale (PACS) was used to measure cravings. The PACS is a self-report five-item instrument intended to measure participant alcohol cravings within the past week (Flannery et al., 1999). The PACS is one of the most widely utilized craving scales (Costello et al., 2020). Psychometric assessments indicated high internal reliability, good convergent and discriminant validity, and its utility for predicting alcohol

relapse during treatment (Costello et al., 2020; Flannery et al., 2003). Tsui et al. (2014) adapted the scale to assess opioid craving. They report a good (α =. 88) internal consistency for the adapted scale as utilized in this study. The 5-item opioid adapted measure showed excellent (α = .95) internal consistency in this current study. Increasing scores indicate increasing presence of opioid cravings. Increasing cravings were predicted to significantly decrease the likelihood of successful retention.

Stigma Experience and Stigma Impact. Stigma has been reported as influential on treatment outcomes (Cooper & Nielsen, 2017; Woo et al., 2017). In the current study, the Inventory of Stigmatizing Experiences (ISE) was used to measure stigma (Stuart et al., 2005). The ISE is composed of two scales: one measuring the scope of stigma experiences (10 items) and the other assesses the psychosocial impact of stigma (seven items). This two-scale measure was developed with the intention of capturing stigma experiences from the perspectives of those who experience them (Stuart et al., 2005). The stigma experiences scale consists of two items scored on 5-point Likert-type scales using the response categories of (1) *never*, (2) *rarely*, (3) *sometimes*, (4) *often*, and (5) *always*. These responses are recoded for scoring into a binary variable with 1 reflecting a high expectation of stigma (often or always) and 0 reflecting no or low expectation (never, rarely, or sometimes). The remaining eight items use three response categories: no, unsure, and yes. These responses are also coded into binary response categories reflecting presence (yes) or absence (no, unsure) of each experience. The total for the scale is then summed across all ten items with increasing scores indicating increasing experiences of stigma. Increasing experiences of stigma were predicted to significantly decrease the likelihood of successful retention.

The seven-item stigma impact scale ask participants to score each impact domain between 0 and 10. Scores are then summed across the seven items resulting in a score range between 0 and 70. Increasing scores indicate increasing impact of stigma. During preliminary testing, the stigma experiences scale showed excellent (α =. 91) internal consistency and the stigma impact scale showed good (α = .83) internal consistency (Stuart et al., 2005). The original two scales, intended to measure mental illness stigma was adapted for the current study to measure opioid addiction and OAT related stigma. In the current study, the adapted 10-item stigma experience scale showed good (α = .82) internal consistency and the adapted seven-item stigma impact scale showed excellent (α = .93). internal consistency. Increasing stigma impact was predicted to significantly decrease the likelihood of successful retention.

Access. Although access to OAT is well documented as lacking, its relation to retention rates is unknown (Davis & Carr, 2019; Eibl et al., 2017). No pre-existing scale for accessibility of OAT was available in current literature. To measure access, a 10-item 5-point Likert scale was created. Items were constructed from participant comments from the Phase 1 study that depicted access to OAT factors. The response options ranged from (1) *never* to (5) *very often*. Two items were reverse scored. The global access score was computed by summing the total across the 10 items providing a final access score that ranged from 10 to 50, with increasing scores indicating decreasing access. Increasing access (lower scores) was predicted to significantly increase the likelihood of successful retention.

Seven OAT experts were sent the final scale and asked three questions: are the questions easy to understand, do you think these questions measure OAT access, and do you think there is anything missing regarding OAT access. Experts included three individuals who have established careers working with opioid addicted populations, three individual who have utilized

OAT long term, and one individual who had utilized OAT long term before stopping to live an opioid free life. Responses from the seven experts led to minor changes in phrasing for some of the items and no additional changes. In the current study, the constructed access scale showed acceptable ($\alpha = .77$) internal consistency.

Demographic Variables

To eliminate for alternative prediction explanations in the sample, four demographic variables were added to the statistical analysis to assess if they influenced the outcome. The analyzed demographic variables were type of OAT, ethnicity, gender, and housing.

Type of OAT. Type of OAT was measured as a dichotomous variable with participants indicating whether they were currently accessing or last accessed (1) *methadone* or (2) *buprenorphine*.

Ethnicity. Ethnicity was measured on a nominal scale with eight response options. Participants were asked which of the following best describes them (a) Black or African American, (b) Asian, (c) White, (d) Indigenous, (e) Middle Eastern, (f) Latino, (g) ethnicity not listed here, or (h) prefer not to respond.

Gender. Gender was measured on a nominal scale with five categories. Participants were asked to indicate their gender as (a) female, (b) male, (c) transgender, (d) non-binary, or (e) prefer not to respond.

Housing. Housing was measured on a nominal scale with eight categories. Participants were asked to indicate their current housing situation as (a) homeless, (b) shelter, (c) recovery house, (d) treatment or detoxification centre, (e) renting, (f) homeowner, (g) living with friends/relatives, or (h) other.

Outcome Variable

The outcome of interest in the current study is OAT retention. This study sought to test factors as predictors of retention success in a binary outcome analysis. As such, it was necessary to produce two categories that participant belonged to. The outcome variable was constructed as a dichotomous variable, with all participants falling into one of two categories (a) unsuccessfully retained or (b) successfully retained. Successful retention is defined as self-reported twelve months or longer of continuous OAT utilization (methadone or buprenorphine). Unsuccessful retention is defined as recent drop out of treatment (within four months of survey completion).

Notably, measuring successful retention is ambiguous and heterogenous within current OAT literature. This study utilized a twelve-month time point to measure the successfully retained group, which is the most common time point currently depicting success in literature (O'Connor et al., 2020). However, studies utilize timeframes that range from six months to three years or more to define success. Defining unsuccessful retention, also referred to as OAT treatment drop out, is even more ambiguous and heterogenous in nature across studies (O'Connor, et al. 2020).

In O'Connor et al. (2020) the reviewed studies applied various rules regarding length of time participants are required to have terminated OAT utilization in order to classify them as unsuccessfully retained/dropped out of treatment. They included studies with dropout thresholds ranging from five days to two months. However, almost half of the studies reporting on time of discontinuation did not specify a threshold for identifying dropout. Some studies define dropout by any interruption in continuous retention (Ruadze & Todadze, 2016).

The survey question in the current study that classified the participants into the two outcome groups was "what group best describes your current OAT retention?" Participant

responses options were (a) I have been taking OAT for twelve months or longer (b) I recently stopped my OAT medication. Participants responses were coded as (0) *unsuccessfully retained* and (1) *successfully retained*.

In order to clearly understand the retention characteristics of the sample obtained in the current study, participants who indicated that they had been taking OAT for twelve months or longer were asked to specify the exact time frame they had been continuously taking OAT without stopping. If participants indicated they had stopped taking OAT recently, they were asked when their drop out incident occurred. The final unsuccessful retention group included participants who indicated that they had dropped out of OAT within four months prior to survey completion. Therefore, this study conceptualizes unsuccessful retention/dropout as any interruption in continuous OAT retention.

The issue of an unclear time point to measure outcomes is not the only issue regarding measuring successful and unsuccessful OAT retention. Specifically, the reasons why individuals drop out of OAT and their specific retention histories are almost never measured or reported. This oversight produces research that characterizes participants as unsuccessful that may be more accurately categorized as successful. For example, some individuals may have intentionally stopped OAT to live opioid free. There are many possible contextual factors that, if measured, may indicate that individuals who are currently regarded as unsuccessful are best regarded as successful. Another example is when participants have had successful retention lengths spanning years prior to a short dropout incident.

The current study acts to preliminarily overcome these challenges by reporting participants reasons for dropout. Further, this study checks the quality of its results by conducting a separate statistical analysis that includes only the successfully retained group, with

retention being measured on a continuous scale (length of time retained). Retention in treatment is commonly measured using a continuous scale showing days in treatment (O'Connor et al. 2020). This analysis eliminates the necessity to include the unsuccessful group measure, which provides a quality check on the utility of the emergent model for predicting retention outcomes. In summary, due to the universal lack of clarity regarding how to best measure retention outcomes, the current study acknowledges that it adheres to a limited conceptualization of unsuccessful retention which is currently found in OAT research and subsequently, undergoes a quality check analysis to increase trustworthiness of results.

Statistical Analysis Methods

The purpose of this study was to examine the extent to which predictors of interest can predict successful retention. To meet this aim, Phase 2 of this project employed a binary logistic regression analysis. Logistic regression is used to estimate the odds of an outcome as a function of predictors. The regression analysis predicts the probability that a predictor will fall into one of two categories in the binary outcome variable. Logistic regression is correlational, correlational research is commonly utilized when manipulation of variables is difficult (Sperry, 2014). Logistic regression is intended to find the best model to describe the relationship between a dependent (criterion) variable and multiple independent (predictor) variables (Pourghasemi et al., 2013).

In this study, survey data was collected for 13 variables of interest derived from past literature and from the qualitative results from the Phase 1 study. In addition, survey data was collected for four demographic variables. Variable selection was then performed to determine which variables were most meaningful for predicting successful OAT retention. The resulting model was then analyzed to investigate the presence of a relationship (either individually or

combined) between the independent variables and the dichotomous outcome variable of OAT retention.

H_0: The coefficients on the parameters of the logistic regression modeling log(odds) of retention as a function of predictors are zero. Said another way, the predictor variables do not significantly change the ability to predict successful OAT retention than predictability expected by chance.

$$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$$

H_A: At least one of the coefficients on the parameters of the logistic regression modeling log(odds) of retention as a function of predictors are nonzero. Said another way, the predictor variables do significantly change the ability to predict successful OAT retention than predictability expected by chance.

$$H_A: \text{At least one } \beta_i \neq 0$$

Binary logistic regression allows for modelling the relationship between multiple independent variables and the dichotomous dependent variable. The population binary logistic regression model equation for five independent variables, as stated in Laerd Statistics (2015):

$$\text{logit}(Y) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Binary Logistic Regression and Medical Research

Logistic regression is further rationalized as the most appropriate method for this study due to its frequent use in medical research. Medical research favors regression techniques because of their ability to measure associations, predict outcomes, and control for confounding variable effects (Stoltzfus, 2011). Logistic regression is often utilized because of its ability to analyze the effect of multiple variables on a binary outcome while quantifying each variables unique contribution. Logistic regression focuses on whether or not an event occurred rather than when it occurred and as such, is particularly appropriate for medical models that involve disease

states and decision making (Boateng & Abave, 2019). One common use of logistic regression in medical research is to determine which or a variety of potential predictors are actually useful for prediction (Boateng & Abave, 2019; Holland et al., 1989; Howell & Davis, 2011). This study utilizes logistic regression analysis for this purpose, to determine the utility of potential predictors to predict outcomes.

Data Cleaning and Preparation

After data collection, data were transferred into IBM Statistical Package for Social Sciences (SPSS) version 28 recoded and cleaned. A total of 439 participants supplied survey data. For the successfully and unsuccessfully retained outcome variable, 17 cases that had no responses were deleted from the data because their responses did not contribute to the measurement of the variable. Likewise, 85 more cases were removed due to missing responses to predictor variable questions. An additional 64 cases were removed due to inability of the participants responses to confirm their inclusion in one of the two outcome group categories (successfully or unsuccessfully retained). Participants who identified themselves in the unsuccessfully retained group but commented their retention length exceeded four months were excluded. Likewise, participants who identified themselves in the successfully retained group but commented their retention length was less than one year were excluded. Lastly, participants who entered retention length question without giving a unit of measurement were excluded. After all exclusion procedures, 273 participants were retained for the final analysis. Data were prepared by creating scaled variables according to each variable's measurement procedure. Items with reverse codes were re-calculated and scale items were computed into individual variables for each scale.

Logistic Regression Assumption Check

There are seven assumptions that must be met prior to conducting a binary logistic regression analysis on any data. The first four assumptions relate to the study design (1) the presence of a dichotomous outcome variable, (2) one or more independent variables that are continuous or nominal, (3) independence of observations, and the categories of the dichotomous outcome variable and all nominal independent variables are mutually exclusive and exhaustive, and (4) you meet the sample size requirements (Laerd, 2015). The fifth assumption, ensuring a linear relationship between continuous independent variables and the logit transformation of the dependent variable is assessed via the Box-Tidwell (1962) procedure. The sixth assumption, ensuring the data does not show multicollinearity is assessed through visual inspection of correlation coefficients and Tolerance/VIF values. The seventh and final assumption, assessing for significant outliers and high leverage points is conducted through case wise diagnostics.

Variable Selection

The predictor variables of interest and the demographic variables were measured with the intention of selecting only some variables for the final regression model. Hosmer et al. (2013) states, “The goal of any method is to select those variables that result in a ‘best’ model within the scientific context of the problem” (p. 89). Purposeful selection of variables is the process by which researchers examine a set of data and build a multivariable regression model which gives the best fit (Hosmer et al., 2013). During purposeful selection, the likelihood-ratio test is utilized instead of the Wald statistic as the criterion for determining variables to be removed from the model (Hosmer et al., 2013).

Stoltzfus (2011) states, “one must always justify variable selection using well-established theory, past research, clinical observations, preliminary statistical analysis, or some sensible

combination of these different options" (p. 1100). Due to the heterogenous nature of past research with respect to duration of OAT retention length, treatment setting, risk factor assessment, and type of OAT there is limited theoretical evidence available to support the influence of specific factors on retention (O'Connor et al., 2020). Therefore, the current study utilizes a combination of three variable selection methods. Purposeful selection is completely analyst controlled, backwards stepwise selection is statistically driven, and hierarchical model testing is a combination of the two. Justification for choice of variables in the final model is informed by these three procedures.

Analysis

Descriptive statistics are presented to explain baseline demographic characteristics (frequency and participation percentages) for the OAT retention outcome variable. Ethnicity, gender, housing situation, type of OAT, employment, legal involvement, location country, and age are included as descriptors of the study sample.

Interpretation of the logistic coefficient is considered more difficult than interpreting the Beta coefficient during multiple linear regression analysis. Thus, "the logistic model is rewritten in terms of the odds of an event occurring, defined as the ratio of the probability that an event will occur to the probability that it will not" (Pyke & Sheridan, 1993, p. 52). Factors that show values that are greater than one indicate an increase in odds and factors that show values less than one indicate a decrease in odds (Pyke & Sheridan, 1993).

Univariable analyses were conducted using the logistic procedure (SPSS28.0) and the results are presented to examine associations between the outcome and all variables of interest to the analysis. The Wald statistic was evaluated as the criterion for determining variable significance

($p < .05$). Multivariable logistic regression analysis was then conducted using the logistic procedure (SPSS28.0).

Multivariable model (crude, adjusted, and interaction) results are compared. As suggested by (Laerd, 2015), the overall statistical significance of the model was assessed. The model was also assessed for how poor it is at predicting the categorical outcomes via the Hosmer and Lemeshow goodness of fit test. The Cox and Snell R Square and Nagelkerke R Square values (pseudo R^2 values) were consulted to understand how much variation in the dependent variable can be explained by the model.

After determining model fit and explained variation, the logistic model was assessed for its ability to predict whether cases can be correctly classified from the independent variables. This analysis estimates the probability of an event occurring (successful retention) if the estimated odds of the event occurring are greater than or equal to 0.5. Consequently, if the probability is less than 0.5 it classifies the event (successful retention) as not occurring. To assess category predictability of the model, the classification table was assessed to determine overall percentage, sensitivity, specificity, positive predictive value, and negative predicative value.

The contribution of each independent variable to the model was then assessed. Odds ratios for each variable and confidence intervals are utilized to understand the change in the odds ratio for one unit increase in each independent variable.

Supplementary Analysis

Due to the potential problems forementioned regarding measurement of the unsuccessfully retained outcome group, a subsequent multiple linear regression analysis was conducted with the final model proposed as meaningful from the logistic regression analysis. This analysis is intended to enhance the trustworthiness of results. The analysis was conducted

on the successfully retained group ($N = 207$). Participants responses were coded into a continuous outcome variable based on years retained in treatment. The analysis investigated the utility of the final model to predict length of treatment retention.

There are eight assumptions that must be met prior to conducting a linear regression analysis on any data. The first two assumptions relate to the study design (1) the outcome variable needs to be continuous, (2) the presence of two or more dependent variables that are measured on continuous or categorical scales (Laerd, 2015). The third assumption, independence of observations was checked using the Durbin-Watson statistic. The fourth assumption of linearity was assessed through visual inspection of a scatterplot of the studentized residuals against the unstandardized predicted values. Linearity was further assessed through visual inspection of partial regression plots. The fifth assumption, homoscedasticity of residuals, was assessed through visual inspection of the plotted studentized residuals against the unstandardized predicted values.

The sixth assumption, ensuring the data does not show multicollinearity, was assessed through correlation coefficients and Tolerance/VIF values. The seventh assumption, assessing for significant outliers and high leverage points, was assessed through case wise diagnostics, leverage points, and Cook's distance. The eighth and final assumption, that there is normal distribution of the residuals, was assessed through visual inspection of a Normal Q-Q Plot of the studentized residuals. The linear regression model was then assessed for its fit and ability to predict retention length.

Ethical Considerations

Regarding ethical considerations, this project received Human Research Ethics Board (HREB file No. 22G20) approval from Trinity Western University before commencing and all

aspects of the study were conducted in accordance with ethical requirements, including informed consent. Participants were asked if they had any questions regarding informed consent, which specified in advance the type of data that would be collected and how it would be used. Informed consent also included the nature of the study, the participants role, the identity of the researcher and supervisory committee, the objective, and how the results would be published and used.

For the Phase 1 study, the participant's identifying information was removed from the transcripts and their names were replaced by numbers. All transcripts were encrypted with password protection. These ethical considerations were all taken to ensure confidentiality and the participant's understanding of their part in the study. For the Phase 2 study, participants filled out anonymous online surveys and all data were stored using numbers as identifiers. All survey data were stored using encrypted and password protected electronic storage devices. Participants could stop the survey at any time and not submit their answers without penalty.

Chapter Summary

In this chapter the philosophical views that guided this project were discussed and a personal statement about the researcher's position was offered. Thereafter, this project's overarching mixed method research approach was rationalized. Participant criteria and recruitment for both Phase 1 and Phase 2 studies were detailed. The Phase 1 study was rationalized in regard to it's ECIT method and design. Further discussion of the Phase 1 study detailed the procedure, data collection, and analytic processes. The Phase 2 study's overarching research question and data collection procedures were then offered. The procedure that was undertaken to construct the survey utilized in Phase 2 was outlined and rationalization for inclusion of predictors. All Phase 2 study measures were detailed, and hypotheses stated. Rationale for utilizing a binary logistic regression analysis was stated and the procedures related

to data cleaning, assumption checking, and variable selection were outlined. In conclusion, the ethical considerations for this project were stated.

CHAPTER 4: RESULTS

This chapter presents all the applied data analysis and results for this project. Results are split into two sections. The first section reports the results from the Phase 1 qualitative study. The second section reports the results from the Phase 2 quantitative study. The final section of this chapter reports the synthesized results for Phases 1 and 2.

Phase 1: Qualitative Results

In this section, the results from the Phase 1 qualitative study are presented. First, demographic data are described and then the remaining results are presented in relation to the main interview components, the contextual component, the ECIT results, and the participants reasoning for their responses to the pre- and post-interview scaling question.

Demographic Data

The sample size of this study ($N = 19$) is consistent with the sample size in typical CIT studies (Butterfield et al., 2005). Table 3 provides a summary of the basic demographic characteristics of the sample. Participants ages ranged from 22 to 54 years ($M = 30.32$ years, SD = 8.7). The majority of participants were male (10 or 53%) and African American (11 or 58%). The majority of participants were employed part time (8 or 42.1%), with six employed full time (31.6%), and the minority were unemployed (5 or 26.3%). The participants were mostly from British Columbia, Canada (14 or 73.7%), with three participants from Ontario, Canada (15.8%), one from Quebec, Canada (0.05%), and one from Orange County, USA (0.05%).

The majority of participants were currently utilizing buprenorphine (11 or 57.9%), with two of those 11 utilizing injectable buprenorphine and the remaining nine utilizing oral buprenorphine. The rest of the participants were currently utilizing methadone (8 or 42.1%). Ten participants (52.6%) reported having tried other types of OAT before utilizing their current type.

Participants current OAT retention length ranged from two months to 25 years (*M* = 3.2 years, SD = 5.9). With six participants (31.6%) being retained in treatments for six months or less, six participants (31.6%) being retained in treatment for over six months to one year, four participants (21%) being retained for over one year to five years, and three participants (15.8%) being retained for over five years. Participants reported having dropped out of OAT treatment one to 30 times (*M* = 4.53 times) over the course of their lifetime OAT utilization.

Table 3

Summary of Phase 1 Basic Demographic Data

#	Retention	OAT Type	Ethnicity	Employment	Location	G	A
1	11.5 Months	Methadone	Caucasian	Unemployed	BC, Canada	F	31
2	25 Years	Buprenorphine	Caucasian	Employed - FT	BC, Canada	F	54
3	9 Months	Buprenorphine	African American	Employed - PT	Orange County, USA	M	25
4	10 Months	Methadone	African American	Employed - PT	BC, Canada	M	27
5	10 Years	Buprenorphine Injectable	Caucasian	Employed - PT	BC, Canada	F	45
6	4 Months	Methadone	African American	Unemployed	BC, Canada	F	22
7	6 Months	Methadone	African American	Employed - PT	Quebec, Canada	F	23
8	2 Months	Buprenorphine	African American	Employed - PT	BC, Canada	M	26
9	5 Months	Buprenorphine	African American	Unemployed	BC, Canada	F	25
10	7 Months	Methadone	African American	Unemployed	Ontario, Canada	M	26
11	2 Years	Methadone	African American	Employed - FT	Ontario, Canada	M	27
12	2.5 Years	Buprenorphine	African American	Employed - PT	BC, Canada	M	25
13	7 Months	Buprenorphine	African American	Employed - PT	Ontario, Canada	F	22
14	2 Months	Methadone	African American	Employed - FT	BC, Canada	M	23
15	3.5 Years	Buprenorphine	Caucasian	Employed - FT	BC, Canada	M	28
16	4 Years	Buprenorphine	Caucasian	Employed - FT	BC, Canada	F	36
17	7.5 Years	Buprenorphine	Caucasian	Employed - PT	BC, Canada	F	34

#	Retention	OAT Type	Ethnicity	Employment	Location	G	A
18	2.5 Months	Buprenorphine Injectable	Caucasian	Unemployed	BC, Canada	M	37
19	1 Year	Methadone	Caucasian	Employed - FT	BC, Canada	M	40

Note. G = gender, A = age

The Contextual Results

One contextual open-ended question was asked to all the participants at the beginning of their interview. The purpose of this contextual question was to help the participant define what good OAT treatment meant to them personally. All participants in this study were currently utilizing OAT and as such, asking this question allowed them to reflect on their own personal OAT treatment definition. This question was intended to develop a reference definition to elicit potentially meaningful factors during the ECIT question portion of the interview.

What Does Good OAT Treatment Mean to You? When participants were asked what good OAT treatment meant to them, they were informed that the study is interested in how and why people make decisions about OAT retention but first, we wanted to know how they define good OAT treatment in their own life. The six main themes that summarize the responses of the participants were treatment of physical opioid addiction, accessible treatment, seeing positive life outcomes, personalized treatment or autonomy in treatment decisions, and judgment free psychosocial support from doctors, counsellors, and the community.

Treating the physical opioid addiction symptoms was the largest theme. Positive life outcomes was the second largest theme. Accessible treatment was the third largest theme. Personalized treatment/autonomy in treatment and judgment free psychosocial support were the smallest themes identified.

Subthemes emerged for each of the five main themes. The main theme of treating physical opioid addiction produced four subthemes. Aid with withdrawals, aid with cravings, opiate use decreasing or stopping, and safety were the emergent subthemes. The main theme of accessibility produced four subthemes. Having a stable and available supply of OAT, easy access to doctors and pharmacies, cost effective OAT, and infrequent dosage requirements were the emergent subthemes. The main theme of positive life outcomes produced four subthemes. Feeling hopeful for the future, seeing a reduction of unwanted life events, seeing an increase in desirable life events, and noticing an absence of physical side effects were the emergent subthemes. The main theme of personalized OAT treatment/autonomy in OAT treatment produced three subthemes. Individualized treatment based on one's own desires and context, authority to make treatment decisions, and exploration of possible options were the emergent subthemes. Lastly, the main theme of judgment free psychosocial produced two subthemes. Feeling supported and not being stigmatized were the emergent subthemes. See Table 4 for subthemes.

Table 4

Summary of Good OAT Treatment Definition: Subthemes

Main Theme	Subthemes
Treating Physical Opioid Addiction	
	Withdrawal Aid
	Craving Aid
	Opiate Use Decrease/Stop
	Safe
Accessible	
	Stable and Available Supply
	Easy Doctor/Pharmacy Access
	Cost Effective
	Frequency of Dose
Positive Life Outcomes	
	Future Hope
	Reduction of Negative
	Improve Positives
	Absence of Physical Side Effects
Personalized Treatment/Autonomy	
	Individualized Treatment
	Decision Authority
	Option Exploration
Judgment Free Psychosocial Support	
	Support
	Stigma Free

Critical Incident and Wish List Categories: ECIT Results

The critical incident portion of the interview was aimed at gathering data related to the research question, what helps and what hinders individuals desire to retain OAT treatment? Specifically, participants were asked to share what factors have helped them stay on OAT, what things have stopped them from staying on OAT, and if there things that would have helped them stay on OAT in the past that were not available to them, or that would help in the future if they became available.

The interviews resulted in a total of 306 incidents with 122 (39.9%) helping critical incidents, 94 (30.7%) hindering critical incidents, and 90 (29.4%) wish list items. The incidents from the interviews were placed into emergent categories. A total of 14 categories were

formulated. ECIT protocol requires a minimum of 25% participation rate for each category (Borgen & Amundson, 1984). Participation rates are calculated by dividing the number of participants who mentioned an incident fitting into specific category by the total number of participants ($N = 19$). Each of the 14 categories met the 25% participation rate minimum in one or more of helping, hindering, or wish list headings. Table 5 summarizes the categories, number of incidents in each category, and participation rate in percentages.

Table 5

Summary of Categories, Participant Frequency and Rates, and Number of Incidents in Each

Category	Helping			Hindering			Wish List		
	P#	P%	I#	P#	P%	I#	P#	P%	I#
Access	7	37%	14	10	53%	15	10	53%	15
Withdrawal/Craving/Opioid Use	18	95%	27	5	26%	6	0	0%	0
Mental Clarity	11	58%	11	0	0%	0	0	0%	0
Stigma	3	16%	4	11	58%	18	6	32%	7
Future Hope/Doubt	8	42%	10	1	5%	1	0	0%	0
Personal Traits	6	32%	6	0	0%	0	0	0%	0
Desire to be Abstinent	4	21%	4	9	47%	13	2	11%	2
Doctor Care	5	26%	6	8	42%	9	13	68%	15
Seeing Life Changes	14	74%	25	2	11%	2	1	5%	1
Chained to Addiction/ Longevity	0	0%	0	6	32%	7	1	5%	1
Psychosocial Addiction Recovery	4	21%	4	1	5%	1	9	47%	13
Information & Resources	1	5%	1	2	11%	3	14	74%	24
Peers	5	26%	8	2	11%	2	10	53%	10
Side Effects	2	11%	2	13	68%	17	2	11%	2

Note. P# = Number of Participants; P% = Percentage of Participants (rounded); I# = Number of Incidents.

Access Category. The access category is defined by factors that relate to access to OAT. Access includes a convenient supply of OAT, the times individuals are allowed to and/or required to access doctors and clinics, location and comfort of clinics, financial considerations, and dosage schedules.

Helping. This category had 37% participation rate, as seven participants reported at least one helping incident belonging to the access category. A total of 14 incidents were reported in this category. Participant comments indicated that a consistent reliable supply of OAT, less frequent pharmacy visits, easily accessible clinics and doctors, type of OAT, more take-home doses (carries), treatment facilities that offer OAT to residents, and OAT doctors being available at hours that worked with their schedules helped them to remain retained in OAT.

Participants identified the importance of being able to take-home a sufficient amount of medication so that they did not have to attend doctors' appointments and pharmacies as frequently. The number of carries provided to them was depicted as an integral component of how they regarded the ease of their OAT program and as such, contributed to their continued medication retention.

> Carries. not having to go to the fucking pharmacist every day … to get your OAT medication is probably one of the only reasons I ever even stayed on it in the first place … Maybe the second time I tried getting on suboxone I went to a rapid access clinic and … I got on OAT pretty quick, but then I had to go to the pharmacy every day to pick up my prescription and it was too much of a pain in the ass … to get there every day. So, I ended up not staying on it because it was too difficult. I can now ask my doctor for carries for as long as I want … and there's no hassle in that aspect. (Participant 15, 3.5 years retention, buprenorphine)

Participants commented that when OAT clinics worked collaboratively with them it substantially helped them in continuing their medication retention. Specifically, when clinics worked to help them access OAT without their OAT schedules interfering with their life schedules.

> They started working with me on what times that I could pick up and worked around my schedule, so that I could stay employed and not have to find a job that lets me leave every day to go to a Suboxone clinic, because … lots of employers don't like to do that and they're a little judgey on it. So, I've been with the same clinic and the same doctor for all these 4 years, and now I go in every 2 weeks. (Participant 16, 4 years retention, buprenorphine)

Participants identified that they type of OAT available to them was an important component of their continued retention. Different types of OAT medication were regarded as serving different psychological and physical functions. Different types were seen as more desirable to some participants than others.

> Finding the right drug and the right kind of therapy for each individual person. I have been in my life somebody that needed it while I was still homeless and on the streets, and still not ready to fully give myself to recovery. I still, at that time, needed a starting point, something to … maybe keep me from accessing really lethal amounts of street drugs. Something to keep myself … not sick, but I also wanted to see that I did not have to keep living a life of crime and homelessness. And then there's a time where I wanted to be on Suboxone, I needed to take something daily to know that I was … safe in the moments that I would think about using or I was struggling. Always being able to make that choice daily to take your Suboxone … if I take my Suboxone in the morning … I'm probably not

> going to relapse that day. And then I also think, like the once-a-month Sublocade injection is really great for people that are ready to just give it up and not have to do all of that everyday stuff. (Participant 16, 4 years retention, buprenorphine)

Hindering. This category had 53% participation rate, as 10 participants reported at least one hindering incident belonging to the access category. A total of 15 incidents were reported in this category. Participant comments indicated that the inability to travel, long wait times to get on OAT, cost of OAT, frequency of pharmacy visits, time required to be at the pharmacy, and restricted take-home doses (carries) hindered their OAT retention.

Participants described the necessary frequency of OAT clinic visits as detrimental to their continued retention. Further, participants reported that the necessity to ingest their medication at the pharmacy daily was an additional detriment.

> Your doctors are there between 8:00 a.m. and 1:00 p.m., you show up between that and just wait until you see your doctor. So that could be an hour, that could be three hours. So, you can't work properly … you have to see them like once a week, and you have to take off a day off once a week. (Participant 1, 11.5 months retention, methadone)

> I don't think it's very practical to expect somebody to hop on a bus, you know, do an hour round trip to pick up their medication … that's half the reason I would skip because I just couldn’t make it to the pharmacy. (Participant 5, 10 years retention, buprenorphine injection)

Participants also noted that the necessity to attend pharmacies and clinics was further exacerbated as a hindering factor by the strict regulations that often left them without

medication. Participants described difficulties in overcoming the physical opioid addiction cycle in order to participate in the activities necessary to obtain a sufficient amount of OAT.

> Accessibility. It's hard to get. I have to jump through so many hoops. Those are the only reasons I ever quit it … even if they do give you carries at first, they give you very small amounts … the restrictions on the … drug, they control it even more than they do … opiates … for pain and stuff … if a script is a day late, they'll cancel it. If you don't pick it up that day, they'll cancel it … then you have to go back and get another prescription. It's ridiculous. To sit in that office for hours and hours … and you're really sick, and it's extremely difficult. I'd go to pick it up a day late … because I'd be weaning down my dose or something right, and they would cancel it, and then I wouldn't have my medication. (Participant 15, 3.5 years retention, buprenorphine)

Participants also noted that when they were not eligible for government assistance programs, the cost of OAT was a hinderance to their continued retention. Participants perceived OAT as costing more than illicit drugs and regarded the financial commitment of OAT programs as more demanding than that which they felt when actively using illicit drugs.

> I was paying out of pocket the first time that I was ever on methadone, and I still am … it's taken me four years to get stabilized enough to pay my own clinic fees … and then paying for the medication. What people don't understand is that it costs $13 a day for a very small amount of Suboxone each day … It can cost a lot of money to be on Suboxone for a month. If you're not on welfare or you don't have any coverage, it can be very expensive. It's actually cheaper to just do drugs all the time. (Participant 16, 4 years retention, buprenorphine)

Wish List. This category had 53% participation rate, as 10 participants reported at least one wish list item belonging to the access category. A total of 15 items were reported in this category. Participant comments indicated that instant access to the medication, more clinics, monthly injections being offered to everyone, less frequent pharmacy visits, cheaper OAT, harm reduction OAT samples being distributed at harm reduction 24-hour sites, easier travel arrangements, treatment and detox centres supporting OAT, more comfortable clinics, and increased access for people who don't know about OAT as wish factors that would increase OAT retention for themselves and others.

Participants noted a desire to have instant access to OAT when it was desired. Some participants spoke about a window of opportunity that is characteristic of opioid addiction where people experience fleeting moments of motivation and desire to attempt recovery. Participants perceived a necessity for OAT to be available within this window as an important part in aiding more individuals in utilizing OAT.

> There's usually a long wait … sometimes when someone is using, they'll have a moment where they're like, I want to get clean … I'm going to go to the clinic and get clean right now. And they'll be like, come back in two weeks. Well, in two weeks I have no idea where I'll be. I don't even know if I'm going to want to get clean then … there's a lot that can happen in two weeks. I would want … when that moment of wanting to be clean and surrender comes, getting them on it then is really important**.** (Participant 1, 11.5 months retention, methadone)

> If there was another way to speed it up so more people could have access to it at the drop of a hat. They could decide that right now is the time that they want to. Because we make

> those decisions in our moments of insanity and despair, when we're hopeless and there's nothing else. There's no drugs. There's no money. That's when we make those decisions to try do something differently. I think it would be really helpful to get people in those moments, and they are not sick anymore, and they're on something like Suboxone or methadone. Then they can keep accessing that. (Participant 16, 4 years retention, buprenorphine)

One participant expressed a desire to have OAT accessible as a harm reduction supply from existing harm reduction resources. Existing harm reduction resources include different organizations that hand out drug using supplies that are intended to facilitate safer drug use. This participant noted that if Suboxone was added to these services and thus, readily available to all users at any time of day, utilization rates would likely increase dramatically. Introducing Suboxone in this easy access format would take away the necessity to attend clinics in order to get started on an OAT program. As such, individuals would be able to move straight from illicit use to OAT.

> If you could go to a safe injection site … and get a free eight milligram Suboxone. If they hand it out like harm reduction … people would have it, and they'd be like … I'm sick in alley somewhere … Okay, take some Suboxone and all of a sudden … you can walk into the clinic and sit there no problem. The chances of them continuing to take it are way higher … Now I'm on Suboxone. I can just stay on Suboxone. I feel like if people just had it, accessible, they could just get their first dose, at the right time and place, when they're ready for it. You might be ready for it at 11 o'clock at night, you know, somewhere in the downtown East Side. Nothing's open. (Participant 15, 3.5 years retention, buprenorphine)

Withdrawal/Craving/Opioid Use Category. The withdrawal/craving/opioid use category is defined by factors that relate to withdrawal from, craving for, and use of opioids. Notably, the use of opioids excludes OAT utilization.

Helping. This category had 95% participation rate, as 18 participants reported at least one helping incident belonging to the withdrawal/craving/opioid use category. A total of 27 incidents were reported in this category. Participant comments indicated that experiencing relief from opiate withdrawal, relief from craving opiates, relief from worry about feeling physically unwell, feeling physically satisfied, feeling free from the opioid detoxification cycle, and not feeling high as factors that helped them retain OAT.

Participants noted that the ability of OAT to relieve their physical withdrawal symptom was an important factor that contributed to their continued retention. One participant noted that the only reason that she continued using illicit opioids was to avoid the physical withdrawal. She noted experiencing a debilitating fear of entering into withdrawal which controlled her life until she started utilizing Suboxone. Another participant perceived Suboxone as a miracle drug as it completely took away her withdrawal symptoms and she did not feel intoxicated from it. This lack of intoxication feeling aided her because she perceived herself as abstinent and therefore, accomplished in her recovery goals.

> In opiate withdrawal you get physical withdrawal. This is the best way to explain it, it's like you have mono and while you have mono, someone is drilling your bones, you're in a hot tub, but in like an ice cellar at the same time as in the hot tub, along with extreme anxiety and restless legs, and all of that combined at one time. For me, personally, withdrawal caused me such anxiety and fear that was basically like my whole using. I would wake up sick, I would use just enough to get not sick, and then I would wait until I

> got sick again, and then used just enough to get not sick, and so like the minute I was on Suboxone, it was alleviated**.** (Participant 17, 7.5 years retention, buprenorphine)

> Aching in your bones until you feel like .. you literally can't survive … and it gets rid of the sickness completely. I thought Suboxone was a miracle … take this Suboxone and all of a sudden, you're not sick anymore … it completely removes the opiate withdrawal immediately. I never felt high from it … it felt like I was clean because I didn't feel intoxicated. (Participant 15, 3.5 years retention, buprenorphine)

Another participant described his withdrawal as having a debilitating mental component. In his experience, the mental part of withdrawal lasts a lot longer than the physical time frame necessary to completely detox from opioids. In this sense, OAT helps to overcome this transition by prolonging the necessity to deal with the physical and mental part of withdrawal.

> The opiates out there right now. They're incredibly physically depending … the withdrawal symptoms can be incredibly intense … and there's a whole mental aspect to it too … Even though doctors will tell you that you're fully detoxed from the drug after a certain period, in my experience … the withdrawal, the mental side of that withdrawal, can last a lot longer … it can take quite a while to feel like you can even do anything. Especially during that time, OAT seems very attractive … it's a way to get past that without having the debilitating mental effects of the street drug. What I'll tell you is even with the sincerest desire and every reason in the world to want to quit and knowing that you have to quit, to make it through those withdrawal symptoms, without some sort of aid, like any OAT, is basically impossible. And I don't think very many people can get through it without going back to using. (Participant 19, 1 year retention, methadone)

Some participants described that the relief from craving opioids was a key factor in their success. One participant described OAT helping them by taking opioid cravings out of their life as their main priority. As such, it gave them space to prioritize other things in their life like recovering from other aspects of addiction.

> Being sick isn't my main priority, when I was just focused on getting the next fix, I wasn't focused on who I am, or goals, or anything besides just getting high, and I didn't seem to have the capacity to care about wanting to be a better me or find out who I was. I just wanted to get high. Methadone helps with cravings. The withdrawal from Fentanyl and methadone or heroin is really really extreme. It's really scary. Imagine the worst flu you've ever had … like you feel like you just want to die every second … For me, I can't stop moving my legs, and throwing up. I'm attempting to run to the washroom as fast as I can but it's not working very well because I'm so sick. It feels like your kind of trapped in your mind. (Participant 1, 11.5 months retention, methadone)

Another participant stated, "It helps you physically, not crave it as much, and that takes away this powerful kind of controlling thing in your life" (Participant 10, 7 months retention, methadone).

Hindering. This category had 26% participation rate, as five participants reported at least one hindering incident belonging to the withdrawal/craving/opioid use category. A total of six incidents were reported in this category. Participant comments indicated that feeling like OAT was not enough and wanting to use "real" drugs, a desire to continue drug use, and feeling like they are not ready to be on OAT and off illicit opioids were factors that hindered their OAT retention.

Some participants described a desire to be intoxicated as a factor that hindered their OAT retention.

> I would say sometimes, the effect is not enough. I need more … especially those times when … the low moments … I need something stronger, and that is really trying at such times, because you're always like a second away from searching for the real drug. (Participant 6, 4 months retention, methadone)

> Most times, I feel like I really need to numb my feelings. Every time I get some related trigger, I just feel like falling back on opioids. And … it gets ugly at times. I just feel like I can't control myself … I find some discouragement, or something just doesn't work out and I feel like, I have something that I could really fall back on, and it's not healthy … when I just feel like I want to hide from the rest of the world. (Participant 13, 7 months retention, buprenorphine)

Other participants spoke about their access to OAT medication hindering their retention in that they were forced into withdrawal due to cancelled prescriptions, missed appointments, and insufficient tapering doses.

> If you're not getting your medication then you're going to go into withdrawal, and you're going to be severely sick, and … its excruciating … you're not going to just cold turkey and sit through it, you're going to go straight back to using. (Participant 17, 7.5 years retention, buprenorphine)

> I stopped before … because the weaning was too fast. Initially, I was told to … reduce every week, so I was done in one month. Honestly, that did not work for me, it was too

> fast … the withdraws and the cravings, they were terrible. So that was one thing that … caused me to relapse, the weaning was too fast, and you know, I bit of more than I could chew. (Participant 13, 7 months retention, buprenorphine)

Mental Clarity Category. The mental clarity category is defined by reported focus, clarity, and mental space.

Helping. This category had 58% participation rate, as 11 participants reported one helping incident belonging to the mental clarity category. A total of 11 incidents were reported in this category. Participant comments indicated that feeling able to concentrate better, having mental space, being able to focus on learning coping skills and recovery, and feeling more present were factors that helped their OAT retention. One participant stated, "It gave me the space to start healing. To start looking at why I was using, learning coping skills, learning to have emotions, and that it's okay to have feelings, and to learn how to deal with my feelings" (Participant 5, 10 years retention, buprenorphine injection).

Stigma Category. The stigma category is defined by reported experiences of judgment, exclusion, and marginalization due to participants opioid addiction and subsequent OAT utilization. This category includes all negative interpersonal experiences reported by individuals across different contexts due to their OAT utilization.

Helping. This category had 16% participation rate, as three participants reported at least one helping incident belonging to the stigma category. A total of four incidents were reported in this category. Participant comments indicated that experiencing less stigma on OAT than when in active illicit drug addiction and overcoming stigma by disclosing OAT utilization helped them retain OAT. Specifically, participants reported experiencing less stigmatizing experiences from

the general public, from healthcare workers, and within friendship relationships while utilizing OAT.

> A lot of people … they judge someone for being a drug addict … it doesn't come out as clearly if you're on methadone, people don't automatically look at you and think, drug addict, because it doesn't have the effects on your body outwardly that street drugs do. If I was in a store people would give me a side eye, security would put extra attention on me. If I was at a doctor they wouldn't take me as seriously, they would think I was just pill seeking, I wasn't there for actual help. (Participant 1, 11.5 months retention, methadone)

> There's this stigma stereotype where people think, she's taking drugs so she's not like a person … they don't treat you very well … because that's how they think. But now I'm on the treatment, I'd say they are more respectful, nicer. (Participant 9, 5 months retention, buprenorphine)

Hindering. This category had 58% participation rate, as 11 participants reported at least one hindering incident belonging to the stigma category. A total of 18 incidents were reported in this category. Participant comments indicated that feeling shame, feeling like OAT utilization was another secret they had to keep similar to illicit drug use, experiencing overt discrimination and exclusion, feeling misunderstood and scared of judgement, being labelled as a drug addict in health care settings, and being excluded from recovery activities were factors that hindered their OAT retention. Notably, stigma was reportedly experienced in clinics, hospitals, public settings, from families, at employment sites, from doctors, and in addiction recovery communities.

Some participants reported experiencing stigma in addiction recovery communities. Participants commented that traditional recovery ideology typically views individuals who are utilizing OAT as not being in recovery and therefore, excludes them. One participant noted that the rejection she experienced from recovery communities made her feel like she did not belong in recovery and instead, belonged with people who were using illicit drugs.

> I've almost given it up due to the way that people view me in the rooms of NA and AA because there's a lot of people who think that … you're not clean, and I've definitely almost stopped taking it too early, many times just because of the way that I felt that other people viewed me … You feel completely rejected and as an addict … I felt like I didn't belong with sober people, I felt like I belonged back with the people who were using drugs. (Participant 16, 4 years retention, buprenorphine)

Another participant described the experience of rejection in recovery communities due to their OAT use as facilitating a desire to hide their OAT utilization. This belief, that OAT utilization must be kept a secret, reminded them of their secret illicit drug using. Further, the stigma about OAT in recovery communities prevents them from helping others who are struggling in that they feel they cannot talk about the medication that helped save their life. Traditional recovery programs are founded on sharing experiences to help others. Thus, secrecy around accessing OAT conflicts with the core recovery principles.

> Some people are very against it. Addiction is full of secrets and living a double life … And then it's like … I have to hold such a big secret again? And this is actually helping me, helping save my life. And if someone came in struggling, I can't be like this has helped me because I might get judged and not be able to take my one-year cake or celebrate clean time. (Participant 1, 11.5 months retention, methadone)

Another participant reported such intense shame and guilt feelings from stigmatizing experiences in 12-step programs that they felt debilitated in their own recovery.

> Just sitting in meetings and people saying that I'm not clean. If I'm on methadone: the shame and guilt. Huge. the shame and guilt of it was just really shitty, really debilitating, it kept me stuck … I actually strayed from the 12-step program because of the shame and stigma around it. (Participant 5, 10 years retention, buprenorphine injection)

Another participant described the dangerous implications that exclusion from 12-step programs has for individuals who are trying to recover. Further, explaining that the argument behind excluding individuals in OAT from 12-step recovery is murky at best.

> Judgment from other addicts in the 12-step program … there seems to be a belief that if you are an OAT patient that you are not clean. I've even heard that you shouldn't share at meetings because you're loaded and that's a little discouraging … especially early in recovery, clean time is a big deal for addicts, collecting clean time is a big deal … and to hear from the people that are supposed to be supporting you, that you are not good enough, as far as I'm concerned, if I'm able to hold down a full time job, and the actual symptoms of substance use disorder are no longer there. Sure, there is a physical dependence, but there is a distinction between the symptoms of addiction and a physical dependence. They're not the same thing. It's very convoluted. They say that it's okay to take painkillers temporarily for pain and that's okay, as long as it's taken as prescribed. But for some reason opiate replacement therapy is frowned upon and I just don't see that as long as you're using a prescribed drug responsibly as prescribed by the doctor … and you're not continuing to use it despite extremely negative consequences in your life. Then what's the problem? Newcomers to the program can be completely turned off if they're

> told they're not clean. As far as I'm concerned, that can kill people. That can make people that came to NA to get clean feel like they don't belong there, either, and then they go back out … they use street drugs, and they overdose. People don't realize that these judgments that are really pointless and really none of their business, it is potentially killing people. In a program that says that their main basic principle is to carry the message of hope to the newcomer. I just do not see how judgment like that is going along with what's supposed to be the main purpose of the program … When an addict comes into a fellowship where they're supposed to be supported and it even says in the literature, this is the first place for a lot of addicts where they ever feel like they fit in, where they ever feel like they have something in common with the people around them, where they've ever felt like they were part of something. And all of a sudden you have people telling them that, you're not good enough to be one of us. It just defeats the purpose of it in my mind. (Participant 19, 1 year retention, methadone)

One participant commented that she had to learn who was a safe person to talk to about her OAT utilization, especially at her employment site.

> At work, people know that are close to me that I'm on it. But the rest of the people don't because it's just not information that you need to share with everybody, because not everybody has a great view on it. I think that that's sad, because it literally, it saved my life. (Participant 16, 4 years retention, buprenorphine)

Another participant reported feeling self-conscious about his OAT utilization when he was around his family. He described feeling as though his family does not understand addiction and views him as weak. Further, that they don't understand the challenges he faces or how difficult it is to overcome addiction.

> I go get my medication and come home, and it just feels like they're walking on eggshells around the fact that you're an addict, and I'm just trying to be the regular old me, but it just seemed like there's judgment. He's not normal. He's dependent on this. Just being on that, they've always said it's like a cop out … They don't understand addiction. They think well, if you don't like it, quit. You know that's as simple as that. I have always beaten myself up for that … It can be misunderstood as a weakness because they don't understand that psychological change that happens. (Participant 18, 2.5 months retention, methadone)

Participants described experiencing stigma in healthcare settings. They commented that they were labelled as drug addicts in hospitals, they were not provided sufficient pain medication for non-related medical problems, they felt judged at pharmacies, they heard overt comments about them being drug addicts from the general public during supervised consumption, they felt that they cannot disclose their OAT utilization on healthcare forms that require a list of medications, and they felt shamed by OAT programs that require supervised consumption.

> I feel like it's being stigmatized … you have to go there … they have to witness you dissolve it under your tongue, and then check your tongue to make sure you're not keeping this thing, because you're an addict right, but it's a drug that doesn't even get you high. So, it's just super condescending and it's terrible and I hated doing that. It just made me feel small, very little. I can't even be trusted to take a fucking pill? Thanks. I think it's just because of the type of people that they're prescribing it to. Oh, we're giving these drugs to addicts. They're going to abuse them, so we have to make them super controlled as opposed to like morphine, oxycodone, oh we're not prescribing it to an addict so we will prescribe that to someone who's not an addict and it won't be difficult for them to get

> it and use it because they're not going to abuse it. But Suboxone is one of the least abusable drugs I've ever used, so I don't understand why. (Participant 15, 3.5 years retention, buprenorphine)

> The medication ties you to the stigma of being a drug addict still, it still holds a little bit of shame … some people will definitely know that you're taking methadone when you're at the pharmacy, and you're taking your witness dose and they just kind of side eye you … I had people talk about it behind my back in the pharmacy line, and its awkward, oh that's for drugs, she's a drug addict. (Participant 1, 11.5 months retention, methadone)

> I've been to many dentists and doctors' appointments for things that have nothing to do with addiction, since being clean and on Suboxone. And I am still worrisome to write that on my list of medications because I get treated differently every single time. I've been treated differently from not telling somebody at the hospital when I've been there in the emergency room for something completely opposite and have been treated like a normal, you know, gal, mom, person, there seeking hospital services. And for the same exact thing telling the doctor that I'm on Suboxone, and I've been treated completely differently, like I am lying. I'm probably just their drug seeking. (Participant 16, 4 years retention, buprenorphine)

Wish List. This category had 32% participation rate, as six participants reported at least one wish list item belonging to the stigma category. A total of seven items were reported in this category. Participant comments indicated that they wished for less stigma, people offering love

and understanding instead of judgment, and clear literature regarding the position of people on maintenance medications in recovery.

> People need checked up on with love, with love and understanding. Because if you do it from a point of judgment, you're actually telling these people, you're telling them that nobody cares and you're actually enhancing their addiction. (Participant 6, 4 months retention, methadone)

Another participant stated, "There's such a huge space between still using and being fully abstinent, we need more room for people in those between areas because you don't get from one spot to the other in a day" (Participant 16, 4 years retention, buprenorphine).

Future Hope/Doubt Category. The future hope/doubt category is defined by reported thoughts about future potential.

***Helping*.** This category had 42% participation rate, as eight participants reported at least one helping incident which belonged to the future hope/doubt category. A total of 10 incidents were reported in this category. Participant comments indicated that hope for their futures, thinking about their futures, motivation to have a better life, realizing their own potential, and seeing that there is hope helped them to retain OAT.

> I'm doing better right now. I'm thinking about myself, I'm thinking about the future. Previously, it was just about right now. Let me have the high. If we don't make it tomorrow, it's okay. But now, I feel I'm more concerned about the future which is a good thing. I want to be stable right now. I'm thinking about stability in the future and that really fits with me. I wanted to drop out but now I'm thinking I need a job, I need to finish school, so I can get myself a job. I need to have a family in the future and for that

you need to be stable for them and for yourself. (Participant 6, 4 months retention, methadone)

Another participant stated, “It gives me more hope for the future that I will be able to ween off, that it’s not a death sentence like street drugs are” (Participant 1, 11.5 months retention, methadone).

Hindering. This category had 5% participation rate, as one participant reported one incident belonging to the future hope/doubt category. The participant commented that insecurity about their future being positive hindered their OAT retention.

Personal Traits Category. The personal traits category is defined by individual traits reported by participants.

Helping. This category had 32% participation rate, as six participants reported one incident each as belonging to the personal traits category. Participant comments indicated that their positive mindset, self-discipline, motivation to be better, personal initiative, and self-determination helped them to retain OAT.

Desire to Be Abstinent Category. The desire to be abstinent category is defined by reported desire to be abstinent from all drugs including OAT itself.

Helping. This category had 21% participation rate, as four participants reported one helping incident each belonging to the desire to be abstinent category. Participant comments indicated that acknowledging it takes time to completely come off OAT, desire to be off all drugs, and changing the type of OAT they utilized to a once a month injection helped them to retain OAT.

Hindering. This category had 47% participation rate, as nine participants reported at least one incident belonging to the desire to be abstinent category. A total of 13 incidents were

reported in this category. Participant comments indicated that having to go through the process of weaning off OAT, wanting to be off all drugs, feeling ready to come off OAT, and wanting to live medication free as hindering to their continued OAT retention.

One participant commented that his desire to be abstinent stemmed from a desire to enrich his spiritual condition. Stating that he feels that as long as he is chemically dependent, he is not fully able to experience his emotions.

> My end goal was to just use it to get through the initial withdrawal period because it definitely helps with that … until I feel that I had enough … I don't know, strength? or whatever you want to call it to do it without the medication. So, the end goal was for me to just use it in the short term when I needed it, and then to slowly get off with a medically supervised taper. Honestly, a big part of my recovery is like my spiritual condition and I realized that, in order to for me to fully recover, I have to learn how to deal with my emotions, and I feel to a certain extent that the OAT drug kind of blocks me from being able to feel the whole spectrum of my emotions, and just to have that spiritual connection, so I feel like the best thing I can do for myself is like, learn how to deal with life without any chemical dependence. (Participant 19, 1 year retention, methadone)

Another participant commented that without hope of abstinence he would rather be doing heroin than utilizing OAT. Further, stating that staying on OAT long term makes him feel guilty and like he is not progressing in life.

> I know I'm a strong person but then I feel if I stayed on it forever, that I'm copping out at some point. If I don't try every single fucking possible way to beat this thing, then I feel like I'm letting myself down or that I'm just trading one addiction for the other. If I'm staying on it forever there's that lingering guilt in my mind that I'm not progressing. I'm

> still having to be on something that I'm attached to. I know it's a disease, that it's considered a disease. So, your brains rewired. But I refuse to believe that it can't be right. At this point, I would like to think that it can be reversed with the proper internal work that I put in. That's where I start thinking that I'm trading one addiction for the other. Is there actually no cure? If there's no cure, then I should just be on heroin. (Participant 18, 2.5 months retention, buprenorphine injection)

One participant commented that she feels ready to move on with her life as she feels that she has moved past the desire to use illicit opioids and would not use them if she stopped.

> The stupid part is I don't need it. I have no desire to use, and I don't think it's because I'm on Suboxone. My life is amazing, I have good things going on, I have no need to go out and use and screw up my whole life. I'm beyond that and it is just ridiculous that I'm stuck on it … I just want to move on in life, like I've moved on in life in every other aspect except this stupid medication. (Participant 2, 25 years retention, buprenorphine)

Some participants reported wanting to be abstinent because OAT utilization is difficult and robs them of living a peaceful life. One participant stated, "I want to live a medication free life. I think it would be more peaceful If I was not on any medication, like just a normal person" (Participant 4, 10 months retention, methadone). Another participant stated,

> I wanted to quit addiction because I was sick of the constant everyday cycle of getting high, getting sick, getting high, getting sick. When you're on Suboxone you still feel like you're, It feels the same as if you're on heroin or opiates, the negative part about needing it or else you get sick and your fucked. That's the bad part about heroin. The good part of it is it makes you feel good. Suboxone doesn't make you feel good. So, it's literally like the negative part of the addiction stays with you the whole time that you're on it. Getting

> the part that made me want to get off heroin. And then, we deal with that for years after you're off the heroin. (Participant 15, 3.5 years retention, buprenorphine)

Wish List. This category had 11% participation rate as two participants reported one item in this category. Participant comments indicated that they wish there was more help available in getting off OAT and they wish for a clear plan as to the amount of time one needs to be on OAT.

> Whether or not you'd have to be on it for the rest of your life, like a straight answer. Is this something that we're supposed to come up with? and then give a timeframe and work with you on that point, instead of just getting you on it … and then you don't ever come off it, like there's never any actual plan to come off it. (Participant 18, 2.5 months retention, buprenorphine injection)

Doctor Care Category. The doctor care category is defined by reported participant experiences with OAT prescribing physicians.

Helping. This category had 26% participation rate as five participants reported at least one incident in the doctor care category. A total of six incidents were reported in this category. Participant comments indicated that having a trusting relationship with their doctor, autonomy in their treatment, feeling supported by their doctor, being met where they were at by their doctor, being given take-home doses (carries) by their doctor, and having a doctor who they feel cares about them are factors that helped their OAT retention.

One participant commented that her relationship with her doctor has helped her continue her retention in that she feels like he really understands her challenges and doesn't judge her. She stated that his support and willingness to help contributed to her believing she could stop opioid use.

> My doctor met me where I was at and we worked toward something that really worked for me, that has kept me going up to today. My current doctor really helps me a lot, and it keeps me … kind of pushing for it … like he told me it was okay, and I wasn't alone … he seemed to be so understanding. I feel like he really felt what I was going through. He was present in that he really listened … without kind of judging me, or seeing me like a loser or something … like I wasn't trying hard enough … I feel like I was being heard, and someone really understood what I was going through, and I feel like I had some support. Not my family, not my friends, support from someone who really understood me and who was really willing to help me. I really felt like I could do it. Like I could get over opioids. (Participant 13, 7 months retention, buprenorphine)

Other participants commented that their doctors caring for them and allowing them to make decisions about their OAT has contributed to their continued retention.

> He asks me what I want to do, and how things are going, and I can just tell him … and he'll be okay with it. He doesn't try to push. He doesn't try to manage my treatment as much as let me manage it … as opposed to other doctors … he doesn't just think, oh, this guy is just an addict, he doesn't know what he's talking about. Give him whatever … because he doesn't know he's talking about. You know he actually listens and treats you like human being. So, I feel like it's because he does care. (Participant 15, 3.5 years retention, buprenorphine)

Hindering. This category had 42% participation rate as eight participants reported at least one incident in the doctor care category. A total of nine incidents were reported in this category. Participant comments indicated that doctors not listening to them, believing doctors are financially motivated, feeling uncared for by doctors, doctors not explaining treatment to them,

feeling alone in treatment decisions, bad relationships with doctors, doctors giving up on them, racism experienced from doctors, being dismissed by doctors, being treated like a loser by doctors, doctors refusing treatment options (dose decreases/type of OAT), and doctors telling them they have to do OAT a certain way are all factors that hindered their OAT retention.

Some participants commented that doctors not supporting their goals of tapering off OAT was a hindering factor to their continued retention. Participants reported tapering themselves down from high doses, without their doctor's support. Some participants felt dehumanized by their doctors dismissing their treatment goals. Other participants reported believing their doctors were financially motivated to keep them utilizing OAT and as such, not prioritizing the participants well-being.

> I told my doctor right away that I wanted to taper, and every time I'd talk to him, he'd say, no, you should stay at the dose you are at and he would just write me a prescription for 24 milligrams or whatever. So, I just stopped taking it. I started throwing some of it out, I'm not taking it … he's like well you know, I would like to be in control of your treatment. You know I've treated lots of people, and you know, lots of success, and this is the way to do it and try to reassure you that they know best, even when you know what's best for you … But trying to tell you that they know best for your treatment and really trying to convince you of that. They just want to pump you full of drugs and not really treat you like a human and send you off and they know best. You're just a dumb addict, so listen to them. that's kind of how it feels sometimes. (Participant 15, 3.5 years retention, buprenorphine)

> The doctors still don't support you coming off of it, what if you have cravings, and this and that. Even though my life is 100% stable, I had to wean myself off methadone, my doctor didn't support it and then I was on a high dose of Suboxone when I started, and I've weaned myself off that. My honest opinion is that it's a billing thing, it's about money. I look on the BC services app, I see my doctor once every three months and it's just a five-minute phone call, if that, every three months. But I look on the BC services app and I see constant billing. (Participant 2, 25 years retention, buprenorphine)

> So, the Doctor doesn't really care about … your well-being. They just really care … that they're getting $250 from the medical system for writing and prescription for Suboxone or methadone, plus they're getting a kick back from the recovery house, and then the pharmacies do the same thing. (Participant 17, 7.5 years retention, buprenorphine)

Some participants reported that the way that doctors treated them hindered their continued OAT retention. One participant stated, "Some of them are not so nice, it's hard to continue, if you know you're not being, I don't know if I should say shown love, you're not being treated very well when you're going in" (Participant 9, 5 months retention, buprenorphine). Another participant stated, "So initially, finding a doctor was a task for me. One that really understood the benefits and didn't treat me like, you know, like I'm some loser or something" (Participant 13, 7 months retention, buprenorphine). Another participant stated,

> They wanted to rush you through as fast as possible. I saw doctors yell at patients for being really sick and just wanting to curl up on like a chair and they were like 'get your feet on the ground.' You can tell they're just sick, they're just struggling. (Participant 1, 11.5 months retention, methadone)

Wish List. This category had 68% participation rate as 13 participants reported at least one item in the doctor care category. A total of 15 items were reported. Participants comments indicated that they wished for more time spent with their doctor, less burnt-out doctors, more caring and supportive doctors, more help from doctors with tapering off OAT, doctors giving a clear plan for their treatment, more communication with doctors, more information being provided by doctors, doctors who are willing to talk about all their issues, and more accessible doctors.

> Doctors being just, understanding, and health professionals, they can be really supportive and understanding, and just try to hear someone out without … making speculations or without making some generalizations, it would really help a lot of people … to come out there and seek help without fear of being judged or being labelled as a loser or something. That would … help a lot of people to come out there and seek help. (Participant 13, 7 months retention, buprenorphine)

> There should be more support with the medical taper because I feel like just the sentiment towards it makes people or addicts believe that they're not going to be able to live a life without the drug. Or that if they begin tapering off the drug, that they're more at risk for a relapse when that is not necessarily the case. So, I think anything that is like geared towards discouraging an addict from becoming as healthy as they can, and living their best life is … not necessarily helpful. (Participant 19, 1 year retention, methadone)

Seeing Life Changes Category. The seeing life changes category is defined by reported life changes in the participants lives. Participants reported seeing changes in their mental health, social functioning and support, physical appearance, and overall quality of life.

Helping. This category had 74% participation rate as 14 participants reported at least one item in the seeing life changes category. A total of 25 incidents were reported in this category. Participants comments indicated that seeing positive career improvements, improvements in their productivity, improvements in relationships and social functioning, ability to do activities that they could not before, being able to be a responsible person, being able to pursue educational desires, feeling better physically, feeling able to take care of themselves, and overall improvements in their mental health were factors that helped them retain OAT.

> It's important because … the longer I'm able to stay clean, the more momentum I start to build, and the more I start to get my old life back and start to … just build a life for myself. So, the more that happens, the more momentum I get, the more I want to be in recovery, and the more grateful I become, and it's just kind of a snowball effect. But the thing that really is most important for me is having that peace of mind and feeling comfortable in my own skin. But to get back those physical outside things also helps with like my inner peace of mind. So, it's a combination of all those things. I would say. And it's kind of hard to feel like you're really doing anything worthwhile if you don't at least have like those basic things that most adults my age have. like being a reliable employee, being able to have a job, getting my driver's license back, even like having a bank account. There were times where I would lose all my ID and I had nothing, and I had to start from square one, from a birth certificate. I had nothing to even like identify myself as a part of society. (Participant 19, 1 year retention, methadone)

> My biggest thing is for the stability, you know, when you spend decades of your life relying on the substance, having something to replace that gives you that stability. You're

> not having to do crime, you're not out having to be out on the street all the time hustling, you can have a bit of normality in your life. You can get your kids back, you can get a job, you can do lots of things. For me, it was like night and day. I went from being on the street, you know living vicariously, doing crime all day every day, to having a home, a place, having my family in my life, getting to be with my grandkids, having a job, and advancing in my career. (Participant 2, 25 years retention, buprenorphine)

Another participant stated, "When I'm on OAT I think I'm a better person, it helps me to interact better socially and also just be productive" (Participant 4, 10 months retention, methadone).

Hindering. This category had 11% participation rate as two participants reported one incident each belonging to the seeing life changes category. One participant commented that once they were on OAT, they realized they had lost friends and important relationships due to their behavior during illicit opioid use, which hindered their OAT retention. The other participant commented that their life had improved so much during OAT utilization that they no longer believed they needed to take it anymore, hindering OAT retention, as they believe nothing would cause them to return to illicit opioid use.

Wish List. This category had 5% participation rate as one participant reported one item in this category. The participant commented that they wished for improvements in that they desired more support from their family.

Chained to Addiction/Longevity Category. The chained to addiction/longevity category is defined by reported experiences of feeling permanently attached to drug addiction and reported distress over OAT utilization reminding participants of their drug misuse patterns and behaviors.

Hindering. This category had 32% participation rate as six participants reported at least one incident belonging to the chained to addiction/longevity category. A total of seven incidents were reported in this category. Participants comments indicated that feeling that they are a slave to the medication, feeling reliant on a medication, wanting to move on with life from drug addiction, feeling they are in a lifelong rut, the long term commitment of OAT, the daily reminder that they are a drug addict, wanting to be normal and being unsure how long they will have to be on OAT, feeling controlled by OAT, and feeling OAT is a ball and chain that keeps them tied to addiction were hindering factors toward their continued OAT retention.

One participant reported feeling like she was a slave to the medication and that there was no solution to stopping it except to figure it out for herself.

> I feel like I'm a slave to the medication. It's hard because I feel like I'm not getting the care that I want. They should be finding any solution they can to get me off … there's got to be something they can do to help people transition off that last little bit of Suboxone, it's kind of crazy there's only one solution … keep taking it forever and … someone really wants to get off and really show that they are really ready to get off and they have everything set up … for success. But then they just can't get over this barrier. How do I get off it? Well, just keep calling every three months and re-prescribing it and it's up to you to wean yourself off. (Participant 2, 25 years retention, buprenorphine)

Another participant described how important it is to come off of it so that they can get on with their life and not have to worry about the addiction cycle.

> It's super important to come off of it, because until your off of it, you still have a ball and chain around your ankle. If you don't go get it, you're sick. I go to work. I forget it. I'm sick … . It's just debilitating to have to take this pill at a certain time every day, or else

> you're fucked. Sometimes you forget it, and it can just get in the way of life. So yeah, it's important to come off of it because I don't want to be dependent on any substance … I also want to be free to live my life and not worry about shit like that. (Participant 15, 3.5 years retention, buprenorphine)

Wish List. This category had 5% participation rate as one participant reported one item belonging to this category. This participant indicated that they wish there was a time limit for how long somebody is supposed to be on OAT before re-evaluating their plan to come off of it.

Psychosocial Addiction Recovery Category. The psychosocial addiction category is defined by participants reported involvement in psychotherapy and other psychosocial addiction recovery activities. This category includes incidents where participants reported the necessity/desire for help with opioid addiction outside of the physical help that OAT provides.

Helping. This category had 21% participation rate as four participants reported a total of four incidents belonging to the psychosocial addiction recovery category. Participants comments indicated that participation in a twelve-step recovery program and participating in addiction recovery social communities helped their OAT retention.

One participant commented on how he believes that his participation in a twelve-step program has contributed to his success. In the past, when he hadn't participated in a twelve-step program, he was not as successful.

> Especially early on it's been a large part of my success … I've tried to get clean a few times … this is the first time I'm coming up to a year very shortly, and it's the first time I've made it to a year, and it it's also the first time that I've done OAT in conjunction with AA to this extent. (Participant 19, 1 year retention, methadone)

Another participant commented on how participating in psychosocial addiction recovery activities is necessary during OAT utilization to accomplish a level of healing where terminating OAT could be successful.

> I do agree with it long term … for some people … but usually those people are the people that aren't also doing the work … they're not involved in the recovery process and doing the work on their recovery and doing their steps and getting treated for their addiction or mental health … they have to have that crutch. (Participant 17, 7.5 months retention, buprenorphine)

Another participant commented on how living in a recovery house has helped him continue his retention through providing an environment where people around him are also striving for the same goals.

> Everybody here has the same state of mind … coming here, my willingness to change … is way higher. If I was to go hang around with old acquaintances, people that I used with, it would be counterproductive. So, by me being in this environment and being part of this fellowship, and people in it with a like state of mind, its less likely that I need to go get something else. (Participant 18, 2.5 months retention, buprenorphine injection)

Hindering. This category had 5% participation rate as one participant reported one incident belonging to the psychosocial addiction recovery category. The participant indicated that coming to terms with needing to see a therapist was difficult and hindered their OAT retention.

Wish List. This category had 47% participation rate as nine participants reported at least one item in the psychosocial addiction recovery category. A total of 13 items were reported in this category. Participants indicated that they wished for more counselling, support, help with the

underlying issues that contribute to their drug use, and information about or access to recovery programs and therapy techniques.

Some participants commented that counselling and support would be helpful for continued retention. Specifically, counselling that targets the underlying root motivations for drug using behaviors.

> Making sure that you have counsellors that … are registered … or have experience in recovery and are willing to work with you for as long as you need, or short as you need. I think that's a big part of it. Because I think that most people use, or start using, to either suppress or enhance something … whether it's to suppress trauma or anxiety, or depressive feelings, or whether it's uppers because you know you feel like you're shy, and you don't fit in … there's almost always some psychological aspect for most people to using and so … if you don't get to the bottom of that. Then the minute that things happen … that's going to affect them, and they will be a risk. (Participant 17, 7.5 years retention, buprenorphine)

> Personally … I have fallen into addiction because of my issues. So … listening to someone talk about their issues and understanding them and helping them, that will help a lot. (Participant 9, 5 months retention, buprenorphine)

One participant commented that he wishes doctors would be educated on and educate patients on other forms of therapies that can be used in conjunction with OAT.

> When somebody chooses OAT therapy there should be more … encouragement for them to get involved in other forms of therapy as well because it's a proven fact that working in like a 12-step program, or like … there's lots of different types of recovery, smart

> recovery, cognitive behavioral therapy. It's a proven fact that doing things like that in conjunction with your OAT, it raises the possibility of success way higher. I've never heard that from a doctor. I've never heard a doctor tell me that if you do this as well, then your chances will be a lot better … and I think that doctors should be more educated on that. I think it would be nice to be told that there's a higher success rate to involve other things as well. I think, when I first went on it, I was under the impression that this was some miracle drug that was going to stop my addiction. And I … think that's the way that doctors look at it too … they're just looking at it from a physical point of view. (Participant 19, 1 year retention, methadone)

Information and Resources Category. The information and resources category is defined by information and resources regarding OAT. This category includes availability and quantity of information about OAT in public and health care realms. Further, this category includes participants reported desire to have known about what their experience on OAT was going to be like prior to starting the medication. This category also includes participants reported desire to have consistency of information and accurate information across opioid addiction resources (detoxification, treatment centres, therapists, doctors, recovery houses, research, etc.).

Helping. This category had 5% participation rate as one participant reported one incident belonging to the information and resources category. The participant reported that the treatment centre they attended offering them OAT and information about OAT helped their OAT retention.

***Hindering*.** This category had 11% participation rate as two participants reported at least one incident belonging to the information and resources category. A total of three incidents were reported in this category. Participants indicated that different resources (treatment facilities,

detoxification programs, recovery houses, doctors, etc.) having differing approaches to OAT treatment and differing expectations of their clients hindered their OAT retention.

Wish List. This category had 74% participation rate as 14 participants reported items in the information and resources category. A total of 24 items were reported in this category. Participants indicated that they wished there was more advertisements for OAT, more accurate information available about OAT including dose schedules and types of OAT, more explanation of OAT prior to starting it, research regarding necessary length of retention, and awareness brought to schools and in media.

Some participants commented that they wish that people who were addicted to opioids had more information available to them about opioids and treatment. Further commenting that they wish they had known about the existence of OAT sooner.

> More awareness on these things because sometimes I feel that people find themselves in addiction because they didn't know what to do. They were not well educated on these things, and I feel some of these things are very much avoidable. If there was more awareness in schools, in social media, especially on opioids because people are really suffering out here. There are even people who don’t know about it, they don’t know about this therapy. (Participant 6, 4 months retention, methadone)

> I wish I had known about the drugs earlier. I feel like I could have regained my life and had my life back earlier … I wanted to come out of it but addiction is what killed me and if I knew that there's something to stop addiction … I could of used it earlier. (Participant 14, 2 months retention, methadone)

One participant commented that they wish that doctors would educate people on all the aspects of utilizing OAT. Specifically, they felt unprepared for the psychological and physical aspects of it and wished doctors would inform patients about these challenges that often accompany OAT utilization.

> Having a doctor who takes you through everything … They have to prepare you psychologically; this is what is going to happen when you take this medicine. For example, dealing with all the side effects … the effect that this drug comes with is the one thing that can make a person quit … the doctor should prepare you psychologically, this is what … to expect and that this should not be something that will make you … not want to continue with the medication or something like that. (Participant 7, 6 months retention, methadone)

Some participants commented that they wished for accurate information regarding the necessary longevity of OAT utilization. Stating that they wish they had a more informed and reliable plan to follow regarding their OAT treatment program.

> Accurate information, It would have been helpful. I would have had a better plan for how I wanted my treatment to go ahead of time instead of staying on it for so many years and I wouldn't have liked to stay on it for that many years. I would have like to know … this is an addictive substance, and I can get on it … and do a rapid taper. (Participant 15, 3.5 years retention, buprenorphine)

Peers (OAT/Opioid Addiction) Category. The peers category is defined by access to and interaction with peers who are actively utilizing OAT and/or who are addicted to opioids.

***Helping*.** This category had 26% participation rate as five participants reported at least one incident belonging to the peers category. A total of eight incidents were reported in this

category. Participants comments indicated that seeing peers who continue with illicit opioid use suffer negative consequences, seeing peers on OAT do well and progress, and making friends with others on OAT have helped their OAT retention.

One participant commented that knowing other people who utilize OAT helps them because it makes them feel like they are not alone.

> I'm not alone. I've seen other people getting treatment and it's also encouraged me and when you find out you are not going through this alone, it gives you motivation, that's the positive side. It is important, me seeing other people taking the treatment because I see that there is hope. (Participant 10, 7 months retention, methadone)

One participant commented that seeing other people succeed using OAT is the reason they chose to start it in the first place.

> A big reason why I chose to go on it is because I had seen others in the program that had been on it for a year or two, even three, and they were having a lot of success in sobriety … I still sometimes struggle with this, where I feel like I'm never going to be able to get clean. Then when I see other people that are getting clean and living like a successful life I start to believe … why can't I do that too? (Participant 19, 1 year retention, methadone)

Another participant stated that making new friends who are utilizing the medication helps them because they talk about the medication and encourage each other.

> I got new friends, and it is very encouraging because I have friends who are also on the treatment. So, it's easier for me, it makes the medical procedure easier. Because your friend is taking the medication. Why should I not? You know? And we are in the same situation. We talk about everything, we vibe, we really vibe big time. (Participant 10, 7 months retention, buprenorphine)

Hindering. This category had 11% participation rate as two participants reported one incident each belonging to the peer's category. One participant indicated that maintaining relationships with addiction peers hindered their retention. In contrast, one participant indicated that terminating relationships with addiction peers hindered their retention because they felt alone in their recovery.

Wish List. This category had 53% participation rate as ten participants reported one item each in the peers category. Participants reported wishing that they had a peer community, that they knew other people on OAT, feeling like they weren't alone, that they had reassurance from peers, access to others on OAT, and that they knew of meetings online with others on OAT.

> It would feel real nice to talk to someone who really understood what it feels like to be … addicted to opioids, and someone who can really relate to my feelings, to my pain. And … talking to someone who really is in my shoes would really help. (Participant 13, 7 months retention, buprenorphine)

> I'm looking forward to joining a group where I can share with others and interact with others who are in recovery. That would really help me. I would also be happy to help others get better too. It would make me know I'm not alone in this and be their supporters and they would be my supporters. (Participant 4, 10 months retention, methadone)

Side Effects Category. The side effects category is defined by all physical side effects reported by participants while utilizing OAT.

Helping. This category had 11% participation rate as two participants reported one incident each belonging to the side effects category. Participants indicated that the absence of negative side effects helped their continued OAT retention.

Hindering. This category had 68% participation rate as 13 participants reported at least one incident belonging to the side effects category. A total of 17 incidents were reported in this category. Participants comments indicated that stress over side effects, productivity being diminished due to side effects, and side effects themselves such as gaining weight, bloating, gas, lethargy, headaches, and constipation hindered their OAT retention.

Some participants reported that the side effects were so impairing that they felt they were unable to be productive because of them. The side effects caused them to question whether they should continue OAT utilization altogether.

> It is the side effects and what they are doing to me. And I was feeling like, this is too much, and it is not worth it. So, dealing with the side effects was not easy. I can say I had stomach pain and a headache and weight gain as well. Sometimes, it was getting so severe that I just have to stay in the house and not go outside or do much. (Participant 7, 6 months retention, methadone)

> I would say it's the side effects. The bloating and the gas you feel in your stomach. That's something that makes me feel so bad sometimes. I really feel sick, and it makes me question myself if I should still be doing this. it's quit a stressful, especially with the headaches because sometimes you feel like you can pass out. Whenever you're experiencing the side effects, you're not productive in any way. It's such a low point for me. (Participant 12, 2.5 years retention, buprenorphine)

Wish List. This category had 11% participation rate as two participants reported one item each belonging to this category. Participants indicated that they wished there was a medication to help them diminish the side effects they were experiencing from OAT utilization.

Scaling Results

Answers to the Scaling Question. All participants were asked to rate on a scale of zero to 10, where zero is very poor OAT treatment outcomes, five is okay, and 10 is very good treatment outcomes, where they would place themselves today. The scaling question was asked twice during the interview. First, before the ECIT portion of the interview and second, after the ECIT portion. The purpose of the scaling question was to gauge how the interview process impacted the participants perception of their OAT treatment outcomes. The question being asked after the ECIT portion was intended to assess whether the interview impacted the response of participants. When the scaling question was asked after the ECIT portion of the interview, eight participants responded with an increased rating score compared to their response when first asked the question, 11 participants responded with the same rating score, and no participants reported a lower rating. See Table 6 for pre- and post- ECIT scaling question scores.

Table 6

Pre- and Post- ECIT Scaling Question Scores

Participant	Gender	Age	Pre-ECIT Score	Post-ECIT Score	Increased	No Change
1	F	31	7	7		X
2	F	54	1	1		X
3	M	25	6	7	X	
4	M	27	5	7	X	
5	F	45	8	8.5	X	
6	F	22	7.5	8.5	X	
7	F	23	7	8	X	
8	M	26	7	7		X
9	F	25	6	10	X	
10	M	26	7	9	X	
11	M	27	10	10		X
12	M	25	4	4		X
13	F	22	7	7		X
14	M	23	7	7		X
15	M	28	10	10		X
16	F	36	8	8		X
17	F	34	10	10		X
18	M	37	6	8.5	X	
19	M	40	8	8		X

Rationale for the Answers to the Scaling Question. Every participant was asked to explain their reasoning for their response to the scaling question after they had responded with a numerical value to the question for the second time. Based on the responses from the participants, six themes emerged. See Table 7 for themes. Three of the six themes focus on why participants hadn't reported a higher value. The subthemes for the relativley lower ratings were lack of support to become abstinent, struggling with opioid addiction, and side effects. The remaining three subthemes focus on why participants rated themselves highly. The subthemes

for high ratings were seeing results and progress in life, self-discipline and confidence in oneself, and good OAT doctors/clinics. Each of the six subthemes are discussed in detail with participant quotes in the following discussion.

Table 7

Justification of Themes from the Scaling Question

	Subthemes
Justifying Low Ratings	
	Lack of support
	Struggle with opioid addiction
	Side effects
Justifying High Ratings	
	Seeing results/progress
	Self-discipline/confidence
	Good doctor/clinic

Justifying Low Ratings. Five participants mentioned factors that contributed to their lower assessment of their overall OAT treatment outcomes today. Two participant reported justifying lower ratings due to their desire to receive more support from their OAT doctors. Two participants reported that they still feel that they struggle with opioid addiction. One participant reported that the side effects from their OAT treatment contributed to their low rating. See Table 8 for participant quotes.

Justifying High Ratings. Seeing results and progress in various areas was reported by 12 participants as contributing to their high rating. Three participants reported developing discipline and confidence in themselves contributed to their high ratings. Five participants reported that having a good OAT doctor and a good OAT clinic contributed to their high ratings. See Table 8 for participant quotes.

Justifying Increased Ratings. Seven of the eight participants who increased their rating when asked the scaling question for the second time reported that the interview process had made them realize they were doing better than they had previously thought. See Table 8 for participant quotes.

Table 8

Participant Quotes from the Scaling Question

Theme	Subtheme	Quotes
Justifying low ratings		
	Lack of support	
		I don't find treatment that effective for me now because I feel like I should be off it, but it's such a struggle to get off it, it's just tricky to let go of that little bit and I'm having a hard time finding support from my physician. (Participant 2, 25 years retention, buprenorphine)
		My doctor is pretty quick … you go in, he says. Are you still doing well?... so maybe a little bit more focus on how I am specifically doing, a little bit more chat around different areas of my life. Not just … still same dose … good. Okay, well, see you. (Participant 16, 4 years retention, buprenorphine)
	Struggle with opioid addiction	
		I was so much addicted to the use of narcotics that I didn't feel like I wanted to let go of the urge, but I didn't stop because I wanted to continue using narcotics. (Participant 8, 2 months retention, buprenorphine)
		Change is not easy; you just feel like this is not you. Better your previous life, you just feel you are not in the correct space. (Participant 10, 7 months retention, methadone)

Theme	Subtheme	Quotes
Justifying high ratings	Side effects	Sometimes it's kind of challenging because I've been experiencing some side effects like mostly vomiting, and strong headaches. So, I mean the side effects like really make me uncomfortable. So, sometimes I'm like, I might have to give this up but I'm like no, I can't have come all this way and you just want to give up. (Participant 12, 2.5 years retention, buprenorphine)
	Seeing results/progress	I thought, I'm not worse off, I'm doing great. I think I'm headed somewhere. (Participant 4, 10 months retention, methadone)
		I'd say, I've seen my life improve a lot. Then from before. Before nothing really happened there was no change. But right now, there is. (Participant 9, 5 months retention, buprenorphine)
		Right now, I don't get like the craving of the street drugs like I used to, Suboxone is really kind of working for me. (Participant 13, 7 months retention, buprenorphine)
		I can say I lost my life, and I'm beginning to regain it. I feel like my life has been positively impacted, at least I can say, I'm beginning to lose that addiction. (Participant 14, 2 months retention, methadone)
		My whole perspective and the way I react to life in general is better. (Participant 19, 1 year retention, methadone)
	Self-discipline and confidence	Because the last 3 years of my treatment. It's been self-directed. I've done what I wanted to, tapered when I wanted to, got as many carries for as long as I wanted to, and it's just allowed me to have the freedom I needed to fix my life. (Participant 15, 3.5 years retention, buprenorphine)
		It's my confidence in my own recovery. I am confident that I can do this. (Participant 17, 7.5 years retention, buprenorphine)

Theme	Subtheme	Quotes
	Good doctor/clinic	
		I have been very fortunate to have a good doctor and pharmacy duo that I gained from the treatment centre … the same doctor and clinic that I started with … if it was not for this specific clinic. I don't know if I still have the same outcome at this point in time. (Participant 16, 4 years retention, buprenorphine)
		With the clinic I'm with now it's been really amazing to me. It is welcoming. (Participant 1, 11.5 months retention, methadone)
		A lot of it is my doctor, you know, it's his willingness to work with me through things that are complex, like when I had my surgery, and there's certain doctors that would not even care. I have someone to go to. We have built trust over the years. (Participant 17, 7.5 years retention, buprenorphine)
		First of all, the doctor that I have been seeing is a family doctor, and I have been with him for the longest time, and I think he understands me better. And our relationship is so good. (Participant 7, 6 months retention, methadone)
Justifying increased ratings		
		Actually, talking about it is really helpful, and people say that a problem shared is a problem solved so I think by sharing with you I am also helping myself. (Participant 4, 10 months retention, methadone)
		Talking about it just made me realize how important it is, and how people need to, you know, people don't talk about it. It's rare to hear people talking about the medication. (Participant 6, 4 months retention, methadone)
		Talking to you has made me think about a lot of things, so yeah, that's the difference. (Participant 9, 5 months retention, buprenorphine)
		When I continue to talk to you, I saw like there's nothing wrong. There's nothing bad. It's going smoothly. And I'm comfortable. (Participant 10, 7 months retention, methadone)

Summary of Section

This section summarized the responses from the 19 participants obtained during the Phase 1 qualitative study. Participants responses were outlined in accordance with the three components of the interview- the contextual component, the ECIT questions, and the scale question pertaining to overall OAT treatment outcomes. The ECIT results are summarized in accordance with the categories formed regarding helping, hindering, and wish list items as per the researcher's interpretation of the data set. Direct quotations are used to reflect the responses of the participants as accurately as possible. The 14 critical incident and wish list categories obtained capture what participants reported as meaningful factors that influence their OAT retention. In the following chapter these results will be linked to existing literature. Novel findings and implications will be discussed.

Phase 2: Quantitative Results

This study sought to investigate factors for their ability to predict group membership in successful and unsuccessful OAT retention groups. This section describes the findings from the analysis which has been previously outlined. A description of the sample is given, followed by univariable associations which highlight the relationship of each predictor to the dependent variable. Variable selection procedures are then outlined which determine the final multivariable model used for analysis. Assumptions pertaining to binary logistic regression are discussed and the final multivariable model is analyzed.

Descriptive Statistics

Survey data was collected from 439 participants. Of those 439 participants, 166 were excluded during data preparation (see Data Cleaning section). The remaining sample ($N = 273$) was used in the final analysis.

Outcome Variable. Of the 273 participants, 66 (24.2%) participants identified themselves as belonging to the unsuccessful retention outcome group and 207 (75.8%) identified themselves as belonging to the successful retention outcome group (≥ 12 months retention). The length of time since last dropout of treatment in the unsuccessfully retained group ranged from one day to 96 days (M = 34.59, SD = 23.35). See Table 9. In the unsuccessfully retained outcome group, 10 participants (15.15%) stated they dropped out and restarted OAT, 23 participants (38%) stated they dropped out and returned to illicit opioid use, and 33 (50%) of participants stated they dropped out to live an opioid free life. See Table 10. The length of time successfully retained in treatment in the successfully retained group ranged from one year to 34 years (M = 5.14, SD = 4.98).

Table 9

Last Dropout Incident (Unsuccessfully Retained Group)

Last Dropout Incident	Frequency (%)
1–6 days	8 (12.12)
7–12 days	5 (7.58)
13–18 days	8 (12.12)
19–24 days	4 (6.06)
25–30 days	11 (16.67)
31–36 days	1 (1.51)
37–42 days	3 (4.55)
43–48 days	4 (6.06)
49–54 days	1 (1.51)
55–60 days	18 (27.27)
61–96 days	3 (6.06)
Total	66 (100)

Table 10

Reason for Unsuccessful Retention (Unsuccessfully Retained Group)

	Reason	Frequency (%)
	Living opioid free	33 (50)
	Restarted illicit opioid use	23 (38)
	Stopped and restarted OAT	10 (15.15)
Total		66 (100)

Demographic Description. The sample was mostly Caucasian (218 participants: 79.9%), with the remaining participants being African American (14: 5.1%), other not listed (18: 6.6%), Latino (10: 3.7%), Indigenous (7: 2.6%), Asian/Pacific Islander (3: 1.1%), and Middle Eastern (3: 1.1%). The sample was mostly male (141: 51.6%) and the large minority was female (117: 42.9%). A small minority of the sample identified as non-binary (5: 1.8%), transgender (4: 1.5%), and some participants preferred not to respond to the gender question (6: 2.2%).

Regarding the type of OAT being utilized, 180 (65.9%) of the 273 participants reported utilizing buprenorphine and 93 (34.1%) reported utilizing methadone. Regarding employment status, 131 (48%) reported being employed full time, 39 (14.3%) reported being employed part time, 94 (34.4%) identified being unemployed), and 9 (3.3%) did not want to respond to the employment question. Regarding current housing situation, 7 (2.6%) reported being homeless, 4 (1.5%) reported living in a shelter, 15 (5.5%) reported living in a recovery or detoxification or drug/alcohol treatment centre, 109 (39.9%) reported renting a dwelling, 60 (22%) reported owning their home, and 64 (23.4%) reported living with friends or relatives.

Participants reported their country of residence which resulted in 16 countries. The majority of the participants (221: 81%) were located in the United States. Participants were also located in Canada (33: 12.1%), Australia (5: 1.8%), and England (2: 0.7%). Twelve countries

had one participant (0.4%) each, Austria, Burkina Faso, Croatia, Finland, France, Germany, Italy, Kenya, Netherlands, New Zealand, Portugal, and Romania. Notably, age is utilized in this study as a potential predictor and not a demographic variable. Participants ranged in age from 20 years old to 63 years old (M = 35.02: SD = 8.936). See Table 11 for demographic sample characteristics. There were no major inhomogeneities between the unsuccessfully retained and successfully retained groups of the dichotomous outcome variable.

Table 11

Phase 1 Demographic Sample Characteristics

		Frequency (%)	Frequency in Unsuccessful (%)	Frequency in Successful (%)
		N = 273	n = 66	n = 207
Ethnicity				
	White	218 (79.9)	53(80.3)	165(79.7)
	African American	14 (5.1)	2(3)	12(5.8)
	Latino	10 (3.7)	1(1.5)	9(4.3)
	Indigenous	7 (2.6)	2(3)	5(2.4)
	Middle Eastern	3 (1.1)	0	3(1.4)
	Asian/Pacific Islander	3 (1.1)	3(4.5)	0
	Prefer not to respond	18 (6.6)	5(7.5)	13(6.3)
Gender				
	Male	141 (51.6)	36(54.5)	105(50.7)
	Female	117 (42.9)	25(37.9)	92(44.4)
	Non-Binary	5 (1.8)	4(6)	1(0.5)
	Transgender	4 (1.5)	0	4(1.9)
	Prefer not to respond	6 (2.2)	1(1.5)	5(2.4)

		Frequency (%)	Frequency in Unsuccessful (%)	Frequency in Successful (%)
		N = 273	*n* = 66	*n* = 207
Housing situation				
	Homeless	7 (2.5)	1(1.5)	6(2.9)
	Shelter	4 (1.5)	3(4.5)	1(0.5)
	Treatment or detoxification centre	7 (2.5)	2(3)	5(2.4)
	Recovery house	8 (2.9)	3(4.5)	5(2.4)
	Renting	109 (39.9)	24(36.4)	85(41.1)
	Homeowner	60 (22)	9(13.6)	51(24.6)
	Living with friends/relatives	64 (23.4)	15(22.7)	49(23.7)
	Other	14 (5.1)	9(13.6)	5(2.4)
Type of OAT				
	Buprenorphine	180 (65.9)	43(65.2)	137(66.2)
	Methadone	93 (34.1)	23(34.8)	70(33.8)
Employment				
	Employed (full time)	131 (48)	27(40.1)	104(50.2)
	Employed (part time)	39 (14.3)	11(16.7)	28(13.5)
	Not Employed	94 (34.4)	26(39.4)	68(32.9)
	No Response	9 (3.3)	2 (3)	7(3.4)
Current legal involvement				
	Yes	42 (15.4)	11(16.7)	31(15)
	No	231 (84.6)	55(83.3)	176(85)

		Frequency (%)	Frequency in Unsuccessful (%)	Frequency in Successful (%)
		N = 273	*n* = 66	*n* = 207
Location				
	Australia	5 (1.8)	1(1.5)	4(1.9)
	Austria	1 (0.4)	0	1(0.5)
	Burkina Faso	1 (0.4)	0	1(0.5)
	Canada	33 (12.1)	8(12.1)	25(12)
	Croatia	1 (0.4)	0	1(0.5)
	England	2 (0.7)	1(1.5)	1(0.5)
	Finland	1 (0.4)	0	1(0.5)
	France	1 (0.4)	0	1(0.5)
	Germany	1 (0.4)	0	1(0.5)
	Italy	1 (0.4)	0	1(0.5)
	Kenya	1 (0.4)	0	1(0.5)
	Netherlands	1 (0.4)	1(1.5)	0
	New Zealand	1 (0.4)	0	1(0.5)
	Portugal	1 (0.4)	0	1(0.5)
	Romania	1 (0.4)	0	1(0.5)
	United States	221 (81)	55(83.3)	166(80.2)
Age				
	20–24	24 (8.8)	6(9)	18(8.7)
	25–29	51 (18.7)	12(18.2)	39(18.8)
	30–34	74 (27.1)	21(31.8)	53(25.6)
	35–39	55 (20.1)	14(21.2)	41(19.9)

	Frequency (%)	Frequency in Unsuccessful (%)	Frequency in Successful (%)
	N = 273	*n* = 66	*n* = 207
40–44	31 (11.4)	6(9)	25(12.1)
45–49	11 (4)	1(1.5)	10(4.8)
50–54	17 (6.2)	3(4.5)	14(6.8)
55–59	6 (2.2)	2(3)	4(1.9)
60–64	4 (1.5)	1(1.5)	3(1.4)

Associations Between Dependent and Independent Variables

Correlations. Correlations were analyzed between all continuous potential predictors to assess for independence of the potential independent variables. See Table 12. The highest correlations were identified between social support and quality of life (.597) and between stigma impact and stigma experience (.478). It was determined that no correlations were high enough to exclude variables from predictor selection. After the final model was determined, multicollinearity was further assessed using tolerance/VIF values. See Assumption Check for Binary Logistic Regression section.

Table 12

Correlations Between All Continuous Variables: Pearson's Correlation

	Craving	OAM5	Side Effect	Access	Stigma Exp.	Social Support	Healthcare	Peer Support	QOL	Stigma Impact	Age
Craving	-	-.344**	.348**	.279**	.266**	-.387**	-.211**	.003	-.404**	.374**	-.218**
OAM5	-.344**	-	-.389**	-.278**	-.133*	.444**	.455**	.156**	.354**	-.232**	.113
Side Effect	.348**	-.389**	-	.303**	.179**	-.366**	-.306**	-.138*	-.361**	.288**	-.087
Access	.279**	-.278**	.303**	-	.398**	-.232**	-.310**	-.079	-.273**	.345**	-.039
Stigma Experience	.266**	-.133*	.179**	.398**	-	-.204**	-.236**	-.032	-.328**	.478**	-.023
Social Support	-.387**	.444**	-.366**	-.232**	-.204**	-	.281**	.260**	.597**	-.396**	.032
Healthcare	-.211**	.455**	-.306**	-.310**	-.236**	.281**	-	.272**	.236**	-.199**	.043
Peer Support	.003	.156**	-.138*	-.079	-.032	.260**	.272**	-	.304**	-.126*	-.049
QOL	-.404**	.354**	-.361**	-.273**	-.328**	.597**	.236**	.304**	-	-.382**	.057
Stigma Impact	.374**	-.232**	.288**	.345**	.478**	-.396**	-.199**	-.126*	-.382**	-	-.028
Age	-.218**	.113	-.087	-.039	-.023	.032	.043	-.049	.057	-.028	-

Note: *$p < .05$, **$p < .001$ (2-tailed)

Univariable Associations. Univariable analyses were conducted on all potential predictors using the logistic procedure in SPSS. Attitudes toward OAT (OAM5), cravings for opioids, and stigma experience variables had *p*-values < .001. The social support, health care experience, side effects, quality of life, housing, and stigma impact variables had *p*-values < .05. See Table 13.

Table 13

Univariable Associations for Covariates on Successful Retention

Variables	Wald Chi-Square	*df*	*p*-value
Demographic			
Gender	5.870	5	.319
Ethnicity	4.144	7	.767
Type of OAT	.024	1	.878
Housing	5.149	1	.023*
Predictors of Interest			
Age	.540	1	.462
Employment	.925	1	.336
Legal	.110	1	.740
Attitudes Toward OAT (OAM5)	19.943	1	< .001**
Social Support	5.717	1	.017*
Peer Support	.472	1	.449
Health Care Experience	8.568	1	.003*
Side Effects	9.519	1	.002*
Quality of Life	8.097	1	.004*
Cravings	26.992	1	< .001**
Stigma Experience	17.516	1	< .001**
Stigma Impact	9.849	1	.002*
Access	2.667	1	.102

Note. *p < .05, **p < .001

Variable Selection. Variables for the final model were arrived at through stepwise backward selection, hierarchical testing, and purposeful selection.

Backward Stepwise. A backwards stepwise likelihood ratio procedure was conducted. Backwards selection begins with all variables in the model (the full model) and removes the least significant variables one at a time to reach the best fitting model. The procedure was run using SPSS backward selection likelihood ratio logistic regression function. The analysis resulted in

twelve variables being removed. The variables that were removed were age, gender, type of OAT, doctor experience, ethnicity, employment, peer support, stigma impact, quality of life, legal involvement, side effects, and social support respectively. The final model contained four variables attitudes toward OAT (OAM5), stigma experience, cravings, and access. Although the chi-square value decreased at every removal of variable throughout the nine steps, none of the decreases were statistically significant. Therefore, the best fitting model (model 9) resulted in four variables (chi-square value of 47.699, $df = 4$, $p < .001$ as compared to null model). This analysis was run on 263 participants as nine participants chose not to answer the employment question and one chose not to answer the doctor experience question. Analysis removing these variables yielded identical results regarding the best fitting model.

Hierarchical Test. A hierarchical test based on the conceptual frame of the model derived from prior analysis and the qualitative results of this study was conducted. The results from the backwards stepwise procedure indicated that cravings, attitudes towards OAT (OAM5), and stigma experiences should be included in the final model. Access is also indicated as a meaningful contributor. Apart from these four variables, the five variables of interest from the independent significance analysis were evaluated for their conceptual influence. Drawing from the qualitative results, side effects and social support were also included.

The hierarchical test evaluated four models. In this analysis, model one (craving alone) showed significant improvement over the null model (chi-square 28.887, $df = 1$, $p < .001$). Model two (craving, OAM5, and stigma experiences) showed significant improvement from model one (chi-square increase of 19.715, $df = 2$, $p < .001$) resulting in improvements compared to the null model (chi-square 48.602, $df = 3$, $p < .001$). Model three (craving, OAM5, stigma, and access) did not show significant improvement in fit compared to model two ($p = 0.069$).

However, the chi-square value increased 3.298 resulting in model three having improved fit. Model three compared to the null model was statistically significant (chi-square 51.9, $df = 4$, $p < .001$ compared to the null model). Model four (craving, OAM5, stigma, access, social support, and side effects) also did not show significant improvement in fit compared to model two ($p = 0.444$). However, the chi-square value increased 1.622 resulting in model four having an improved fit. Model four compared to the null model was statistically significant (chi-square 53.522, $df = 6$, $p < .001$).

Purposeful Selection. According to Hosmer et al. (2013) to achieve the goal of purposeful selection there needs to be a basic plan for selecting variables for the model, and a set of methods for assessing the adequacy of the model both in terms of its individual variables and overall performance must be decided on. This analysis followed the seven-step strategy guided purposeful selection approach (Hosmer et al., 2013).

The first step in purposeful selection is to conduct univariable analysis of each independent variable. Categorical variable categories were collapsed into meaningful categories. Legal involvement and employment were already dichotomous variables. Ethnicity was coded (0) *not Caucasian* (1) *Caucasian*. Gender was coded (0) *male*, (1) *female*, (2) *other*. Type of OAT was already a dichotomous variable. Housing was recoded (0) *renting or owning* and (1) *other*. See Table 14.

Table 14

Results of Univariable Logistic Regression Models (Likelihood Ratio)

	Coeff.	Std. Err.	Exp(B) Odds ratio	95% CI		Chi-Square	*p*
Predictors							
Legal	.127	.383	1.135	.536	2.408	.108	.742
Employment	.284	.295	1.328	.745	2.368	.917	.338
Craving	-.083	.016	.920	.892	.950	28.887	<.001
OAM5	.141	.032	1.152	1.083	1.226	21.207	<.001
Side Effect	-.259	.084	.771	.654	.910	9.492	.002
Access	-.030	.018	.970	.936	1.006	2.696	.101
Stigma Ex.	-.233	.056	.792	.710	.883	19.350	<.001
Stigma Im.	-.029	.009	.971	.954	.989	10.175	.001
Social Support	.043	.018	1.044	1.008	1.082	5.709	.017
Peer Support	.012	.016	1.012	.981	1.043	.573	.449
Healthcare Exp.	.035	.012	1.035	1.012	1.060	8.734	.003
QOL	.023	.008	1.023	1.007	1.039	8.283	.004
Age	.012	.016	1.012	.980	1.045	.551	.458
Demographic							
Type of OAT	-.046	.297	.955	.534	1.710	.024	.878
Gender						1.295	.523
Gender(1)	.232	.297	.613	.705	2.258		
Gender(2)	-.377	.581	.686	.220	2.140		
Housing	-.650	.286	.522	.298	.915	5.134	.023
Ethnicity	-.037	.354	.964	.481	1.930	.011	.917

After univariable analysis has been conducted, variables are assessed independently for their likelihood ratio chi-square test results. To construct the first multivariable model all variables with *p*-values less than 0.25 are extracted (Hosmer et al., 2013). At this threshold, it was decided that seven variables (legal involvement, employment, peer support, age, type of OAT, gender, and ethnicity) do not explain variation in OAT retention success.

The second step in purposeful selection involves fitting a multivariable model containing all the variables identified for inclusion in step one. The importance of each variable is then assessed using the *p*-value of its Wald statistic (Hosmer et al., 2013). Variables are determined as contributing at traditional levels of significance. The variable with the highest *p*-value is removed and the smaller, new, model is compared to the older, larger, model using the partial likelihood ratio test ($\chi 2q$).

Table 15

Results of Fitting the Multivariable Model with All Variables Significant at the 0.25 Level During Univariable Analysis

Predictor	Coeff.	Std. Err.	Wald	*p*	Exp(B)	95%CI	
Craving	-.061	.020	9.746	.002	.941	.905	.978
OAM5	.127	.041	9.320	.002	1.135	1.046	1.231
Side Effect	-.081	.106	.575	.448	.923	.749	1.136
Access	.049	.049	3.629	.057	1.050	.999	1.104
Stigma Exp.	-.231	.072	10.226	.001	.794	.689	.915
Stigma Impact	-.003	.013	.059	.808	.997	.971	1.023
Social Support	-.024	.027	.839	.360	.976	.926	1.028
Healthcare Exp.	.009	.015	.348	.555	1.009	.980	1.039
QOL	-.004	.012	.134	.715	.996	.974	1.019
Housing	-.393	.332	1.395	.238	.675	.352	1.296
Constant	.516	1.553	.110	.740	1.676		

The third step in purposeful selection involves comparing the estimated coefficients between models, watching for coefficients that change markedly in magnitude (20%). If marked changes occur, the variable is added back into the model. This process of deleting variables, refitting, and verifying the model continues until all important variables are in the model (Hosmer et al., 2013). The variable with the highest *p*-value (stigma impact) was removed,

partial likelihood ratio tests were compared, and assessment for marked change in estimated coefficients in the model was conducted. This process repeated through six more variables being removed. For full purposeful selection process (Appendix H). The variables that were removed were quality of life, healthcare experience, side effects, social support, housing situation, and access, respectively. Although access was not significant in the seventh model ($p = .074$), removing it increased the estimated coefficient for stigma experience by 25.82%. Therefore, it was added back to the final model. Hosmer et al. (2013) states that any variable that removal causes over 20% movement in the coefficients of other variables indicates that the removed variable is important for providing adjustment effects for the variables that remain in the model.

The fourth step of purposeful selection involves adding each variable excluded after step one to the final model obtained after step three, one at a time. After the addition of each variable, that variables significance is assessed by the Wald statistic *p*-value or the partial likelihood ratio test for categorical variables with more than two levels (Hosmer et al., 2013). Legal involvement, employment, peer support, age, type of OAT, gender, and ethnicity were each added back to the model independently and significance was assessed. When each of the seven variables was added to the model independently its coefficient did not become significant. See Table 16 for preliminary main effects model.

Table 16

Preliminary Main Effects Model

	Coeff.	Std. Err.	Wald	*p*	95% CI	
Craving	-.062	.018	12.247	<.001	.907	.973
OAM5	.128	.037	12.164	<.001	1.058	1.221
Access	.043	.024	3.192	.074	.996	1.095
Stigma Ex.	-.223	.065	11.786	<.001	.703	.908
Constant	-.731	1.057	.478	.489		

In order to evaluate the preliminary main effects model further, confirmation that the logit increases/decreases linearly as a function of the covariate was necessary. Checking for linearity is the fifth step of purposeful selection. Linearity of the variables with respect to the logit of the dependent variable was assessed via the Box-Tidwell (1962) procedure. Based on this assessment, all independent variables were found to be linearly related to the logit of the dependent variable. Therefore, the preliminary main effects model depicted in Table 16 was accepted as the main effects model.

The sixth step of purposeful selection involves checking for interactions among the variables in the model. All possible interactions were assessed by adding the interactions, one at a time, to the main effects model and statistical significance was assessed using a likelihood ratio test. Interaction variables were created by mean centering both predictors, subtracting the variable means from all individual scores, and computing the interaction as a product of the mean centred predictors. During univariable analysis the interaction between craving and stigma produced a likelihood ratio statistic ($\chi 2(1) = 4.692$, $p = .030$). However, when the interaction (craving*stigma) was added to the main effects model its contribution was not significant ($p = .974$). Therefore, it was excluded from the final model. In contrast, the interaction between

attitudes toward OAT (OAM5) and cravings for opioids produced a non-significant univariable likelihood ratio statistic ($\chi2(1) = 1.155$, $p = .282$), suggesting the interaction (OAM5*Crave) alone does not account for variance in the dependent variable. However, when the interaction (OAM5*Crave) was added to the main effects model its contribution within the model was significant ($p = .006$). From a clinical perspective, it is worthy of investigation that the effect on retention of attitudes toward OAT and cravings for opioids are not constant across levels of each other. Therefore, the interaction (OAM5*Crave) was added to the final model. See Table 20.

The seventh and final step of purposeful selection is finalizing the model by assessing its adequacy and checking its fit. The final model was statistically significant, $\chi2(5) = 59.731$, $p < .001$. A more thorough assessment of variable selection, adherence to assumptions, and assessment for influence is explained in the next sections.

Final Model. It was clear that attitudes toward OAT (OAM5), opioid cravings, and stigma experiences should be included in the final model as they were significant predictors of interest in every analysis. Access was a meaningful predictor in both purposeful selection and backwards stepwise and as such, included in the final model.

The interaction variable between attitudes toward OAT and cravings was also included in the final model. An interaction between two variables indicates that the effect of each variable is not constant over levels of the other variable (Hosmer et al., 2013). Statistically, the interaction implies that the estimate of the log-odds of one variable changes, depending on the value of the other. Practically, the interaction implies that attitudes toward OAT and cravings for opioids interact in such a way that different levels of one change the predictability of successful retention in a meaningful way. Therefore, the interaction (OAM5*Craving) was also included in the final model. For the final models variables descriptive statistics see Table 17.

Table 17

Model Variables: Descriptive Statistics

	N	Min	Max	Mean	SD
Craving	273	0	30	9.41	9
OAM5	273	5	25	20.517	4.48
Access	273	11	45	27.033	7.754
Stigma	273	0	10	4.747	2.8
OAM5*Crave	273	-319.48	117.78	-13.846	44.293
Retention	273	0	1	0.758	0.429

Assumption Check for Binary Logistic Regression. In order to conduct a binary logistic regression analysis, seven assumptions need to be met. First, there must be one dichotomous dependent variable. The outcome variable in this current study (retention) is dichotomous as participants fall into one of two categories (successfully or unsuccessfully retained). Second, there must be one or more independent variables that are measured on either a continuous or nominal scale. This study utilizes five independent variables (craving, attitudes toward OAT (OAM5), stigma experience, access, and the interaction between attitudes toward OAT and Craving (OAM5*Crave)) which are all measured on continuous scales. Therefore, assumption two is met. Third, there should be independence of observations and the categories of the dichotomous dependent variable, and all nominal independent variables should be mutually exclusive. There are no nominal independent variables in the model and the dichotomous dependent variable is independent in that participants can belong to either the successfully retained or unsuccessfully retained category of the variable but cannot belong to both.

The fourth assumption ensures there are enough cases for the model. Peduzzi et al. (1996) suggested a simple guideline for the minimum number of cases in a multiple logistic regression

analysis. As stated in Park (2013), “Let p be the smallest of the proportions of negative or positive cases in the population and k the number of independent variables, then the minimum number of cases to include is: $N = 10 \text{ k} / \text{p}$” (p. 157). Inputting the data parameters from this study, $N = 10(5)/.242$, a minimum sample size of 207 is suggested. The current study ($N = 273$) meets the sample size suggestion.

The fifth assumption states that there needs to be a linear relationship between the continuous independent variables and the logit transformation of the dependent variable. Linearity of the continuous variables with respect to the logit of the dependent variable was assessed via the Box-Tidwell (1962) procedure. A Bonferroni correction was applied using all eleven terms in the model resulting in statistical significance being accepted when $p < .00045$ (Tabachnick & Fidell, 2014). Based on this assessment, all continuous independent variables were found to be linearly related to the logit of the dependent variable.

The sixth assumption states that the data must now show multicollinearity. Multicollinearity was tested for by visual inspection of predictor variables in a correlation matrix. See Table 18. The highest correlation between variables is .398 and therefore, logistic regression analysis is an acceptable analytic strategy. No evidence of multicollinearity was also determined by tolerance values, which were all greater than 0.1 (Laerd, 2015). The seventh and last assumption states that there should not be significant outliers, high leverage points, or highly influential points. There were eight cases with standardized residuals greater than 2.5 standard deviations, which were kept in the analysis. For these eight cases, standard deviations ranged from 2.6 to 4.5.

Table 18

Correlations Between Final Model Variables: Pearson's Correlation

	Craving	Access	OAM5	Stigma	OAM5*Crave	Retention
Craving	-	.279**	-.344**	.266**	-.221**	-.333**
Access	.279**	-	-.278**	.398**	-.011	-.099
OAM5	-.344**	.278**	-	-.133*	.123*	.287**
Stigma	.266**	.398**	-.133*	-	.086	-.262
Retention	-.333**	-.099	.287**	.262**	-.063	-

Note. *$p < .05$, **$p < .001$ (2-tailed)

Binary Logistic Regression. A binary logistic regression was performed to ascertain the effects of cravings, attitudes toward OAT (OAM5), stigma experiences, and access to OAT on the likelihood that participants are successfully retained in treatment. The logistic regression model significantly predicted the dependent variable over and above the intercept only model, $\chi_2(4) = 51.900$, $p < .001$. See Table 19. The model explained 25.9% (Nagelkerke R^2) of the variance in treatment retention and correctly classified 76.6% of cases. Repeating this analysis while controlling for variables (type of OAT, current legal involvement, and employment) showed no significant differences (See Appendix I).

Table 19

Binary Logistic Models: Crude, Adjusted, and Interaction

	Crude Models		Adjusted Model		Adjusted Interaction Model	
	OR (95% CI)	*p*	OR (95% CI)	*p*	OR (95% CI)	*p*
Craving	.920(.892-.950)	<.001*	.940(.907-.973)	<.001*	.920(.885-.957)	<.001*
OAM5	1.152(1.083-1.226)	<.001*	1.137(1.058-1.221)	<.001*	1.161(1.076-1.252)	<.001*
Stigma	.792(.710-.883)	<.001*	.799(.703-.908)	<.001*	.825(.724-.938)	.003*
Access	.970(.936-1.006)	.102	1.044(.996-1.095)	.996	1.046(.997-1.097)	.068
OAM5 *Crave					.990(.983-.997)	.006*
			$\chi2(4) = 51.900$, $p < .001$.		$\chi2(5) = 59.731$, $p < .001$	
			Pseudo R2 (Nagelkerke)=.259		Pseudo R2 (Nagelkerke) = .294	

Note. *$p < .05$

Adding the interaction term (OAM5*Crave) to the binary logistic regression model showed to be an additional significant predictor. The model with the interaction term significantly predicted the dependent variable over and above the intercept-only model, $\chi_2(5) = 59.731$, $p < .001$. See Table 20. The model explained 29.4% (Nagelkerke R^2) of the variance in treatment retention and correctly classified 81% of cases. Sensitivity (percentage of cases that had the characteristic of success which were correctly predicted by the model) or true positive prediction was 94.7%. Specificity (percentage of cases that did not have the characteristic of success (unsuccessful) and were correctly predicted as unsuccessful) or true negative prediction was 37.9%. The positive predicative (percentage of correctly predicted successfully retained cases compared to all successfully predicted cases) value was 82.7% and the negative predicative

value (percentage of correctly predicted unsuccessfully retained cases compared to all unsuccessfully predicted cases) was 69.44%.

Of the five predictor variables four were statistically significant ($p < .05$): cravings for opioids, attitudes toward OAT (OAM5), stigma experiences, and the interaction term between attitudes toward OAT and cravings (OAM5*Crave). Increases in stigmatizing experiences was associated with decreased likelihood of successful retention. Due to the inclusion of the interaction term, it is necessary to consider the interaction when interpreting the meaning of statistical significance for the independent OAM5 and cravings variables. In the final model, When OAM5 is held at its mean, a one unit increase in cravings decreases the likelihood of successful retention by 8%. When craving is held at its mean, a one unit increase in OAM5 increases the likelihood of successful retention by 16.1%. As OAM5 increases the influence of cravings on likelihood of successful retention decreases by 1%. The reverse is also true of cravings. As craving increases the influence of OAM5 on likelihood of successful retention decreases by 1%.

Table 20

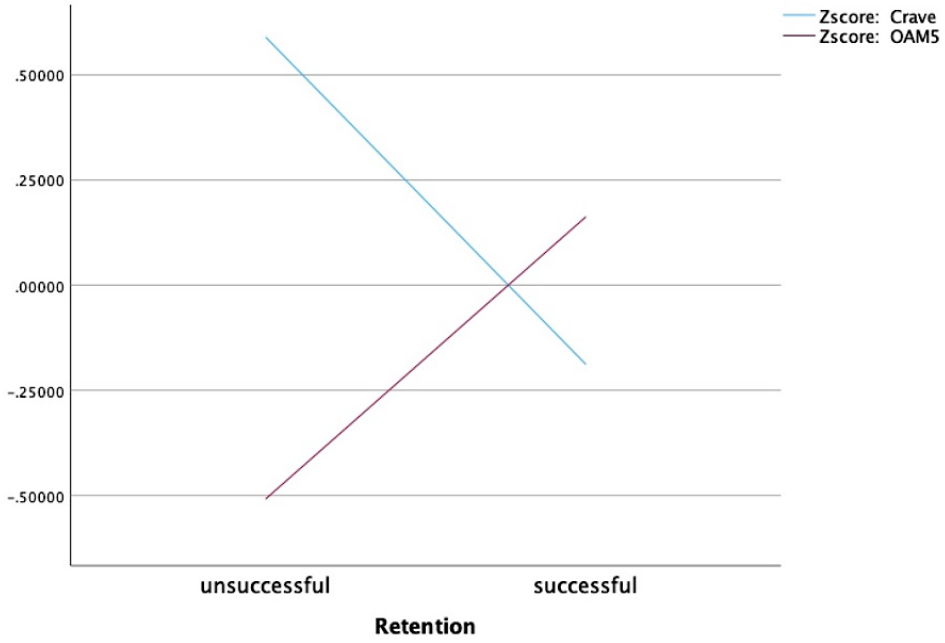
Binary Logistic Regression Predicting Likelihood of Successful Retention based on Cravings, Attitudes Toward OAT, Stigma Experiences, Access, and the Interaction Term

							95% CI for Odds Ratio	
	B	*SE*	Wald	*df*	*p*	Odds Ratio	Lower	Upper
Crave	-.083	.020	17.190	1	< .001	.920	.885	.957
OAM5	.149	.039	14.892	1	< .001	1.161	1.076	1.252
Stigma	-.194	.066	8.588	1	.003	.824	.724	.938
Access	.045	.024	3.341	1	.068	1.046	.997	1.097
OAM5*Craving	-.010	.004	7.634	1	.006	.990	.983	.997
Constant	-1.184	1.072	1.221	1	.269	.306		

Interaction Effect. When added to the main effect model, there was a significant interaction effect between attitudes toward OAT (OAM5) and cravings on retention ($p < .05$). It was necessary to further analyze the interaction effect to decipher its meaning. Although adding the interaction term to the final model was significant, the exact meaning of significance required further investigation. Thus, the interaction was plotted using the z-standardized and linearly transformed variables. See Figure 1.

Figure 1

Plotted Interaction Between Craving and Attitudes Toward OAT on Retention Outcomes

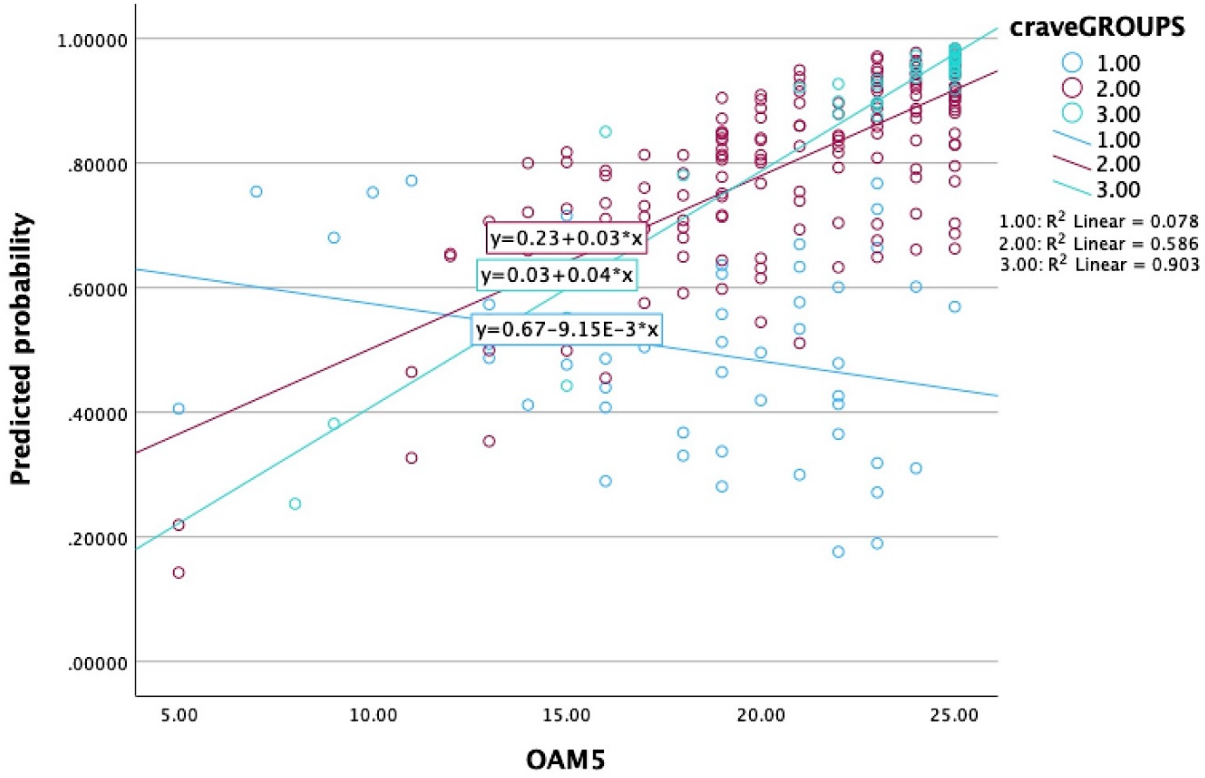


Note. *z*-standardized and linearly transformed to have a joint reference point.

Visual inspection of Figure 1 indicates that individuals with high craving scores appear to be unsuccessfully retained when they are also holding significantly decreased positive attitudes toward OAT. Individuals with low craving scores appear to be successfully retained when they are also experiencing significantly increased positive attitudes toward OAT. To further analyze the interaction term, both cravings and OAM5 were recoded into low, medium, and high groups and plotted as identifiers with the other interaction variable's raw scores against the full models predicted probabilities. See Figure 2 and Figure 3.

Figure 2

Plotted Attitudes Toward OAT at Various Craving Levels on Likelihood of Successful Retention

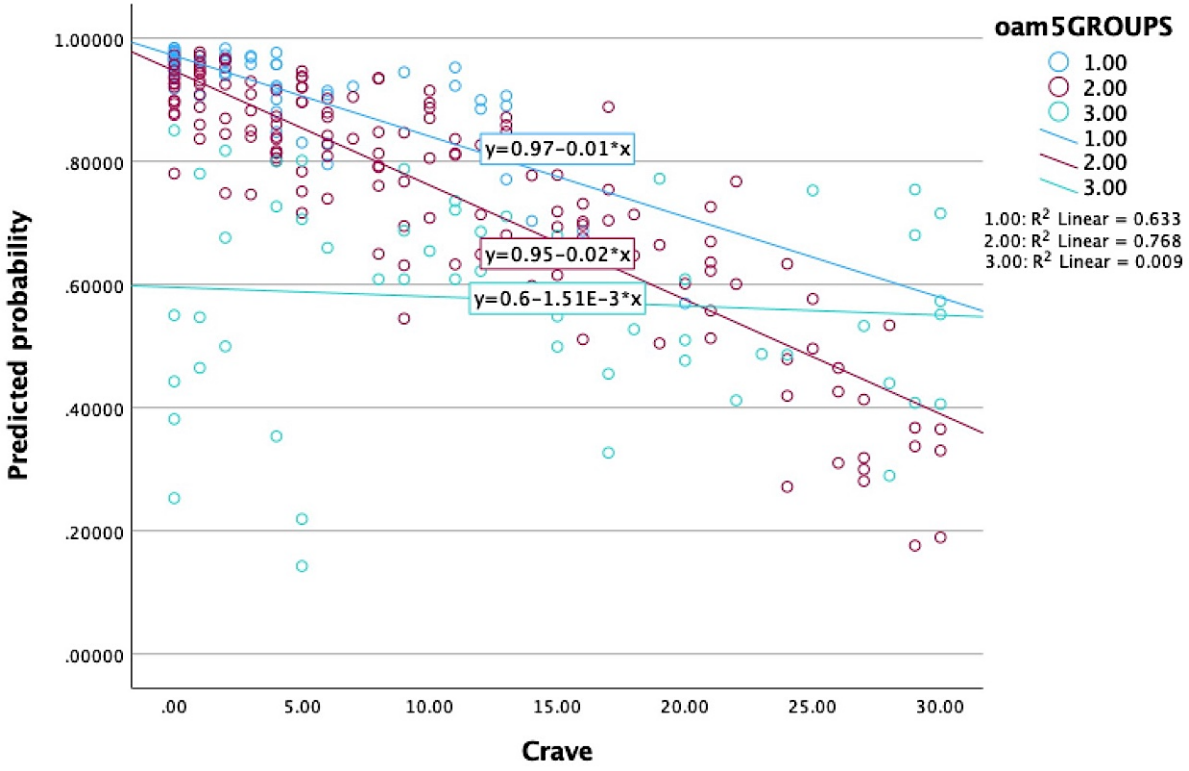


Note. craveGROUPS depicts craving scores separated into low (1) medium (2) and high (3) groups. OAM5 depicts attitudes toward OAT scores.

Upon visual inspection of the plotted values, it appears that for the high craving category (green), increases in OAM5 sharply influence increased likelihood of successful retention. For the medium craving score category (red), increases in OAM5 also sharply influence increased likelihood of successful retention. For the low craving score category (blue), it appears that increasing OAM5 scores decrease the likelihood of successful retention.

Figure 3

Plotted Cravings at Attitudes Toward OAT Levels on Likelihood of Successful Retention



Note. Oam5GROUPS depicts attitudes toward OAT scores separated into low (1) medium (2) and high (3) groups. Crave depicts cravings scores.

Upon visual inspection of the plotted values, it appears that for the low OAM5 category (blue), increases in cravings sharply decrease the likelihood of successful retention. For the medium OAM5 category (red), increases in cravings also sharply decrease the likelihood of successful retention. For the high OAM5 category (green), it appears that increasing cravings have little influence on the likelihood of successful retention. What influence it does have indicates that as craving scores increase likelihood of successful retention decreases.

In order to determine a more precise conclusion regarding the relationship between the interaction terms, both attitudes toward OAT and cravings were further analyzed by splitting each variable into two levels (low scores and high scores). Linear regression analysis were then

conducted. The effect of craving on the predicted probability of successful retention was statistically significant ($p < .001$) when OAM5 was low. The effect of craving on the predicted probability of successful retention was not statistically significant ($p = .899$) when OAM5 was high. At both low and high craving levels, the effect of OAM5 on the predicted probability of successful retention was statistically significant ($p < .001$).

Taken together, these findings indicate that highly positive attitudes toward OAT modify the effects of cravings on the likelihood of successful retention in a meaningful way. Said another way, cravings are a significant predictor of successful retention when the individual does not hold highly positive attitudes toward OAT but when the individual does hold highly positive attitudes toward OAT, cravings are not a significant predictor. Further, attitudes toward OAT are always a significant predictor, regardless of craving scores.

Supplementary Analysis: Multiple Linear Regression

In order to confirm the presence of a significant relationship between the final model and retention outcomes, a linear regression analysis was also conducted. This analysis intended to investigate the utility of the forementioned final model for predicting retention length in order to further enhance the trustworthiness of the results from the logistic regression analysis. Notably, this analysis conceptualizes success on a continuous scale with increasing years of retention indicating more success.

The analysis was conducted on the successfully retained group ($N = 207$). The successful group's length of retention responses were transformed into a continuous outcome variable characterized by years of retention ($M = 4.88$; SD = 4.92). Years of retention ranged from one year to 34 years.

Assumption Check. Multiple linear regression requires that eight assumptions be met. The first assumption, that the dependent variable be measured on a continuous scale, is met by retention being measured in years. The second assumption, that there are two or more independent variables measured on continuous scales, is met by all the dependent variables being continuous (cravings, attitudes toward OAT, access, and stigma experiences). A multiple regression was run (SPSS28.0) to predict retention from cravings, attitudes toward OAT, access, stigma experiences, and the interaction between cravings and attitudes toward OAT. There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.207. There was evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were four studentized deleted residuals greater than or less than three standard deviations, ranging from 3.1 studentized residuals to 6.5 studentized residuals. These four cases were retained in the final analysis. There were no leverage values greater than 0.2 nor Cooks distances values above 1. The assumption of normality was met, as assessed by a Q-Q Plot.

Multiple Linear Regression Model. R^2 for the overall model was 9.4% with an adjusted R^2 of 7.1%, a medium effect size according to Cohen (1988). Cravings, attitudes toward OAT, access, stigma experiences, and the interaction term significantly predicted retention length, $F(5, 201) = 4.147$, $p = .001$. The medium effect size and the significant ability of the model to predict retention outcomes, confirms that the final model is a useful model for predicting retention outcomes. The final model showed significant ability to predict binary retention outcomes (logistic regression) and continuous retention outcomes (linear regression).

Summary of Section

This Phase 2 study aimed to investigate the ability of factors to predict successful OAT retention. This section summarized the results. Data was collected for 439 participants of which 273 were retained for analysis. Of the 273 participants, 24.2% belonged to the unsuccessfully retained group and 75.8% belonged to the successfully retained group. Of all the participants, 34.1% were utilizing methadone and 65.9% were utilizing buprenorphine. There were no significant group differences between the successfully and unsuccessfully retained groups. Univariable associations revealed that nine of the 17 variables that were analyzed were significant ($p < .05$) predictors of group membership. Variable selection procedures and binary logistic regression assumption checking procedures were outlined. The final model consisted of four variables (cravings, attitudes towards OAT, access, and experiences of stigma) and one interaction term. Three of the four variables in the model were significant predictors of group membership (cravings, attitudes towards OAT, and experiences of stigma). The interaction term significantly increased predictability of the model. Probing of the interaction effects revealed that highly positive attitudes towards OAT modify the effects of cravings on group membership.

Phase 1 and 2 Synthesis

This project, in totality, collected and analyzed data from 292 participants. The Phase 1 study revealed fourteen categories as influential, from the subjective view of participants, on their OAT retention. Results for the Phase 1 study were offered independently. In creating the Phase 2 study, the fourteen categories from Phase 1 were assessed for their participation rates and the factors with the highest participation rates were considered as predictors of interest in the Phase 2 study. Nine factors met the greater than 50% participation rate criterion and seven were

added to the survey instrument for Phase 2 (peer support, doctor care, access, withdrawal and craving effects, stigma, seeing life changes, and side effects).

The comments made by participants were used to help pick measures that intend to measure the factors in the way that the participants had described them. For example, the doctor care category in Phase 1 was described by participants,

> You know he actually listens and treats you like human being. (Participant 15, 3.5 years retention, buprenorphine)

and

> I feel like I was being heard, and someone really understood what I was going through, and I feel like I had some support. Not my family, not my friends, support from someone who really understood me and who was really willing to help me. (Participant 13, 7 months retention, buprenorphine)

Assessing the statements made about doctor care by participants led to the utilization of a consultational empathy related questionnaire for the survey instrument, which is intended to measure patients' perceptions of relational empathy from their physicians. Notably, the stigma category was split into two variables for Phase 2 analysis, stigma impact and stigma experience. The seeing life changes category was also split into two variables for Phase 2 analysis, quality of life and social support. Therefore, nine variables investigated during the Phase 2 study originated from the Phase 1 study. Of those nine variables, seven were significant ($p < .05$) predictors of successful retention during univariable analysis. One variable (attitudes toward OAT) that originated from past research, and one demographic variable (housing) also proved to be significant predictors during univariable analysis.

To construct the best fitting prediction model, variable selection procedures were undertaken during Phase 2 analysis. The resulting model consisted of four variables and one interaction term. Of those four variables, three originated from the Phase 1 study (access, stigma experiences, and cravings) and one originated from past research (attitudes toward OAT). These results indicate the utility of the mixed method approach applied in this project. The Phase 1 study meaningfully informed the Phase 2 study. The next chapter discusses the results from this project in its entirety.

CHAPTER 5: DISCUSSION

This chapter discusses the findings from this project. The Phase 1 and Phase 2 studies are discussed respectively. Theoretical application of these findings is discussed in relation to the biopsychosocial model that informed this projects creation. Limitations for both studies are then stated. In conclusion, recommendations are offered for policy, practice, and research based on the combined findings from both studies.

Phase 1: Qualitative Summary of Findings

This section addresses findings from both the contextual question and the ECIT interview component of the Phase 1 study. This section further discusses these results in relation to existing literature: to highlight the extent to which these findings are embedded in literature and the extent to which they point to unique contributions. This section concludes with the implications of this study in relation to the biopsychosocial model of illness and wellness.

The Contextual Results

Participants were asked to define what good OAT treatment meant to them. The open-ended nature of this question allowed for participants to comment on good OAT treatment in the context of their subjective perception. The six main themes that emerged indicated that relief from physiological opioid addiction symptoms and easier access to OAT are necessary components of good OAT treatment. Physiological aid and access are well documented in current literature as important characteristics of good treatment. The resulting themes also suggested core characteristics of good OAT treatment that are not well documented, such as seeing positive changes in one's life and having autonomy regarding treatment decisions. Although it is suggested in most literature that OAT be provided alongside psychosocial recovery supports, most treatment providers are not equipped to offer such supports. The

resulting themes also indicated that judgment free psychosocial support is an essential characteristic of good OAT treatment.

Treating Physical Opioid Addiction. The main theme of treating physical opioid addiction had the highest participation rate in this study. Subthemes that explained the main theme were helping with withdrawal symptoms, helping with opiate cravings, decreasing opiate use, and increasing safety. The benefits of utilizing OAT are well documented. OAT decreases cravings for opiates, decreases withdrawal symptoms, decreases opiate use, and reduces risk of overdose death. The current study's finding that treating physical opioid addiction had the highest participation rate toward defining good OAT treatment suggests that participants in this study primarily desired to obtain the documented benefits of utilizing OAT.

Seeing Positive Life Outcomes. The main theme of seeing positive life outcomes had the second highest participation rate in this study. Subthemes that explained the main theme were feeling hopeful toward the future, reduction of undesirable events, increase in desirable events, and absence of physical side effects. Current literature depicts an association between long-term OAT utilization and improvements in health-related quality of life (Nosyk et al., 2015). Health related quality of life includes self-perceived physical and emotional functioning. The current study's finding that seeing positive life outcomes had the second highest participation rate toward defining good OAT treatment suggests that participants desire to experience positive life changes was a core factor that motivated them to utilize OAT.

Accessible OAT. The main theme of accessible OAT had the third highest participation rate in this study. Subthemes that explained the main theme were consistently available OAT, easy access to doctors and pharmacies, cost effective OAT, and less frequent OAT dosing. It is well documented that demand for OAT continues to exceed supply and prescribing resources in

the United States and Canada (Davis & Carr, 2019; Eibl et al., 2017). The current study's finding that accessible OAT is important toward defining good OAT treatment suggests ease of access is an important factor for OAT utilizers to be satisfied with their OAT treatment.

Personalized Treatment/Autonomy in Treatment. The main theme of personalized OAT treatment and autonomy in treatment decisions had a 26% participation rate in this study. Participants expressed the desire for their treatment to be personalized to their individual contexts, to be offered autonomy in their treatment decisions, and to explore alternate options with their doctors. This finding deviates from current literature, which suggests continued retention as the key indicator of treatment success (O'Connor, 2022). Participants defining good OAT treatment by the personalization of treatment and being given autonomy in their treatment decisions contradicts the current one-size-fits-all approach to dosing, OAT type, retention length, and standardized care models.

Judgment Free Psychosocial Support. The main theme of judgment free psychosocial support had the same participation rate (26%) as the personalized treatment/autonomy in treatment theme. Participants reported that good OAT treatment meant not encountering judgmental attitudes (stigma) about their opioid addiction and/or their medication use while accessing services. Further, participants stated that good OAT treatment meant having readily available psychosocial resources, such as therapy or self-help groups. Having psychosocial supports is regarded as a factor that helps individuals utilize OAT (O'Connor et al., 2020) and a major barrier to treatment is the experience of stigma (Olsen & Sharfstein, 2014).

Defining Good OAT Treatment. Taken together, the five main contextual themes produce meaningful components toward defining good OAT treatment, from the perspective of participants who were currently accessing the medication. In the context of this study, good OAT

treatment is defined as relief from withdrawal and cravings for opiates, a decrease or cease in opiate use, prevention from overdose death, readily available, conveniently accessible through doctors and pharmacies, cost effective, and requiring infrequent consumption. Good OAT treatment is further defined as influencing one's life positively through providing hope for the future, reduction of undesirable events, increase in desirable events, and absence of physical side effects. Good OAT treatment also means the treatment is provided in an individualized manner, with patients being offered autonomy in their treatment decisions and given the opportunity to explore alternate options. Good OAT treatment is also offered in a supportive and stigma free environment.

Critical Incident and Wish List Categories

The critical incidents reported by participants revealed what they believed helped and hindered their desire to retain OAT. Participants also indicated incidents they wished were available or wished would become available in the future. All the incidents were summarized into fourteen categories. For the purposes of this discussion, the fourteen categories have been organized into four groups based on commonalities between categories. The four groups are physical influences, practical influences, internal influences, and external influences. These four groups are discussed in relation to OAT retention literature in this section.

Physical Influences. This group encompasses two categories– withdrawal/craving/opioid use and side effects. Within this group is the highest helping category (withdrawal/craving/opioid use) and the highest hindering category (side effects). The primary reason for prescribing methadone or buprenorphine as substitute drugs is to substitute the pharmacological drug for the illicit drug, which prevents or reverses withdrawal symptoms and therefore, decreases the desire for and consumption of illicit opioid drugs (Mattick et al., 2009;

2014). Based on the results from this study, people's main reason for remaining retained in OAT treatment is experiencing these documented physiological benefits.

The results indicated that opioid withdrawal is excruciating, incredibly intense, and that people feel as though they literally can't survive it. The craving for opioids during withdrawal was depicted as impossible to overcome. OAT was regarded as serving its main purpose, to alleviate the physical symptoms of opioid dependence and this alleviation was most desirable. However, OAT side effects were the most hindering factor toward continued treatment retention. Side effects included lethargy, constipation, sickness, sedation, headaches, weight gain, dizziness, bloating, and feeling intoxicated. Some people experience side effects so extreme they felt debilitated and unable to function. In comparison, research on buprenorphine and methadone supports the finding that the forementioned side effects are common. However, most literature depicts these side effects as minor and as such, non-influential on retention (Peddicord et al., 2015; Soyka et al., 2008).

The current study found that physical influences are both the most helpful and the most hindering influences on OAT retention from the subjective view of participants who are currently utilizing OAT. Research supports these findings except for the implication that side effects from OAT may be a meaningful influence on treatment retention success.

Practical Influences. This group encompasses two categories— access and information/resources. Information and resources was the highest wish list category. Over half the participants reported access as hindering their OAT retention. Over half the participants also reported access as a wish list factor.

Based on the results from this study, people strongly desire more awareness and knowledge of OAT and more promotion of OAT related resources. The availability of

information about the benefits of OAT was regarded as lacking. The lack of readily available information was perceived to influence the amount of people still actively using illicit opioids and was perceived as detrimental to the amount of time participants remained actively using illicit opioids themselves. They often wished they had known about it sooner. Information was regarded as lacking from many sources included from doctors and from research. People wished their doctors had prepared them for treatment, that they had received accurate information about the details of OAT programs, and that research would investigate the necessary longevity of OAT utilization.

These findings are difficult to synthesize across current literature as they encompass promotion and knowledge of OAT. However, other qualitative research has reported similar themes. Yarborough et al. (2016) conducted a large ($N = 283$) qualitative study that interviewed participants regarding their OAT experiences and decision-making factors. They found that participants not being made aware of treatment alternatives was a major theme that influenced OAT decision-making. There is a call for better clinician-patient communication and improved patient education (Yarborough et al., 2016).

The request for research regarding the necessary longevity for utilizing OAT is also supported in current literature. It is well documented that longer retention is associated with reduced risk of mortality (Irvine et al., 2019; O'Connor et al., 2020). However, retention successes are measured at various timepoints in literature and successful retention is only described as long-term without a time frame attached to it. There is a call for future research to be directed toward defining the retention length necessary for successful retention to synthesize findings across studies (O'Connor, 2022). Participants asking for research to be directed at this

aim, to better inform their understanding of OAT, adds weight to the necessity for such research to be conducted.

In the current study access was defined by reported factors related to supply of OAT, timing of doctor/clinic visits, financial considerations, location and comfort of clinics, and dosage schedules. Two main contributors determine an OAT utilizers access, their OAT physician and the governing entity that makes OAT related decisions at their location. Physicians are instructed to use their professional judgment for OAT treatment related decisions such as dosage, medication schedules, and take-home medication allowance (BCCSU, 2017). Utilization of OAT usually involves strict requirements, individuals are often required to visit a clinic daily to participate in witnessed consumption and provide frequent urine specimens (Russel et al., 2022). After some time, OAT utilizers are typically granted gradual take-home OAT doses (carries). In Canada and the USA, it usually takes more than eight months to a year for an OAT utilizer to be provided one week's worth of take-home OAT medication (Russel et al., 2022). Socías et al. (2020) suggests that requirements to attend pharmacies likely interfere with employment schedules, making OAT utilization difficult. Four cohort studies found significant associations between the distance/travel time required to reach OAT treatment and reduced retention (O'Connor, 2022).

In the USA, access to OAT is documented as a significant barrier to OAT as unduly federal, state, and local regulations restrict access (Davis & Carr, 2019). In Canada, the regulations for OAT prescribing were handed down from the federal level to the College of Physician and Surgeons of each province. Consequently, each province has its own policies regarding delivery and access (Eibl et al., 2017). All of Canada and the USA are still in desperate need of expanded access to OAT (Davis & Carr, 2019; Eibl et al., 2017; Irvine et al., 2019). In

summary, the literature on OAT access and the calls to increase access support the findings in this study, that access hinders OAT retention and that there is a desire for increased access to increase retention.

The current study found that practical influences were the most desired influencing factors on continued OAT retention from the subjective view of participants who are currently utilizing OAT. Existing literature supports this finding in that access is a well-documented barrier to OAT retention and in that there is a need for more research to investigate the necessary longevity of OAT utilization.

Internal Influences. This group encompasses five categories– mental clarity, future hope/doubt, desire to be abstinent, chained to addiction/longevity, and personal traits. The results from this study indicated that experiencing mental clarity, feeling hopeful toward the future, and personal traits (such as personal initiative, determination, and motivation) were helpful toward continued OAT retention. There is less research that investigates internal influences on OAT retention than external influences. However, Mahu (2022) found that hopelessness was associated with recent illicit opioid use for participants who were utilizing methadone. Simpson et al. (1997) found that higher motivation for treatment was predicative of longer treatment retention. Marks et al. (2020) states that personal characteristics, such as motivation, are often considered important predictors of retention. However, significant literature seems to suggest that individual characteristics are less important than treatment characteristics in predicting the resolution of drug dependence and retention rates in OAT programs (Marks et al., 2020). Notably, this assertion about individual characteristics encompasses both the personal internal factors discussed here and demographic factors such as age.

Results from the current study indicated that the desire to be abstinent and the feeling of being chained to addiction hindered continued OAT retention. Yarborough et al. (2016) found that two significant qualitative themes influencing OAT treatment decisions were associated with participants desire to live drug-free. First, participants feared continuing their addiction and perceived OAT withdrawal as difficult. The second theme was that treatment expectations and goals differed between clinicians and patients. Some patients desired to be drug-free and as such, intended on adhering to a short-term detoxification schedule. These participants began OAT with the intention of a rapid taper and when that was not provided, felt their treatment did not align with their goals. Bojko et al. (2016) also found that unclear treatment goals were a dominant theme that undermined OAT retention for participants who had successfully initiated it.

The current study found that internal influences were meaningful factors toward successful OAT retention from the subjective view of participants who are currently utilizing OAT. There is a dearth of research that explores internal influences in relation to OAT retention. Some research indicates hopelessness and motivation may be related to OAT retention and continued illicit drug use. There is, however, qualitative findings that support the current study's finding that a desire to be abstinent and the feeling of being chained to addiction indefinitely are perceived as barriers to continued OAT retention. This finding is especially meaningful in the context of the ongoing movement for longer-term OAT implementation, as the long-term model does not align with many OAT utilizers treatment goals.

External Influences. This group encompasses five categories– stigma, doctor care, seeing life changes, psychosocial addiction recovery, and peers. In the current study, seeing life changes was found to be a helpful factor toward continued OAT retention. Stigma and doctor care were found to be influential hindering factors and factors that participants desired changes

in for their continued future retention. Psychosocial addiction recovery and knowing OAT utilizing peers were factors that participants stated they thought would be influential on their continued retention if they had them in the past or if they became available in the future.

In the current study, the seeing life changes category included participants reported improvements in mental health, improvements in social functioning, improvements in physical appearance, and other quality of life related factors. Among most quality of life and OAT retention research, it is unknown if findings indicate that individuals' subjective feelings of improvements contribute to their continued retention or, alternatively, if staying in treatment leads to the perceived improvements.

Mitchell et al. (2015) found that participants quality of life in all four domains (physical, psychological, environmental, and social) increased over time retained in buprenorphine treatment. However, continued retention was only associated with higher psychological and environmental quality of life scores. Chou et al. (2013) found improvements in psychological and environmental domains for methadone participants who were retained in treatment for six months. Padaiga et al. (2007) found improvements in physical, psychological, and environmental domains for participants retained in methadone treatment for six months. Rouhani et al. (2012) followed participants ($N = 203$) from the start of their methadone treatment to six months retention. They found that participants with lower levels of quality of life at treatment initiation stayed in treatment longer. They also found that participants who had lower levels of quality of life at the beginning showed more improvements in the early stage of treatment. In the current study, participants noted that their subjective experience of quality-of-life improvements factored into their decisions to remain retained in OAT. This finding is supported by the forementioned studies that indicate quality of life improvements during OAT retention and adds to these

findings by suggesting that when OAT utilizers notice quality of life improvements in different domains, that awareness motivates them to continue with their treatment.

Madden et al. (2021) conducted a systematic review of stigma toward OAT. Synthesis of findings indicated that participants experienced OAT related stigma from healthcare providers, peers utilizing OAT, the public, and that stigma was driven at the policy level. They concluded that stigma decreases access to and utilization of OAT. Yarborough et al. (2016) found that the desire to avoid methadone clinics or associated stigma was a major theme in participants decision to utilize buprenorphine rather than methadone. A growing body of research places stigma as the root of the treatment gap between the documented utility of OAT and the low retention and access rates (Pasman, 2022). This assertion, that stigma hinders access to OAT, is supported by the findings in the current study. Participants noted that they felt judged for being addicts. For example, participants commented that their doctors did not trust them with their OAT medication because of their addiction history. Pasman (2021) states that policies regarding prescribing regulations and restricted patient limits are a product and reinforcer of stigma and not necessary or effective for treatment itself. Perceived or anticipated stigma from family, friends, and others may influence opioid addicted individuals' decisions to utilize OAT (Pasman, 2022). Woo et al. (2017) found that family and friends were the most common sources of stigma toward OAT utilizers. Further, participants reported that stigma resulted in reluctance to initiate and continue OAT.

Experiences of stigmatization in the current study were noted in addiction recovery communities, at employment sites, from the public, from family, and in healthcare settings. Thus, supporting the finding that OAT utilizers experience stigma from friends, family, community members, employers (Woo et al., 2017), and experience institutional stigma (Anstice

et al., 2009; Harris et al., 2012). The current study's finding that OAT utilizers believed that negative experiences with OAT physicians were influential toward their continued OAT retention is supported by Marks et al. (2020). They found that participants positive experiences with healthcare staff (non-judgmental) encouraged them to return for treatment. Barmada (2018) found that for veterans utilizing OAT, satisfaction with treatment was significantly correlated with feeling respected and non-judged by the methadone clinic staff. Cooper and Nielsen (2017) states that the relationship between clients and healthcare providers appears to be an influential factor on outcomes.

The current study's finding that OAT utilizers believe that relationships with OAT utilizing peers would be helpful toward their continued retention is also supported by Marks et al. (2020). They concluded that social cohesion within their OAT program was one of two most important factors for keeping participants retained in treatment. In contrast, Sarasvita et al. (2012) found that perceived peer support increased the likelihood of dropping out of OAT.

The current studies finding that participants desired counselling, help with their addiction issues, and access to other forms of therapy such as twelve-step programs (psychosocial addiction recovery) is supported by the fact that these medications are approved for use within a medical, social, and psychological comprehensive support model for opioid addiction (Dugosh et al., 2016). Although a review of studies indicated some efficacy of providing psychosocial interventions in combination with OAT medications, there remains a significant gap in literature depicting which psychosocial supports work best (Dugosh et al., 2016).

The current study found that external influences were meaningful factors toward successful OAT retention from the subjective view of participants who are currently utilizing OAT. Although some research supports the notion that stigma, doctor experience, quality of life,

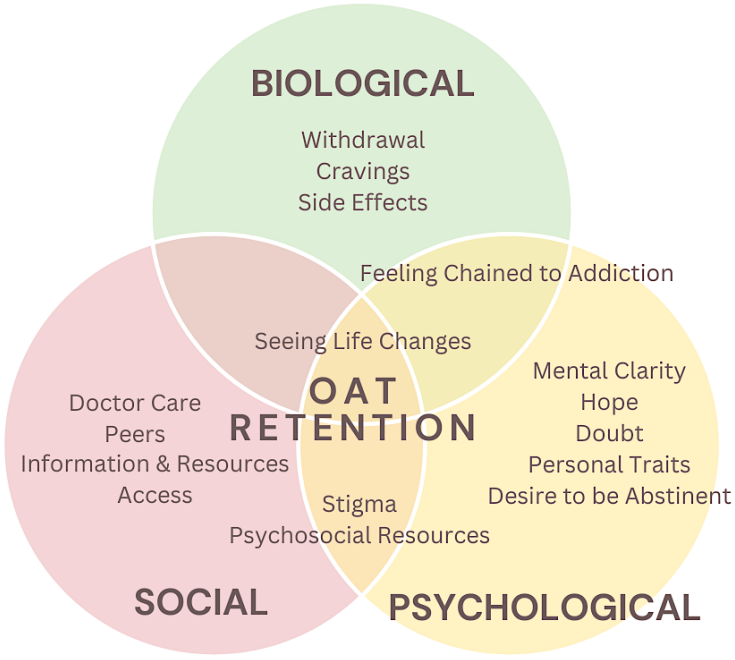
peer relationships, and psychosocial addiction support are associated with OAT retention, adequate investigation into these topics has not been performed to conclude the presence of influential relationships.

Integrating Theory with Results

Biopsychosocial Model. The current study was informed by a biopsychosocial model which proposes that a wide range of factors, cutting across biological, psychological, and social domains are influential on decision-making. This project proposed that viewing OAT as the answer to OUD in isolation, as a medication without psychosocial considerations, is a reductionistic biomedical approach. Synthesizing the findings from the current study with a biopsychosocial model suggests that an interconnected multi-realm factor landscape is influential on OAT retention outcomes. See Figure 4.

Figure 4

Phase 1 Biopsychosocial Model of Factors Contributing to OAT Retention



The current study focused on subjective factors perceived as meaningful toward individuals continued OAT retention. Resulting factors emerged in all three, biological, psychological, and social, independent domains. Factors also emerged in interconnected bio-psycho, psycho-social, and bio-psycho-social domains. Taken together, these findings support the utility of a biopsychosocial model as useful for understanding OAT retention decisions.

The biopsychosocial model framework offers meaningful insight into the differences between medication assisted addiction recovery and non-medication assisted addiction recovery. In a non-medication assisted recovery framework, the biological realm is typically considered first through abstinence or decreased use. Therefore, the biological realm is often considered the threshold between recovery and relapse. Said another way, a threshold regarding drug use is set as an indicator between success and failure. Further, especially for abstinent individuals, a rapid and noticeable change in biological functioning occurs. Individuals in a non-medication assisted model are typically able to navigate their psychosocial recovery independent of biological considerations once they are achieving their desired threshold of drug use. Decades of research has investigated psychosocial interventions for substance use disorders with non-medicated populations.

In contrast, individuals accessing maintenance medications, such as OAT, continue to activate the biological mechanisms that were activated during their addiction cycles. They experience continued addiction cycles, as their medication is now necessary, instead of illicit opioids, to prevent withdrawal. Further, they often need to adapt to side effects from the medication. Experiencing psychosocial recovery within the context of continued addiction cycles is bound to be more challenging than seeking psychosocial recovery outside this context.

Notably, OAT utilization typically involves remaining in the physiological addiction cycle without experiencing the euphoria experienced when using illicit opioids.

To further complicate matters, psychosocial barriers that relate specifically to OAT utilization hinder access to psychosocial recovery resources. Individuals experiencing medication assisted addiction recovery face pervasive stigma and are perceived as different than their non-medicated addiction recovery peers. This perception limits the resources available to them as they are often excluded from existing addiction recovery resources. One key issue is that individuals accessing medication do not have a universally accepted threshold of success. Where non-medicated individuals measure their success at a biological threshold, many OAT utilizers believe their success starts when they terminate their medication. The practical implication of utilizing medication further sets individuals utilizing medication apart from their non-medicated peers. Individuals utilizing OAT need to incorporate regular physician and pharmacy visits into their schedules. It is crucial for treatment providers to understand the unique and disadvantaged position that OAT utilizers hold in the addiction recovery landscape to better support these individuals. Due to the additional burdens and unique challenges faced by OAT utilizers during addiction recovery, it is necessary to consider all these dynamics when planning policy, practice, and research.

Summary of Section

This section discussed the findings from the Phase 1 study. The contextual results revealed how good OAT retention was defined from the subjective view of participants. This study sought to illuminate factors that participants perceive as influential on their OAT retention decisions. Physical influences were found to be the most helpful and most hindering factors. This finding suggests that participants mostly decided to utilize OAT for the reasons that OAT is

prescribed, to alleviate withdrawals, cravings, and illicit opioid use. Further, participants believed their decision to discontinue OAT was mostly motivated by the burden of side effects that they experienced. Participants were also asked what factors they desire to have had experienced or to experience in the future that they perceive as beneficial toward continued retention. Practical influences were found to be the most desired factors by participants. Internal and external influences were also detailed, across participant experiences, as meaningful toward their OAT retention. Taken together, the findings from this study indicated that a multitude of factors, across biopsychosocial domains, are influential on OAT retention decisions.

Phase 2: Quantitative Summary of Findings

This study investigated the ability of factors to predict successful OAT retention. Of the 17 independent variables examined, four were retained for the final model. One interaction term was also included in the final model, resulting in a five-variable model. Of those five variables, four were independently predictive of successful OAT retention (having p-values $< .05$). Therefore, the null hypothesis is rejected, and the alternate hypothesis is supported. The alternate hypothesis proposed that at least one of the predictor variables would significantly change the ability to predict successful OAT retention than the predictability expected by chance. In this section, there is discussion of each variable within the final model and each variable that was explored that is not in the final model. The findings are then discussed in relation to current literature. In conclusion, these findings are discussed in relation to the biopsychosocial model of illness and wellness.

Predictors of Successful Retention

Cravings. Participants cravings for opioids significantly predicted belonging to the successfully retained group in both the crude model and the adjusted model with p-values

significant at the <.001 level. The coefficient for cravings was negative, indicating that as participant craving scores increased (more cravings) their likelihood of belonging to the successfully retained group decreased. In the adjusted model, without any interaction effects, for every one unit increase in craving scores the predicted odds of successful retention changed by a factor of .94. The odds ratio for cravings indicates that every unit increase in cravings is associated with a multiplicative 6% decrease in the odds of belonging to the successfully retained group. *The cravings hypothesis for this study, that increasing cravings would decrease the likelihood of successful retention, is supported by these findings.*

Interaction. In the final adjusted interaction model, the inclusion of the interaction term (OAM5*Craving) influences the interpretability of results for craving scores in isolation. Including the interaction term in the model means that the odds ratio for cravings differs at different levels of attitudes toward OAT. Thus, the significant interaction suggests that cravings have a different relationship to retention depending on the level of attitudes toward OAT (OAM5) also experienced. During interaction analysis, it became apparent that when a participant had a low attitude toward OAT score, cravings were a significant predictor of successful retention, with higher craving scores decreasing the likelihood of success. However, when a participant held a high attitude toward OAT score, cravings scores were not able to decrease likelihood of successful retention by a significant amount.

Attitudes Toward OAT. Participants attitudes toward OAT significantly predicted belonging to the successfully retained group in both the crude model and adjusted main effects model with *p*-values of < .001. The coefficient for attitudes toward OAT was positive, indicating that as participants attitudes towards OAT scores increased (more positive attitudes) their likelihood of belonging to the successfully retained group increased. In the adjusted main effects

model, without the interaction term, for every one unit increase in attitudes toward OAT the predicted odds of successful retention changed by a factor of 1.137. The odds ratio for attitudes toward OAT indicated that every unit increase in attitudes is associated with a 13.7% increase in the odds of belonging to the successfully retained group. The odds ratio in the crude model indicated that every unit increase in attitudes is associated with a 15.2% increase in the odds of belonging to the successfully retained group. *The attitudes toward OAT hypothesis for this study, that increasingly positive attitudes would significantly increase the likelihood of successful retention, is supported by these findings.*

Interaction. In the final adjusted interaction model, the inclusion of the interaction term (OAM5*Craving) influences the interpretability of the results for attitude scores in isolation. Including the interaction term in the model means that the odds ratio for attitudes differs at different levels of cravings. Thus, the significant interaction suggests that attitudes have a different relationship to retention depending on the level of cravings also experienced. During interaction analysis, it became apparent that attitudes toward OAT was a significant predictor of successful retention at both low and high craving levels.

Stigma Experiences. Participants experiences of stigma significantly predicted belonging to the successfully retained group in both the crude model ($p < .001$) and the adjusted final model ($p < .05$). The coefficient for stigma experiences was negative, indicating that as participants stigma experience scores increased (more experiences of stigma) their likelihood of belonging to the successfully retained group decreased. For every one unit increase in stigma experiences the predicted odds of successful retention changed by a factor of .824. The final model odds ratio for stigma experiences indicates that every unit increase in stigma experiences is associated with a 17.6% decrease in the odds of belonging to the successfully retained group.

The crude model indicated that every unit increase in stigma experiences is associated with a 20.8% decrease in the odds of belonging to the successfully retained group. *The stigma experiences hypothesis for this study, that increasing experiences of stigma would significantly decrease the likelihood of successful retention, is supported by these findings.*

Access. Participants access to OAT scores were not significant in the crude (p = .102) nor final adjusted interaction model (p = .068). However, including access in the final model contributed to the significance of the model in its entirety. Hosmer et al. (2013) states that when a variable is removed and a marked change occurs in the coefficient of another variable, it indicates that the excluded variable is important in the sense of providing a needed adjustment of the effect of the variables that remain in the model. In application, this finding may indicate that access to OAT modifies the effects of other factors on OAT retention success. Notably, the coefficient for access during all analyses indicated that decreasing access was associated with slight increase in likelihood of successful retention. This finding is surprising in that decreasing access was hypothesized to decrease, not increase, likelihood of successful retention. Further investigation is needed to understand the relationship between access and retention and to investigate access as a potential effect modifier. *The OAT access hypothesis for this study, that increasing access (lower scores) would significantly decrease the likelihood of successful retention, is not supported by these findings.*

Interaction Between Attitudes Toward OAT and Cravings. The interaction between attitudes toward OAT and cravings for opioids significantly predicted belonging to the successfully retained group. Exploration of the interaction led to the conclusion that attitudes toward OAT are a significant predictor of successful retention across craving levels. Cravings for

opioids were only a significant predictor when attitudes held toward OAT were low. Thus, highly positive attitudes toward OAT modified the effect of cravings on likelihood of retention.

Variables Not in The Final Model

This study investigated thirteen variables and four demographic variables as potential predictors of successful OAT retention. The final model, arrived at through purposeful selection combined with other selection procedures, only contained four variables. This section discusses the variables not included in the final model. Notably, univariable analysis should be interpreted with caution and further exploration is needed to determine applicability of the results in real world contexts.

Legal involvement has been associated with reduced retention in most studies that investigated it. However, six studies have reported non-significant effects (O'Connor et al., 2020). During univariable analysis, the current study found legal involvement to have a non-significant (p = .740) association with retention. *The legal involvement hypothesis for this study, that being involved with the legal system would significantly decrease the likelihood of successful retention, is not supported by these findings.*

There are mixed findings regarding the relationship between employment and OAT retention in current literature (O'Connor et al. 2020; Socías et al. 2020). During univariable analysis, the current study found employment to have a non-significant (p = .336) association with retention. *The employment hypothesis for this study, that being employed would significantly decrease the likelihood of successful retention, is not supported by these findings.*

Side effects were included as a potential predictor because they emerged as an important retention factor during the Phase 1 study. Although side effects are documented as common during OAT utilization (Peddicord et al., 2015; Soyka et al., 2008) they have not been

thoroughly investigated as a predictor of retention. Soyka et al. (2008) found that side effects were not associated with drop out for either methadone nor buprenorphine groups. In contrast, the current study found that side effects were significantly ($p < .05$) associated with retention during univariable analysis (actual $p = .002$). The coefficient for side effects was negative ($B = -.259$) indicating that increased scores (increased side effect burden) decreased likelihood of successful retention. *Therefore, the side effects hypothesis for this study, that increasing side effects would significantly decrease the likelihood of successful retention, is supported by these findings.*

Stigma was an important potential predictor as it was supported by past research (Madden et al., 2021; Pasman, 2022; Woo et al., 2017; Yarborough, 2016) and had emerged as an important factor in retention related decisions during the Phase 1 study of this project. Due to the wide scope of the stigma phenomenon, it was split into two variables, stigma experiences and stigma impact. Although the stigma experiences variable was included in the final prediction model, stigma impact was not. However, during univariable analysis, stigma impact was significantly ($p < .05$) associated with retention (actual $p = .002$). The coefficient for stigma impact was negative ($B = -.029$) indicating that increased scores (increased impact of stigma) decreased likelihood of successful retention. *Therefore, the stigma impact hypothesis for this study, that increasing impact of stigma would significantly decrease the likelihood of successful retention, is supported by these findings.*

Social support and quality of life were included as potential predictors due to the category of seeing life changes emerging as an important factor in retention making decisions during the Phase 1 study. Five methadone studies concluded that individuals with better family support remain retained in treatment longer (Zhou & Zhuang, 2014). QOL scores have been documented

to increase over the course of OAT treatment (Mitchell et al., 2015). Lower QOL at treatment onset has been associated with longer retention (Padaiga et al., 2007). In the current study, during univariable analysis, both social support and quality of life were significantly ($p < .05$) associated with successful retention. With quality of life ($p = .004$) being more significantly associated than social support ($p = .017$). Quality of life ($B = .023$) and social support ($B = .043$) both had positive coefficients indicating that as scores increased there was an increase in likelihood of successful retention. *Therefore, the social support and quality of life hypotheses for this study, that increasing social support and increasing quality of life would both significantly increase the likelihood of successful retention, is supported by these findings.*

Although peer support emerged as an important predictor from the Phase 1 study and from Marks et al. (2020), it was a not significantly associated with retention during univariable analysis ($p = .449$). *The peer support hypothesis for this study, that increasing peer support would significantly increase the likelihood of successful retention, is not supported by these findings.* In contrast, healthcare experience also emerged as a potential predictor from the Phase 1 study and from Marks et al. (2020) and was significantly associated ($p < .05$) with retention during univariable analysis (actual $p = .003$). The coefficient for healthcare experience was positive ($B = .035$) indicating that increased scores (increasing relational empathy from prescribing physician) increased likelihood of successful retention. *The healthcare experience hypothesis for this study, that increasingly positive perceptions of healthcare experiences would significantly increase the likelihood of successful retention, is supported by these findings.*

Increasing age has been found to be associated with increased retention in several studies (O'Connor et al., 2020). However, age was not significantly associated with retention in this study ($p = .462$). *The age hypothesis for this study, that increasing age would significantly*

increase the likelihood of successful retention, is not supported by these findings. Of the four demographic variables analyzed (type of OAT, gender, housing situation, and employment), housing situation was the only variable significantly ($p < .05$) associated with retention during univariable analysis ($p = .023$). The coefficient for housing was negative ($B = -.650$) indicating that individuals who rented or owned their residence were more likely to be successfully retained than individuals who had other housing situations (such as living in a recovery house, shelter, detox/treatment centre, with friends/family, or homeless).

Final Model as Predictor

Univariable analysis is helpful when theorizing about which predictors may influence an outcome. However, univariable analysis is limited in that it does not replicate real world contexts well. Individuals in the real world are likely experiencing a multitude of factors that are contributing to their decision-making processes. Analyzing a model of factors allows for a more replicative of the real world statical analysis and allows for interactions to emerge between predictors. When data on all the variables in the model is obtained, and the interaction effect accounted for, the ability of the model to predict successful group membership is 81%.

In application the full model indicates that when an individual has a low presence of cravings, highly positive attitudes towards OAT, and has experienced little stigma they are most likely to be successfully retained. The purposeful selection procedure indicated that access is an important modifying variable, although to understand its direct influence would require further investigation. The model also indicates that retention outcomes are better predicted when the interaction is accounted for, as highly positive attitudes toward OAT can significantly influence the negative effect cravings have on retention. These factors, measured together, are a better predictor of retention outcomes than any one variable independently.

Evaluation of the model by examining the goodness-of-fit statistic and the classification table indicated that this model fit the data well. Another means of assessing the prediction model is to determine the uncertainty reduction in the prediction of successful retention. For the 273 participants included in the logistic regression procedure, 196 of those who were predicted to be in the successfully retained group belonged to that group, and 25 of those who were predicted to be in the unsuccessfully retained group also performed as predicted. This represents an 81% classification rate. From the entire sample, 75.8% belonged to the successfully retained group. Thus, predicting retention based on the model improved prediction by 5.2%.

Model Variables in Relation to Literature

Fareed et al. (2010) conducted a literature review investigating the effect of methadone on opioid cravings. Of the 16 articles included, seven studies reported methadone as reducing cravings, four reported continued risk of cravings, one study reported increased cravings, and four studies reported a neutral effect on cravings. Panlilio et al. (2019) investigated cravings in relation to treatment retention. They concluded that craving levels were higher in participants who dropped out of treatment. Soyka et al. (2008) investigated predictors of OAT retention for buprenorphine and methadone participants. They found that 22% of participants said that the reason for their treatment dropout was craving drugs but made no conclusion regarding cravings as a predictor. Tsui et al. (2014) found that cravings for opioids significantly predicted return to illicit opioid use to opioid use among a cohort of patients treated with buprenorphine. Although cravings have been explored in the context of OAT utilization, cravings as a predictor of successful retention have not. This study adds to our current knowledge about the relationship between cravings and retention as cravings for opioids were found to be a significant predictor of successful OAT retention. A novel finding from the current study was that the negative effect of

cravings on the likelihood of successful retention can be positively modified by highly positive attitudes toward OAT.

Attitudes towards methadone retention were reported as influential on treatment retention in six cohort studies, five of the six studies found that positive attitudes were associated with increased retention (O'Connor et al., 2020). Kayman et al. (2006) investigated attitudes towards methadone as a potential predictor of successful retention (defined as one year retention). They found that negative attitudes toward methadone at the time of admission predicted termination within one year of enrollment. Aligned with these findings, the current study found that attitudes toward OAT were a significant predictor of successful retention. Further, the interaction term in the current study suggests that attitudes toward OAT may provide a unique positive modifying effect when considered in conjunction with craving levels.

Stigma is documented to decrease access and utilization of OAT (Madden et al., 2021). Stigma has been suggested as the reason behind the obvious benefits of OAT and the low retention rates (Pasman, 2022). There is a dearth of research that explores a quantifiable relationship between experiencing stigma and OAT retention. In other highly stigmatized medical care studies, such as HIV research, stigma experiences predict poor retention, with more experiences of stigma related to less consistency in attending appointments (Kalichman et al., 2020). The finding in the current study, that stigma experiences significantly predict successful OAT retention, suggests a necessity to explore this relationship further. This finding suggests that processes happening in other highly stigmatized medical care may generalize to OAT utilization.

Taken together, the final adjusted interaction model had better predicative ability than all the crude models and the adjusted main effects model. This finding indicates the necessity for

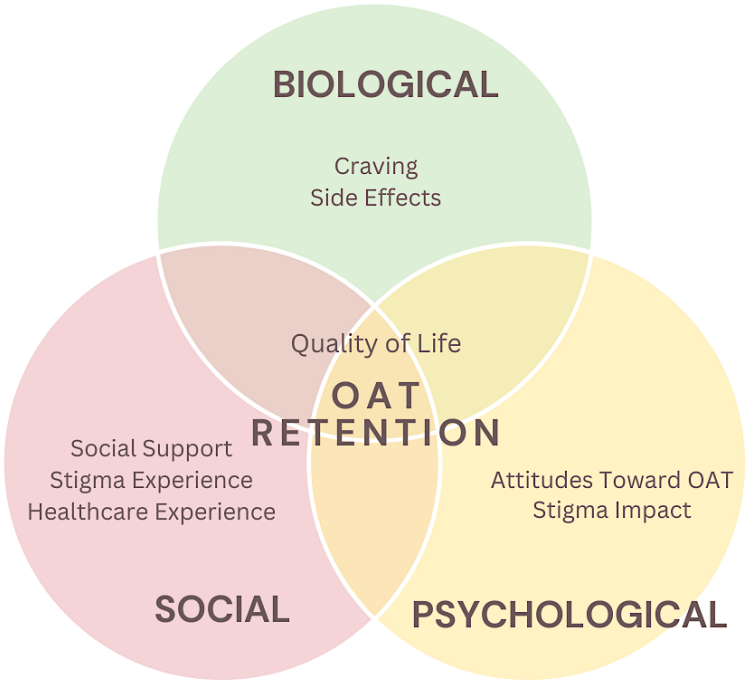
retention theory to be far reaching and inclusive of a variety of factors. This discussion is continued in the next section.

Integrating Theory with Results

Biopsychosocial Model. The current project was informed by a biopsychosocial model, proposing that factors in all domains need be considered as meaningful influencers on OAT retention decisions. This approach was supported by findings from both the Phase 1 and Phase 2 portions of this project. During univariable analysis, eight predictors of interest were significant predictors of successful OAT retention. Those eight predictors, cut across all three biopsychosocial domains. See Figure 5.

Figure 5

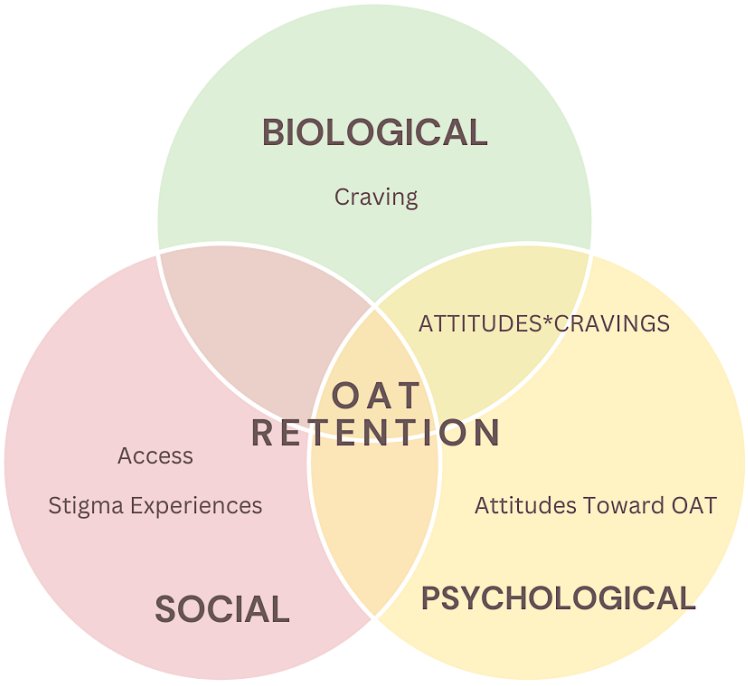
Phase 2 Univariable Predictors: Biopsychosocial Model of Factors Predicting Successful Retention



In the biological domain, cravings and side effects emerged as potentially meaningful. In the psychological domain, attitudes towards OAT and impact of stigma emerged as potentially meaningful. In the social domain, social support, stigma experiences, and health care experience emerged as potentially meaningful. The last variable, quality of life, encompasses all three biopsychosocial domains, providing further support for the utilization of an interconnected and multi-domain conceptualization of meaningful OAT retention factors. Although the effects of each of the eight predictors, in isolation, was significant, the most useful model included all five variables. The final five variable model consisted of four predictors and one interaction term. See Figure 6.

Figure 6

Phase 2 Model: Biopsychosocial Model of Factors Predicting Successful Retention



The three significant variables in the final model cut across all three biopsychosocial domains. Socially, experiences of stigma were a significant predictor. Biologically, cravings for opioids were a significant predictor. Psychologically, attitudes toward OAT were a significant

predictor. The interaction between attitudes and cravings, which is inherently an interaction between physiological and psychological domains, created a more precise prediction model as the interaction effect was also significant. The last variable, access to OAT, was not a significant predictor in the model, but removing it diminished the usefulness of other predictors. Thus, the findings from this Phase 2 study support the usefulness of a biopsychosocial model framework for understanding factors that influence OAT retention.

Investigating Treatment Success: Participant Perspectives

One unexpected finding that was noted during the Phase 1 study and confirmed during the Phase 2 study, was that continued retention seemed to be regarded as unsuccessful treatment by many participants. During the Phase 1 study, 11 participants (58%) viewed the longevity of OAT and their own desire to be abstinent as a main hindering factor toward their continued retention. This finding has important implications. There seems to be a divide in thought, between utilizers and treatment providers, regarding what successful OAT treatment means. Research has shown that short-term OAT schedules typically lead to individuals returning to illicit opioid use (Amato et al., 2003; BCCSU, 2017; Luty, 2003). The BCCSU (2017) manual states that withdrawal management is not effective and individuals who receive short-term OAT management are more likely to die from overdose than those who receive no treatment. These findings led to the belief that long term treatment was a mandatory characteristic of successful treatment. This belief has formed our research inquiries, which position continued retention as the key indicator of treatment success.

However, this project sought to understand OAT retention from the perspectives of individuals who utilize it. Thus, their desire for short-term OAT that leads to an opioid free life holds significant weight. Some Phase 1 participants reported that the medication itself reminds

them of their addiction and that without hope of acute medication termination, they would not be accessing it at all. These experiences are integral to the discussion of what makes OAT treatment successful. The safety offered by long term utilization is irrelevant in the context of utilizers who do not want to, and will not, adhere to long-term programs. Further, the push toward long-term treatment as the only viable option has left utilizers feeling controlled by their prescribers and alone to manage their dosage tapers.

Some participants stated that they allow their prescribers to believe that they are ingesting more OAT than they actually are, while cutting their doses at home or only taking part of their medication during supervised consumption. Participants who were actively trying to stop their OAT medication to live opioid free, reported doing so without their physician being aware of their tapering activities. This line of thinking needs to be investigated as a potential reason for low retention and access rates. To confirm this necessity, a question regarding the reason for OAT termination was added to the survey in the Phase 2 study of this project.

Including the reason for treatment termination question in Phase 2 revealed that 50% of participants, in the unsuccessfully retained group, terminated treatment with the intention of living an opioid free life. This finding supports the notion that measuring success by continued retention may not be the most accurate nor meaningful measure. Efforts to improve the utility and safety of short-term OAT schedules, that lead to opioid free living, may be more useful for and desirable by many in the opioid use disorder population. Most OAT research does not report reason for treatment dropout. However, Soyka et al. (2008) reported that 11% of participants stopped OAT (methadone and suboxone) because they felt confident in living without OAT.

When an individual makes the decision to enter recovery from opioid addiction, they likely expect their efforts to result in the emergence of a life that they desire to live. During

Phase 1, continued OAT retention was reported as a constant reminder of active addiction, as one continues to be physically reliant on an opioid substance that threatens one' physical well-being daily. Further, continued retention was reported as involving social and psychological aspects of active addiction. Participants reported judgment and stigmatization from employers, family, recovery communities, and friends. Participants reported OAT program schedules as interfering with their ability to participate in life activities, such as employment.

Participants reported a lack of sense of accomplishment and shame over their continued utilization. It is my observation that when physicians and researchers cling to the belief that long-term utilization is the only option that can be successful, we are portraying the message that there is no hope for recovery, in the way these people desire it. This message has serious and far-reaching implications. To worsen matters, participants reported that their prescribers could not and would not, upon continuous requests for, indicate a planned retention length. Participants continuously reported feeling dismissed and strung along when asked about retention longevity. It is my observation that this lack of clarity further exacerbates the plethora of psychosocial challenges that OAT utilizers face. If long term retention is the treatment plan, a time frame of success and an explicit plan for reevaluation could go a long way toward facilitating hope.

Investigating Treatment Success: Research Perspective

Aligned with the previous section's discussion regarding disjointed conceptualizations of OAT success between participants and treatment providers, there is a disjointed and short-sighted conceptualization of both successful and unsuccessful retention in current research. Successful and unsuccessful retention is measured with a variety of measures at different time points. Some studies required a follow-up measure to indicate unsuccessful retention (such as not reinitiating treatment within a month), others do not report their unsuccessful measurement

procedures, and others portray unsuccessful as any disruption in continuous treatment. As forementioned, this heterogenous research outcome landscape makes synthesizing results difficult.

Although the current study aligns itself within current research by measuring success as greater than twelve months of continuous retention and unsuccessful as four months or less since treatment dropout, a variety of factors could be influencing dropout occurrences that were not measured. These reasons are not measured in other studies and as such, diminishes the ability of studies to make conclusions regarding factors and characteristics of unsuccessful participants. The absence of a follow up requirement to measure unsuccessful retention in the current study was due to this studies intention of measuring factors currently contributing to the decision to stop treatment, such factors likely change over time and as such, could not be measured at timepoints far away from the drop out incident.

Conceptualizing unsuccessful and successful retention has serious implications toward the usefulness and accuracy of research. Although research is divided in thought regarding time points, the most glaring issue seems to be that unsuccessful retention is only being measured by time points and not the contextual factors that contributed to the drop out. It is crucial that a comprehensive definition of unsuccessful treatment emerge that includes both time points and contextual influences contributing to drop out. For example, individuals who stop OAT to live opioid free lives should not be included in unsuccessful groups.

Summary of Section

This section discussed the findings from the Phase 2 study. This study sought to determine the predictive ability of factors on group membership between successfully and unsuccessfully retained OAT groups. This aim was met, and a final model was constructed that

was able to predict successful retention over and above the intercept only model. This section discussed all the Phase 2 study results and positioned predictors within the context of current literature. Univariable results should be interpreted with caution, as univariable analysis does not allow for assessment of confounding factors. Regardless, univariable results revealed that side effects, impact of stigma, social support, quality of life, and healthcare experience were significant predictors of successful retention. These variables should be explored further to assess their relationships with retention success.

The main findings revealed that cravings for opioids, attitudes toward OAT, and experiences of stigma were the most useful predictors of successful retention. Further, the interaction between attitudes towards OAT and cravings modified group membership predictability in a significant way. Although not statistically significant during univariable nor multivariable analysis, access to OAT proved to be an important inclusion variable in the final model for its modifying effect. This relationship needs to be explored further to assess its meaning. Taken together, the findings from this study indicated that a multitude of factors, across biopsychosocial domains are relevant toward OAT retention decisions.

Limitations

The findings from this project should be interpreted and evaluated in light of several limitations. This section discusses the limitations of the Phase 1 and Phase 2 studies respectively.

Phase 1: Qualitative Limitations. Although ECIT was the best method to meet the aim of this study, there are several notable limitations. First, although this study was positioned using post-positivist assumptions, it is likely that the subjective judgment of the researcher influenced the interpretation of findings. Although the best effort to overcome research subjective judgment was taken using the credibility checks characteristic of ECIT, it may not have been fully

overcome. For example, the primary researcher created the categories that were cross-checked after creation, subjective judgment may have influenced the actual creation of the categories. A notable limitation is that only four participants responded to the follow up interview, thereby not allowing for sufficient participant verification indicating that the results matched their experience.

Although participants appeared to be open during interviews, it is likely that some were not comfortable discussing their OAT experiences and as such, withheld aspects of their experiences. Withholding aspects of experience may have led to findings that do not cover the full range of experiences related to OAT retention. This study is also limited to the subjective experiences of the participants that were interviewed and as such, these experiences may not reflect the experiences of others who utilize OAT. The extent to which the sample is representative of people with opioid addiction issues is limited and will likely overrepresent specific subpopulations. This study relies on the ability of participants to report their experiences accurately. Self-reporting of incidents is likely to be influenced by a range of factors including memory differences among participants.

Another limitation of this study is that participants were screened based on self-reported opioid addiction issues. The sample may not be reflective of a sample that is screened using official OUD diagnostic measures. The participants in the study did not include individuals from many countries, 18 participants were from Canada and one participant was from the USA. Most participants were located in the province of BC (73.7%).

The exploratory nature of this study focuses on the factors that help and hinder desire to access OAT. Thus, the detailed accounts of participant experience with their subjective meaning making and other relevant factors to their experiences were not captured. This method did not

allow for thick in-depth descriptions of contexts related to reported incidents. This study revealed a range of experiences and circumstances that participants found helpful and hindering to their OAT retention. These findings serve as the foundation for theorizing about retention decisions as it does not measure any data outside its primary focus. Further exploration of the factors uncovered here are necessary to understand the prevalence and severity of these factors in the larger opioid addicted population.

Phase 2: Quantitative Limitations. The self-report modality of this study is a limitation in that it relies on participant perspectives and transparency regarding their medical behaviors, perceptions of others, etc. Participant perspectives may be skewed, and participants could answer untruthfully for a variety of reasons. This study is limited to the definitions of independent variables as operationalized. For example, the healthcare experience variable in the current study utilized a measure that matched both participant comments from the Phase 1 study and past qualitative research. These sources depicted consultation empathy as the core component of the participant's healthcare experiences that resulted in their continued retention. Healthcare experience is a diverse and multifaceted concept. As such, the scales chosen here to measure variables may not represent the conceptualization of these phenomena posed by other investigators.

The measurement of the dependent variable as dichotomous in this study is a limitation. OAT retention is measured here within the binary definition that defines successful as more than twelve months retention and unsuccessful as a recent drop out incident. The success measure in this study is limited to a twelve-month time point. Successful OAT retention may be conceptualized as long-term treatment with different variables affecting successful retention at

different time points. Successful OAT retention is not conceptualized homogeneously across literature, making synthesis of findings difficult

The measure for unsuccessful retention was determined by participant availability (< 4 months). A more accurate measure of unsuccessful retention may contain participants within a shorter time frame of treatment drop out or a longer timeframe of continuous dropout. As discussed throughout this report, defining unsuccessful retention by timepoint alone and not considering the contextual factors that surround participants reason for dropping out is a universal issue within current OAT research and as such, limits research to the definitions utilized. Therefore, this study is limited in that it measured the drop out incident which characterized the unsuccessfully retained group as a self-reported stop in OAT medication utilization for any reason.

The snowball sampling and online advertisement recruitment methods may limit results as participants may be clients at the same OAT program or otherwise related. Snowball sampling may influence the independence of observation assumption necessary for regression analysis as participants may be related. Participants who do not know other individuals who utilize OAT may not be represented. The sample is further limited in generalizability as the majority of the sample was White (79.9%) and located in the USA (81%). As such, other ethnicities and countries are not well represented. Location of service is an important consideration in OAT research as different countries and jurisdictions have different prescribing and regulatory guidelines. Factors that affect variables, such as factors contributing to ease of access, likely vary considerably depending on the type of OAT being utilized and the location of utilization. Although the large majority of the sample was located in the USA, the rest of the sample (19%) were located across 15 different countries. Regarding type of OAT, buprenorphine was slightly

more represented in the sample (65.9%) and results should be interpreted considering this when making inferences about methadone.

Although this study attempted to include relevant factors that influence treatment outcomes, some factors were excluded that could be influential. Dosage of OAT was excluded from this study. Dosage has been investigated and proposed as a meaningful factor that may contribute to OAT treatment outcomes. Substance use while utilizing OAT was excluded in this study. Polysubstance use has been investigated and proposed as a meaningful factor that may contribute to OAT treatment outcomes. Information and resources about OAT emerged as a meaningful factor that may contribute to OAT treatment outcomes in the Phase 1 study but was not included in the Phase 2 study. This study is limited to the variables chosen for investigation.

Logistic regression is appropriate to investigate the influence of predictors on a binary outcome and also the direction of associations, but it has several notable limitations. Logistic regression attempts to predict precise probabilities on highly dimensional datasets. This may lead to the model being over-fit, overstating the accuracy of predictors. The model used in this study did not undergo internal or external validation procedures. Its utility in a larger sample, between different populations, and in real world settings is unknown. Logistic regression solves problems on a linear decision surface and linearly separable data is rarely found in real world scenarios. As such, it is difficult to capture complex relationships using this method.

Recommendations

The findings from this project have shed light on potential directions for practice, research, and policy. From both studies conducted and insights gleaned, certain conclusions and recommendations can be considered. This section discusses these recommendations.

Recommendations for Practice. This project is aligned with a counselling psychology perspective in that it takes a holistic client-centred approach to understanding OAT retention and considers the psychosocial context in which individuals function as relevant to treatment outcomes. This project is also aligned with a medical perspective in that it assessed the physiological and otherwise related experiences of participants who were accessing a highly stigmatized medication. Therefore, practice recommendations are made for counselling clinicians and OAT prescribing physicians.

Counselling Clinicians. The findings from this project have important implications for counselling clinicians working with OAT utilizing clients. Clinicians should educate themselves about the unique challenges faced by OAT utilizers, especially in comparison to the known components of seeking addiction recovery services when not utilizing medication. Clinicians who understand these unique challenges will be better positioned to offer interventions aligned with their clients' needs. A desire for psychosocial counselling support was one of the core categories that emerged from participants during the ECIT study. Clinicians should make themselves accessible to OAT utilizing populations.

It is important that clinicians understand the unique stigma, access, and physical challenges associated with utilizing OAT so that they can tailor their interventions around empathizing with and supporting their clients while they navigate these challenges. Of specific importance is that clinicians allow space for their clients to vocalize and plan for their own individualized treatment goals. Given the reports in this study that participants felt alone and dismissed by their treatment providers, it may be especially influential for individuals utilizing OAT to feel that they have an ally in their treatment plan, who is willing to walk with them on their chosen path. This study also found that participants felt uniformed and uneducated about

OAT. Clinicians should educate themselves about treatment options and other components of OAT programs so that they can help their clients be well informed.

The quantitative study revealed that experiences of stigma, cravings for opioids, and attitudes toward OAT are significant predictors of retention. These factors should be explored in clinical settings. Working to counteract the influence of cravings and stigmatizing experiences may prove especially useful for OAT utilizers. Further, working to promote positive attitudes towards OAT may in itself aid in successful retention and may modify the negative effects of cravings on treatment outcomes. Participants commented that feeling hopeful toward their future, feeling mentally clear, and seeing positive life outcomes positively influenced their retention. Clinicians may apply these findings in their work with OAT utilizers through targeted interventions intended to promote hopefulness, mental clarity, and positivity.

OAT Prescribing Physicians. The findings from this project have important implications for OAT prescribing physicians. The Phase 1 study resulted in viable participation rates in the doctor care category. Participants commented that when they felt their doctor cared for them it aided them in desiring to continue OAT. In contrast, when they felt dismissed by their physicians and uncared for it hindered their continued retention. Participants stated that they wished their doctors would spend more time with them and support them more. The emergence of a doctor care category as integral to retention decisions, across participant experiences, suggests that the relationship between patient and physician is a meaningful factor that contributes to treatment outcomes. The univariable analysis in the Phase 2 study supported this assertion, with healthcare experience (prescribing physicians' relational empathy) being a significant predictor of group membership in successfully and unsuccessfully retained groups. In light of these findings, it is

recommended that OAT prescribing physicians tailor their approaches, with OAT patients, to be patient-centered, collaborative, and empathetic.

Another important finding for physician consideration was that the side effects from OAT were found to be the top factor that hindered retention in the Phase 1 study. Further, side effects were a significant predictor of group membership in successfully and unsuccessfully retained groups during univariable analysis in the Phase 2 study. These findings imply that it could be extremely beneficial for physicians to monitor the burden of side effects experienced by their patients and make treatment recommendations based on these ratings. The FIBSER rating scale (Wisniewski et al., 2006) is a simple and quick measure that could be utilized by physicians to measure side effects.

Another important finding for physician consideration is their role in the reported access challenges experienced by participants. Although physicians are limited in their ability to facilitate access, they do have discretionary privileges regarding take-home medication allowance. The findings from this study should be considered while making such discretionary decisions. Participants who were able to take home a sufficient number of carries indicated that it positively influenced their retention and participants who had to attend pharmacies often indicated that it hindered their continued retention. Physicians should make every effort possible to facilitate ease of access.

The Phase 2 study found that craving opioids was one of the best predictors of successful and unsuccessful OAT retention group membership. Physicians could monitor craving levels to inform their treatment recommendations. Further, positive attitudes toward OAT significantly modified the negative effects of cravings on retention outcomes. If physicians assess their

patients attitudes toward OAT and facilitate conversations around attitudes that their patients hold, they may be able to significantly influence treatment outcomes.

Lastly, and perhaps most importantly, this project confirmed that the current OAT landscape is confusing and difficult to navigate for both practitioners and patients. Participants reported receiving conflicting education about OAT from various practitioners. Participants continuously reported confusion over their OAT programs requirements. Specifically, length of necessary retention seemed to weigh heavily on the minds of participants. Both studies showed that participants often felt the necessity to terminate OAT and move on with their lives, opioid free. It is recommended that physicians ask patients what their OAT goals are at the onset of treatment. When patients hold abstinent goals, collaborate with patients to build structured treatment schedules. When retention time frames are ambiguous, as they often are, physicians could explain their rationale and suggest success markers so that their patients can measure their progress. This recommendation is an echo of that made by Yarborough et al. (2016) who called for better clinician-patient communication and improved patient education.

Recommendations for Research. Although a large number of studies investigate OAT retention and dropout as a primary outcome measures it is difficult to compare results due to the variability in defining retention and dropout. There is no consensus on an acceptable threshold for defining these phenomena. This lack of consensus is further complicated when considering the findings from the current project. Half the participants in the first study wanted to terminate OAT to live opioid free lives. Half the participants in the second study, in the unsuccessfully retained group, stated their reason for stopping OAT was because they are living opioid free.

Future research should aim to reach a clinically appropriate and contextually relevant definition of successful and unsuccessful retention. As suggested in O'Connor (2022) an

international consensus project, using a Delphi methodology could be organised to reach this goal. Reaching consensus would allow for replication of findings and thus, progress toward answering retention related questions. It is likely that different reasons for treatment dropout are associated with different risk factors and as such, reasons for dropout should be investigated in relation to risk factors and treatment outcomes. Notably, a useful definition for successful treatment should include components that individuals utilizing OAT perceive as integral to success. Further, a useful definition of unsuccessful treatment should include contextual factors such as length of time the individual has stopped utilizing OAT and their reasoning for stopping.

This study positioned itself within the OUD cascade of care framework so that research can be unified in an attempt to improve clinical and system-level outcomes. It is recommended that future studies that investigate OAT do the same to help reach this aim. The current landscape of OAT research has disregarded short-term OAT utilization as a safe and effective option. However, when a large portion of OAT utilizer desire abstinence it becomes necessary to explore programs that can best help them meet their goals safely. Future research should explore best practices around short-term OAT utilization, aiming to improve safety so that short-term utilization becomes a viable option. It is apparent that OAT utilizers are going to continue attempting to utilize OAT in this capacity. As such, research should investigate the safest way for them to do so.

Despite the well documented benefits of OAT, access rates and treatment retention continue to be extremely low. This project took a fresh approach through its mixed method structure, which allowed for two types of data to inform results. The unification of two types of data allowed for new concepts to emerge as integral to OAT decisions from the perspectives of

individuals who were currently accessing it and allowed for testing those emergent concepts in the larger population. This project demonstrated the usefulness of this approach.

When research seeks to solve real world problems it is important to investigate those problems from the perspectives of the people experiencing them. The utility of a mixed method approach is proven through the emergence of factors that would not have been explored without the first qualitative investigation. Two factors in the final model, cravings for opioids and experiences of stigma were included due to the data collected from participants in Phase 1. Utilizing mixed method approaches, that seek to investigate lived experiences and test those experiences as generalizable, shows promising movement toward tangible and applicable solutions that may help diminish the overdose epidemic toll.

This project's ECIT study helped identify what OAT utilizers who self-identify as having opioid addiction found helpful and hindering to their continued OAT retention and what they wished was available in the past or would be available in the future. The findings of this study could help expand the empirical knowledge base related to OAT retention. This would help improve OAT treatment programs in accordance with how OAT retention is experienced from patients' perspectives. The categories related to OAT retention reported by participants in the current study need to be further examined in other populations and confirmed in follow up studies. Currently, there appears to be a conceptual divide between qualitative OAT research and quantitative OAT research. Qualitative OAT research often covers psychosocial factors related to OAT retention and quantitative OAT research often covers biological and demographic factors in relation to retention. The findings from this project suggest the usefulness in exploring all factors using diverse methods. Future research should further investigate psychosocial factors with quantitative methods to confirm the influence of these factors in larger populations. Future

research should also investigate physiological, demographic, and practical factors through qualitative inquiry to develop in-depth, dynamic, and informed explanations of the associations between these factors and OAT retention found through quantitative inquiry.

The findings from the quantitative study in this project suggest that attitudes toward OAT, cravings for opioids, and experiences of stigma are important factors for predicting successful retention. Future studies should explore these factors as meaningful in other populations and confirm these findings using other methods. It would be useful to investigate these factors alongside factors not investigated in this study to continue to investigate which factors can best predict retention. Notably, predictors of retention may vary across retention time points and longitudinal studies would be useful in determining factor variance at different time intervals. The final prediction model in this study included access to OAT as an important variable in the model but the effect was not significant. The access scale utilized in this study was created during this study and has not been validated in other research. Further research is needed to validate the scale, explore access as a potential predictor, and explore access as an effect modifier for other significant retention predictor variables.

Recommendations for Policy. The results from this study indicate that low-threshold OAT programs may prove to be the most successful. It is therefore recommended that low-threshold OAT programs be implemented across regions. Low-threshold programs (Christie et al. 2013; Marks et al. 2020) have shown unprecedented success in retaining patients. Programs designed to reduce barriers to entry, be patient-centered, and take non-punitive approaches to drug use could provide substantial relief to our current opioid related public health emergency.

Implementing low-threshold OAT programs is supported by eight of the fourteen categories found in this project's ECIT study. Low-threshold program implementation may

relieve access problems, decrease stigma, help OAT utilizers reach their individual medication goals, provide psychosocial supports, provide information and resources, and lead to development of peer relationships. Notably, it is integral to the success of such programs that the philosophy and architecture of the program is aligned with that utilized in Marks et al. (2020), where participants were attracted to programs by meeting their needs and empowering them to make well-informed conscious decisions about their drug use. Such programs are staffed with physicians, nurses, social workers, and counsellors who interact with patients using unconditional positive regard and collaboration.

Under the current BC prescribing guidelines (BCCSU, 2017), strict requirements are necessary for individuals to utilize OAT. The current guidelines dictate treatment goals and treatment schedules. As such, these guidelines do not adhere to low-threshold criteria and are contradictory to the recommendation made here. The biopsychosocial treatment model currently in effect, that demands clients demonstrate social, cognitive, and emotional stability by attending all appointments, not missing doses, and prove they are improving their life through return to work or school in order to receive take home medication (CPSBC, 2014) is not supported by the findings of this project. Such evaluations were seen as dehumanizing and frustrating by participants in the ECIT study. Such evaluations, from physicians, contributed to experiences of stigma which proved to be a significant predictor of successful OAT retention in the prediction model study. Such evaluations are intended to inform physicians of the patient's level of risk for dropout of treatment. The findings from this project suggest that measuring attitudes towards OAT, cravings for opioids, and experiences of stigma may be more useful predictors of retention. However, it is recommended that prescribing guidelines move away from an evaluative model entirely and move toward a low-threshold collaboration model. The findings of

this project indicate that it may prove more successful to educate patients, spend time talking to and understanding patients, and allow patients autonomy in their treatment decisions than to follow rigid one-size-fits-all treatment approaches.

In Canada, OAT is currently delivered in three main settings: provincially funded programs, by family physicians, and in correctional facilities. Provincially funded programs are the only setting that offers the comprehensive care (counselling, social support, and mental health services) suggested as the best practice guideline for successful treatment (Eibl et al., 2017). Family physicians continue to be the most common setting delivering OAT in Canada. Provincially funded program expansion to northern, rural, and remote regions is not common (Eibl et al. 2017). It is recommended that comprehensive care be implemented across delivery settings and be expanded into northern, rural, and remote regions.

Aligned with the low-threshold OAT program recommendation, it is recommended that buprenorphine be deregulated so that it may be accessible at harm reduction facilities (such as safe injection sites). Many participants during the Phase 1 study commented that rapid access to OAT was necessary in order to facilitate OAT initiation and retention. The ability to initiate treatment in this capacity removes substantial barriers, such as the necessity to attend doctor's offices while experiencing opioid withdrawal. An initial buprenorphine dose could alleviate withdrawal long enough for an individual to connect with a physician without having active withdrawal substantially hindering their efforts. Accessibility of OAT in this capacity may also act to decrease stigmatizing experiences which were found to be a predictor of retention in the prediction model. Safe injection sites are already situated in areas with high rates of drug use and already offer health screening and access to mental health supports. Safe injection sites educate clients and refer clients to other health services. Offering an initial buprenorphine dose with a

referral to a provincially funded clinic may substantially increase treatment uptake. Further, offering initial buprenorphine doses in this setting allows for instant access whenever an individual feels motivated to attempt treatment.

Conclusion

This project furthered our understanding of OAT retention facilitators and barriers by illuminating the experiences of individuals who were currently utilizing OAT and analyzing those experiences in relation to retention success. The Phase 1 study revealed fourteen factors that were perceived by participants to help and hinder their continued OAT retention. The results from Phase 1 showed that individuals utilizing OAT have unique, OAT-specific, biopsychosocial experiences that challenge and aid their continued retention.

The Phase 2 study found that cravings for opioids, attitudes towards OAT, and experiences of stigma were the most useful factors for predicting successful retention, of the potential factors explored. The results further indicated that highly positive attitudes toward OAT modify the effects of cravings on retention outcomes. These results also supported the use of a biopsychosocial factor model for conceptualizing influences on OAT retention decisions.

Taken together, the findings from this project provide tangible applications with regard to practice and policy. Based on the experiences of participants in this study, policy and practice level interventions, tools, and strategies for OAT care may be developed. Given the ongoing opioid crisis with its unprecedented magnitude, I hope that the findings from this project will be considered as meaningful by policymakers, physicians, and counselling clinicians. Further, I hope this project will stimulate more research, particularly focusing on facilitating successful OAT treatment outcomes that are aligned with the goals of those who are seeking help.

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APPENDIX A

Phase 1 Study Advertisement

We are looking to hear from individuals who are currently taking methadone or buprenorphine and who have had a minimum of one experience where they have stopped taking their OAT medication within six months of starting it. Participation involves an approximately 90-minute interview. To thank you for your time, you will receive a $25 Amazon e-Gift card. You can participate if you are nineteen years old or older.

APPENDIX B

Phase 2 Study Advertisement

We are looking to hear from individuals who have been taking methadone or buprenorphine for one year or longer and from individuals who have recently stopped their medication (with or without restarting it). Individuals must self-identify as having an opioid addiction and be nineteen years old or older. Participation involves an approximately 25-minute anonymous online survey. To thank you for your time, you can be entered to win one of three $25 Amazon e-Gift card.

APPENDIX C

ECIT First Contact Screening Script

Screening Questions

1. Are you nineteen years old or older? Yes/no
2. Are you currently taking OAT (buprenorphine or methadone)? Yes/no
3. Have you ever started taking OAT and then stopped prior to 6 months retention? Yes/no
4. Are you willing to talk about your experiences? Yes/no
5. Do you identify as having opioid addiction issues? Yes/no
6. Are you able to correspond over email for follow-up once within the next 4-9 months? Yes/no

Arranged first interview? Yes/no

APPENDIX D

Informed Consent for Phase 1 ECIT Study

Principal Investigator (Researcher): Alyssa Cappon, M.A. Student in Counselling Psychology, Trinity Western University.

Supervisor: Deepak Mathew, Associate Professor, Counselling Psychology Department, Trinity Western University.

Purpose: The purpose of this research project is to better understand decisions regarding OAT therapy by individuals who are currently utilizing methadone or buprenorphine and who self-identify as having opioid addiction issues. It will also provide individuals with an opportunity to describe their experiences. This study is designed to provide insight into the desirability of OAT. This research is being conducted as part of a master's thesis in Counselling Psychology at Trinity Western University. The results of this research will be included in a master's thesis that will become public documents in the University library once completed. The results of this research may also be published in appropriate professional and academic journals. This study is funded through a grant from the Social Sciences and Humanities Research Council of Canada.

Procedures: The semi-structured interview will last from one and a half hours to two hours. Participants will be screened prior to the interview date. During the first part of the interview, you will be introduced to the purpose of the study and upon giving your signed consent for participation, you will be asked what good opioid agonist therapy (OAT) treatment means to you. Following this, you will be asked for an account of your OAT decision-making process. Then you will be asked to recall specific factors that helped or hindered you in making OAT retention decisions, as well as examples of these helping and hindering factors from your experiences. You will also be asked whether you can identify anything that might have helped you but was not available to you at the time. Finally, you will be asked to provide demographic information about yourself. These interviews will be recorded, transcribed, and given a code number to ensure confidentiality. Upon completion of the study these tapes will be erased.

There will also be a telephone/email contact, which will take about 15 minutes and will consist of a review of the categories discovered by the researcher. Your total participation time will be approximately two and a half to three and a half hours within a four to nine-month period.

Confidentiality: Any information identifying individuals participating in this study will be kept confidential. Only trained research assistants on the research team will have access to the data. Upon signing informed consent, you will be given a code number to ensure the maintenance of confidentiality. Participants will not be identified by the use of names or initials in any reports of the completed study. All research documents will be kept in a locked filing cabinet in a locked office at Trinity Western University. Computer data files will be encrypted, and password protected.

Compensation: You will be provided with a $25 Amazon gift card prior to the beginning of the first interview, regardless of whether or not you complete the interviews.

Contact for Information About the Study: If you have any questions or would like more information about this study, you may contact Alyssa Cappon (Principal Investigator) or Deepak Mathew (Supervisor).
If you would like to obtain a copy of the results of the study, please contact Alyssa Cappon.

Contact for Concerns About the Rights of Research Subjects: If you have any concerns about your treatment or rights as a research participant, please contact the Ethics Compliance Officer in the Office of Research, Trinity Western University.

Consent: Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time without prejudice of any kind.

Your signature below indicates that you have received a copy of this consent form for your own records.

Your signature indicates that you consent to participate in this study.

The data from this study may be used in future research. If you do not wish it to be used in future research, you may indicate so below. It will then not be used beyond this study.

Do you consent to allow your data from this study (in anonymous form) to be used in future research?
Yes ___ No ___

_____ _____
Participant Signature. Date

_____-
Printed name of the Participant signing above

I agree to be contacted in the future for research participation in similar studies by the same researcher.

Initials: _____ Date:_____

Thank you for your willingness to participate in this study.

APPENDIX E

Interview Guide For Phase 1 ECIT Study

Participant #: _____ Date: _____
Interview Start Time: _____

**To the interviewer: this guide contains material that should be read to each participant. Material that does not need to be read is demarcated with brackets ([]); otherwise, it should be read out loud.*

Purpose of the Study [Welcome the participant to the study] Our purpose in this study is to understand people's decisions about opioid agonist therapy (buprenorphine, methadone, or any other buprenorphine/naloxone). I am personally a member of the drug and alcohol recovery community and created this study due to my understanding of its necessity.

[At this point, please review the informed consent form with the participant and answer any questions they have that pertain to informed consent].

Part One: What Does OAT (Buprenorphine/Methadone) Treatment Mean to You?
In this study we are interested in how and why people make decisions about OAT. But first we want to know how you define good OAT treatment in your own life. We are not just interested in the medication itself, but any other factors you think are important for good OAT treatment.

1. Can you tell me what OAT treatment means to you in the context of your own life?
2. Can you tell me what OAT treatment means to you?

In the last section, we discussed what good OAT treatment means to you.
On a scale of 0 – 10, where 0 is very poor treatment outcomes, 5 is OK, and 10 is very good, where would you place yourself?

_____
0 1 2 3 4 5 6 7 8 9 10
Very Poor OK Very Good

Part Two: Enhanced Critical Incident Interview
[Preamble:] In this part of the interview we will discuss the OAT medication retention barriers and what has helped or hindered you in staying on the medication.

[Transition to Critical Incident questions:] You rated yourself as a 5-6 [or whatever the participant rated him- or herself in question 1 (b) above] in OAT treatment as you just described.

a. What has helped you stay on OAT?

(Probes: What was the incident/factor? How did it impact you? – e.g.: "Social support is helping. How is it helping?" Can you give me a specific example where social support helped? How did that help you want to utilize OAT?)

Helpful Factor & What it Means to Participant (What do you mean by … ?)	Importance (How did it help? Tell me what it was about...that you find helpful.)	Example (What led up to it? Incident. Outcome of incident.)

This concludes another set of questions regarding your experience. Before we move on to the next set of questions about what hindered your desire to utilize OAT, I would like to make sure I have not missed anything you have said up to this point. [summarize helping items up to this point].

b. Now, I'm wondering what things have made you not want to stay on your OAT medication? (Alternative question: What kinds of things have happened that made it harder for you to stay on the program?)

Hindering Factor & What it Means to Participant (What do you mean by … ?)	Importance (How did it hinder? Tell me what it was about … that you find unhelpful.)	Example (What led up to it? Incident. Outcome of incident.)

This concludes another set of questions regarding your experience. Before we move on to the next set of questions, I would like to make sure I have not missed anything you have said up to this point (summarize hindering items as indicated by the participant).

c. We've talked about what's helped you stay on OAT (name them), and some things that have made it more difficult for you to stay on OAT (name them). Are there other things that would have helped you want to retain OAT in the past that were not available to you, or that will help in the future if they become available? (Alternative question: I wonder what else might be helpful to you that you haven't had access to/experience?)

Wish List Item & What it Means to Participant (What do you mean by … ?)	Past (p) or Future (f) [E.g. Would have helped/would help]	Importance (How would it help? Tell me what it is about … that you would find helpful.)	Example (In what circumstances might this be helpful?)

Thank you. Before we move on to the final set of questions, I want to make sure I did not miss anything [summarize items regarding what would have helped and what would potentially help].

d. Now that you've had a chance to reflect back on what's helped and hindered, where would you place yourself on the same scale we discussed earlier? The scale is from 0 – 10, where 0 is doing very poorly, 5 is OK, and 10 is doing very well.

0 1 2 3 4 5 6 7 8 9 10
Very Poor OK Very Well

e. What's made the difference? (To be asked only if there is a difference between the first and second scaling question ratings.)

f. Have you always retained OAT at this level [mention number from scale question]
g. If not, when did this change for you?
h. What happened that caused you to begin retaining OAT differently?

Part Three: Demographic Information

This is that last part of the interview. I will ask you a few questions to gather demographic information. This will be reported in aggregate form, such as totals and averages, and will not identify you individually.

1.
   A. Where is your OAT at right now, in terms of how long you have been utilizing it?
   B. Type of OAT currently utilizing and dosage
   C. Lifetime dropout occurrence
   D. First OAT utilization year
   E. Types of OAT utilized over lifetime and general challenge/positive of each

2. Where is your OAT at right now in terms of activities you're currently engaging in? (could be program specific such as urine tests, supervised consumption, or outside activities such as twelve-step group, therapy, assisted living community, etc)
3. How would you describe your social support system? (family, friends, healthcare professionals)
4. Age
5. Gender (how would you describe your gender?)
6. Employment status
7. Would you describe your relationship with your primary OAT physician as positive or negative?
8. Where do you live?

Start/End Time: _____ Length of interview: _____
Interviewer's Name: _____
Interview location: _____

Debrief Statement

We want to thank you for participating in this research on OAT decision-making. Your time and effort are very much appreciated. Your participation helps us to develop an understanding of OAT retention factors and their effects on treatment.

Previous work on OAT retention has found limited associations between certain factors and OAT retention rates (O'Connor et al., 2020). Such factors include age, substance use, dosage, legal issues, and attitudes toward OAT (O'Connor et al., 2020). Our research has taken a new approach by first, asking people currently accessing OAT what factors they believe are influencing their OAT retention and then testing those factors as predicative of unsuccessful OAT retention. This study asked you about your experiences with barriers around OAT retention. These questions help our research by contributing to the development of a model of factors that may influence retention results in the larger OAT population. The factors determined by this study will be used for a follow up study that tests the ability of these factors to predict unsuccessful OAT retention.

If you have any questions or would like to receive more information about this study, please contact Alyssa Cappon.

If you have any concerns about your treatment or rights as a research participant, please contact the Ethics Compliance Officer in the Office of Research, Trinity Western University.

APPENDIX F

Participant Consent Phase 2

Study Title: Opioid Agonist Therapy: Medication Barriers Predict Successful Retention
Research Investigators: Alyssa Cappon, Trinity Western University and Deepak Mathew, Trinity Western University.
Background: You are invited to take part in a study on opioid agonist therapy treatment retention decisions conducted by Alyssa Cappon, graduate student in counselling psychology at Trinity Western University and Deepak Mathew, PhD, supervisor. To participate in this study you must be over 19 years old. This study will ask questions about the length of time you have been accessing OAT and about your relationships with your physician, health care providers, and OAT peers.
Purpose: This study explores the relationship between social cohesion, health care experiences and successful OAT retention.
Study Procedures: This study involves answering an online questionnaire and will take about 30-45 minutes of your time.
Benefits: There is no direct benefit to participating in this study. We hope that this research will contribute to the literature and knowledge regarding OAT retention.
Compensation: We would like to offer you the opportunity to enter to win one of five $25 Amazon e-Gift cards as a thank you for your participation. If you choose to enter the draw, the email address that you provide will be used only for the purpose of contacting the winner(s), and all email addresses will be deleted promptly following the conclusion of the prize draw. At no time will your email address be connected to your study responses.
Risk: This study will ask questions about your relationships and time spent using OAT. If this might be difficult for you, please do not take part in this study. You can end your participation at any time by closing the browser window. Please contact the researcher if you would like a copy of the research findings to be sent to you directly.
Voluntary Participation: Participation in this study is completely voluntary and you are not required to answer any specific questions. At any time if you decide you do not want to participate you can close the window prior to submitting any responses. Your responses will not be recorded and there is no penalty for leaving the study. It will not be possible to withdraw your responses after you have submitted them, since responses are anonymously recorded.
Confidentiality: The results from this study may be presented at conferences or be published in a research article. Your responses to the questions are completely anonymous, as no identifying data is collected. All information will be kept strictly confidential and only the researchers will be able to access the data. Even though the data collected is not identifiable and confidential, it will be coded with unique identifiers while the researcher manages the data. Data is stored anonymously through encrypted password-protected means. If you would like a copy of the research findings after the study is complete, you are invited to contact Alyssa Cappon.
Further Information: If you have any questions or concerns about this study, please contact Alyssa Cappon or supervisor, Deepak Mathew.
Contact for Concerns About the Rights of Research Participants:
If you have any concerns about your treatment or rights as a research participant, please contact the Ethics Compliance Officer in the Office of Research, Trinity Western University.

Consent Statement: By clicking “continue” you are indicating that you consent to participate in the study and your responses may be put in anonymous form and kept for further use after the completion of this study. Please print or take a screenshot of this consent form for your own records.

APPENDIX G

Opioid Experiences Survey Questionnaire

Note: *Opioid Agonist Therapy (OAT) includes all methadone medication (Methadose, Dolophine, etc.) and all buprenorphine medication (Suboxone, Sublocade, Belbuca, Butrans, Subutex, etc).*

Screening Questions:
Please only proceed with the survey if your answer is YES to the following three questions:

1. Are you nineteen years old or older?

□ Yes
□ No

2. Do you identify as having opioid addiction issues?

□ Yes
□ No

3. Do you belong to **one** of the two following groups:

(1) Group One: You have been taking OAT for 12 months or longer

OR

(2) Group Two: You recently **within the past two months** stopped taking OAT medication (and started again or not restarted)..

□ Yes
□ No

Which of the following best describes your current OAT retention length?

Note: *Opioid Agonist Therapy (OAT) includes all methadone medication (Methadose, Dolophine, etc.) and all buprenorphine medication (Suboxone, Sublocade, Belbuca, Butrans, Subutex, etc).*

(a) I have been taking OAT for **12 months or longer**

(b) I **recently** stopped my OAT medication (and restarted it or did not restart it).

<u>If your answer was B to the last question, answer the following:</u>
You indicated that you **recently stopped** your OAT medication, what response best explains your opiate drug use now:

1) I stopped the medication and have NOT restarted taking it. I am living an opioid free life.

2) I stopped the medication and have NOT restarted taking it. I am using opioids.
3) I stopped the medication and have restarted taking it. I am currently taking OAT (with or without using opioids alongside OAT.

How long ago did you stop taking OAT medication? If you are currently taking OAT how long ago did you stop last? (missed dose, cancelled script, chose to stop, etc).
Example (7 days ago) _____

<u>If your answer was A to the last question, answer the following:</u>
How long have you been taking OAT continuously since stopping last? _____

Survey Questions

1. Gender:

□ Female
□ Male
□ Transgender
□ Non-Binary
□ Prefer not to respond

2. Which of the following best describes you?

□ Black or African American
□ Asian
□ White
□ Indigenous
□ Middle Eastern
□ Latino
□ An ethnicity not listed here
□ Prefer not to respond

3. What Country do you live in? _____

4. What province/state/region do you live in? _____

5. Current housing situation:

□ Homeless
□ Living at a shelter
□ Recovery house
□ Treatment center/detox center
□ Renter
□ Homeowner
□ Living with friends/relatives
□ Prefer not to respond

6. What is your current employment status?

□ Full-time

□ Part-time
□ Unemployed seeking employment
□ Unemployed not seeking employment
□ Retired
□ Prefer not to respond

7. How old are you in years? _____

8. What OAT medication are you currently taking or last accessed?
□ Buprenorphine (Suboxone/sublocade/or other)
□ Methadone

9. What is your current dosage of OAT?
please indicate number and measurement (Example: 30 milligrams): _____

10. Are you currently on probation, parole, bail, enrolled in drug court, or involved in a child protective service case?
□ Yes
□ No

Please read each item carefully and circle the number that best describes your **opioid craving during the past week**

1. During the past week ***how often*** have you thought about using opiates (other than OAT) or about how good using opiates (other than OAT) would make you feel?
0 Never: 0 times during this period
1 Rarely: 1-2 times during this period
2 Occasionally: 3-4 times during this period of time
3 Sometimes: 5-10 times during this period of time
4 Often: 11-20 times during this period of time
5 Most of the time: 20-40 times during this period of time
6 Nearly all of the time: more than 40 times or more than 6 times per day

2. At its most severe point, ***how strong*** was your craving during the past week?
0 None at all
1 Slight, that is a very mild urge
2 Mild urge
3 Moderate urge
4 Strong urge, but easily controlled
5 Strong urge and difficult to control
6 Strong urge and would have used opiates if they were available
3. During the past week ***how much time*** have you spent thinking about opiate use (other than OAT) or about how good using opiates would make you feel?
0 None at all
1 Less than 20 minutes
2 21-45 minutes
3 46-90 minutes

4 90minutes-3 hours
5 Between 3 hours and 6 hours
6 More than 6 hours

4. During the past week ***how difficult would it have been to resist*** taking opiates if you had known opiates (other than OAT) were in your house?
   0 Not difficult at all
   1 Very mildly difficult
   2 Mildly difficult
   3 Moderately difficult
   4 Very difficult
   5 Extremely difficult
   6 Would not be able to resist
5. Keeping in mind your responses to the previous questions, please rate your overall ***average opiate craving (other than OAT)*** for the past week?
   0 Never thought about using opiates and never had the urge to use opiates
   1 Rarely thought about opiates and rarely had the urge to use opiates
   2 Occasionally thought about opiates and occasionally had the urge to use opiates
   3 Sometimes thought about opiates and sometimes had the urge to use opiates
   4 Often thought about opiates and often had the urge to use opiates
   5 Thought about opiates most of the time and had the urge to use opiates most of the time
   6 Thought about opiates nearly all of the time and had the urge to use opiates nearly all the time

Side Effects

Please choose and circle your response based on **side effects** that you believe are caused by OAT **IN THE PAST MONTH**.

1. IN THE PAST MONTH, how **much of the time** did you experience side effects caused by OAT?

0	1	2	3	4	5	6
None of the time (no side effects)	10% of the time	25% of the time	50% of the time	75% of the time	90% of the time	All the time

2. IN THE PAST MONTH, how **severe** were the side effects from OAT?

0	1	2	3	4	5	6
None (no side effects)	Minimal severity	Mild severity	Moderate severity	Marked severity	Severe severity	Intolerable severity

3. IN THE PAST MONTH, how much have the side effects from OAT medication **interfered** with your day-to-day activities?

0	1	2	3	4	5	6
No interference with activities	Minimal interference with activities	Mild interference with activities	Moderate interference with activities	Marked interference with activities	Severe interference with activities	Unable to function

Thinking about your most recent interactions with an OAT prescribing doctor, please rate the following statements.

How good was the OAT doctor at:

1. Making you feel at ease (introducing him/herself, explaining his/her position, being friendly and warm towards you, treating you with respect; not cold or abrupt)
   Poor Fair Good Very Good Excellent Does not apply
2. Letting you tell your "story" (giving you time to fully describe your condition in your own words; not interrupting, rushing or diverting you)
   Poor Fair Good Very Good Excellent Does not apply
3. Really listening (paying close attention to what you were saying; not looking at the notes or computer as you were talking)
   Poor Fair Good Very Good Excellent Does not apply
4. Being interested in you as a whole person (asking/knowing relevant details about your life, your situation; not treating you as "just a number")
   Poor Fair Good Very Good Excellent Does not apply
5. Fully understanding your concerns (communicating that he/she had accurately understood your concerns and anxieties; not overlooking or dismissing anything)
   Poor Fair Good Very Good Excellent Does not apply
6. Showing care and compassion (seeming genuinely concerned, connecting with you on a human level; not being indifferent or "detached")
   Poor Fair Good Very Good Excellent Does not apply
7. Being positive (having a positive approach and a positive attitude; being honest but not negative about your problems)
   Poor Fair Good Very Good Excellent Does not apply
8. Explaining things clearly (fully answering your questions; explaining clearly, giving you adequate information; not being vague)
   Poor Fair Good Very Good Excellent Does not apply
9. Helping you to take control (exploring with you what you can do to improve your health yourself; encouraging rather than "lecturing" you)
   Poor Fair Good Very Good Excellent Does not apply
10. Making a plan of action with you (discussing the options, involving you in decisions as much as you want to be involved; not ignoring your views)
    Poor Fair Good Very Good Excellent Does not apply

Thinking about <u>your current</u> life, please rate the following statements:

1. You have people close to you who motivate and encourage your recovery.
   Strongly Disagree Disagree Neutral Agree Strongly Agree

2. You have close family members who help you stay away from drugs.
   Strongly Disagree Disagree Neutral Agree Strongly Agree

3. You have good friends who do not use drugs.
   Strongly Disagree Disagree Neutral Agree Strongly Agree

4. You have people close to you who can always be trusted.
   Strongly Disagree Disagree Neutral Agree Strongly Agree

5. You have people close to you who understand your situation and problems.
   Strongly Disagree Disagree Neutral Agree Strongly Agree

6. Most of your time is spent in situations where drug use is common.
   Strongly Disagree Disagree Neutral Agree Strongly Agree

7. You have people close to you who expect you to make positive changes in your life.
   Strongly Disagree Disagree Neutral Agree Strongly Agree

8. You have people close to you who help you develop confidence in yourself.
   Strongly Disagree Disagree Neutral Agree Strongly Agree

9. You have people close to you who respect you and your efforts with OAT
   Strongly Disagree Disagree Neutral Agree Strongly Agree

Thinking about other <u>people on OAT</u>, please rate the following statements:

1. Other people on OAT care about you and your problems
Strongly Disagree Disagree Neutral Agree Strongly Agree
2. Other people on OAT are helpful to you
Strongly Disagree Disagree Neutral Agree Strongly Agree
3. You are similar to (or like) others on OAT
Strongly Disagree Disagree Neutral Agree Strongly Agree
4. You have developed positive trusting friendships with others on OAT
Strongly Disagree Disagree Neutral Agree Strongly Agree
5. You feel a sense of community (or family) with others on OAT
Strongly Disagree Disagree Neutral Agree Strongly Agree

QUALITY OF LIFE SCALE (QOL)

Please read each item and circle the number that best describes how satisfied you are at this time. Please answer each item even if you do not currently participate in an activity or have a relationship. You can be satisfied or dissatisfied with not doing the activity or having the relationship.

	Delighted	Pleased	Mostly Satisfied	Mixed	Mostly Dissatisfied	Unhappy	Terrible
1. Material comforts home, food, conveniences, financial security	7	6	5	4	3	2	1
2. Health - being physically fit and vigorous	7	6	5	4	3	2	1
3. Relationships with parents, siblings & other relatives- communicating, visiting, helping	7	6	5	4	3	2	1
4. Having and rearing children	7	6	5	4	3	2	1
5. Close relationships with spouse or significant other	7	6	5	4	3	2	1
6. Close friends	7	6	5	4	3	2	1
7. Helping and encouraging others, volunteering, giving advice	7	6	5	4	3	2	1
8. Participating in organizations and public affairs	7	6	5	4	3	2	1
9. Learning- attending school, improving understanding, getting additional knowledge	7	6	5	4	3	2	1
10. Understanding yourself - knowing your assets and limitations - knowing what life is about	7	6	5	4	3	2	1
11. Work - job or in home	7	6	5	4	3	2	1
12. Expressing yourself creatively	7	6	5	4	3	2	1
13. Socializing - meeting other people, doing things, parties, etc	7	6	5	4	3	2	1
14. Reading, listening to music, or observing entertainment	7	6	5	4	3	2	1
15. Participating in active recreation	7	6	5	4	3	2	1
16. Independence, doing for yourself	7	6	5	4	3	2	1

Thinking about OAT (suboxone or methadone), please circle one response for each of the following questions

A. OAT has proven to be the best way of quitting heroin

Strongly disagree, disagree, neutral, agree, strongly agree

B. With OAT you can eventually get off illegal drugs if you want to
Strongly disagree, disagree, neutral, agree, strongly agree

C. OAT helps us lead a normal life
Strongly disagree, disagree, neutral, agree, strongly agree

D. OAT takes away the craving for heroin
Strongly disagree, disagree, neutral, agree, strongly agree

E. It is safe to take OAT
Strongly disagree, disagree, neutral, agree, strongly agree

Please circle one response.

1. Do you think people will think less of you if they know you take OAT?
Never, rarely, sometimes, often, always
2. Do you think that the average person is afraid of someone who takes OAT?
Never, rarely, sometimes, often, always
3. Have you ever been teased, bullied, or harassed because you take OAT?
no, unsure, and yes
4. Have you felt that you have been treated unfairly or that your rights have been denied because you take OAT?
no, unsure, and yes
5. Have your experiences with stigma affected your recovery?
no, unsure, and yes
6. Have your experiences with stigma cause you to think less about yourself or your abilities?
no, unsure, and yes
7. Have your experiences with stigma affected your ability to make or keep friends?
no, unsure, and yes
8. Have your experiences with stigma affected your ability to interact with your family?
no, unsure, and yes
9. Have your experiences with stigma affected your satisfaction with or quality of life?
no, unsure, and yes
10. Do you try to avoid situations that may be stigmatizing to you?
no, unsure, and yes

On a scale where 0 is the lowest possible amount, and 10 is the highest possible amount, how much does stigma regarding addiction affect <u>you personally today</u>?

1. Quality of life
1,2,3,4,5,6,7,8,9,10
2. Social contacts
1,2,3,4,5,6,7,8,9,10
3. Self-esteem

1,2,3,4,5,6,7,8,9,10

4. Family relations

1,2,3,4,5,6,7,8,9,10

On a scale where 0 is the lowest possible amount, and 10 is the highest possible amount, how much does stigma regarding addiction affect your family as a whole?

1. Quality of life

1,2,3,4,5,6,7,8,9,10

2. Social contacts

1,2,3,4,5,6,7,8,9,10

3. Family relations

1,2,3,4,5,6,7,8,9,10

1. To get OAT medication, I have to attend the pharmacy

Never, rarely, sometimes, often, very often

2. I have to wait a long time at the pharmacy to get my OAT medication

Never, rarely, sometimes, often, very often

3. It takes a long time to travel to my OAT pharmacy from my house

Never, rarely, sometimes, often, very often

4. I receive the amount of take-home OAT medication that I want (carries) ®

Never, rarely, sometimes, often, very often

5. I have to wait a long time to see an OAT physician on my appointment days

Never, rarely, sometimes, often, very often

6. I have a difficult time making an appointment to see an OAT physician

Never, rarely, sometimes, often, very often

7 I think that the price of my OAT medication is reasonable ®

Never, rarely, sometimes, often, very often

8. I have to rearrange my life schedule to accommodate OAT related appointments and/or pharmacy visits

Never, rarely, sometimes, often, very often

9. I worry about my OAT prescription being cancelled because of missing an appointment or dose at the pharmacy

Never, rarely, sometimes, often, very often

10. I worry about travelling away from my home city because I am unsure if I will be able to access OAT from another location

Never, rarely, sometimes, often, very often

Do you consent to allow your data from this study (in anonymous form) to be used in future research?

Yes___ No ___

Participant Draw Question

If you would like to enter the optional prize draw for one of three $25 CAD Amazon e-gift cards, please enter your full **mailing** address here:

Debrief Statement

We want to thank you for participating in this research on OAT retention barriers. Your time and effort are very much appreciated. Your participation helps us to develop an understanding of OAT barriers and their effects on retention in treatment.

Previous work on OAT retention has found limited associations between certain factors and OAT retention rates. Such factors include age, substance use, dosage, legal issues, and attitudes toward OAT. Our research has taken a new approach by first, asking people currently accessing OAT what factors they believe are influencing their OAT retention and then testing those factors as predicative of unsuccessful OAT retention. This study asked you different questions about your OAT retention and experiences. These questions help our research by testing the ability of certain factors in your life to influence retention results.

If you have any questions or would like to receive more information about this study, please contact Alyssa Cappon.

If you have any concerns about your treatment or rights as a research participant, please contact the Ethics Compliance Officer in the Office of Research, Trinity Western University.

APPENDIX H

Purposeful Selection Procedure

Round One

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.061	.020	9.746	1	.002	.941
OAM5	.127	.041	9.320	1	.002	1.135
Side Effect	-.081	.106	.575	1	.448	.923
Access	.049	.026	3.629	1	.057	1.050
Stigma Ex	-.231	.072	10.226	1	.001	.794
Stigma Im	-.003	.013	.059	1	.808	.997
Social	-.024	.027	.839	1	.360	.976
Healthcare	.009	.015	.348	1	.555	1.009
QOL	-.004	.012	.134	1	.715	.996
Housing	-.393	.332	1.395	1	.238	.675
Constant	.516	1.553	.110	1	.740	1.676
Likelihood-Ratio Stats for Model	Chi-Square= 55.133 df= 10 Sig = <.001					

Round Two: Remove Stigma Impact

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.062	.019	10.058	1	.002	.940
OAM5	.126	.041	9.314	1	.002	1.135
Side Effect	-.084	.106	.627	1	.429	.920
Access	.048	.025	3.584	1	.058	1.049
Stigma Ex	-.237	.068	12.081	1	<.001	.789
Social	-.024	.026	.798	1	.372	.977
Healthcare	.009	.015	.329	1	.566	1.009
QOL	-.004	.011	.113	1	.737	.996
Housing	-.394	.332	1.406	1	.236	.674
Constant	.437	1.518	.083	1	.773	1.548
Likelihood-Ratio Stats for Model	Chi-Square= 55.074 df= 9 Sig = <.001					

Round Three: Remove Quality of Life

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.061	.019	10.010	1	.002	.941
OAM5	.126	.041	9.293	1	.002	1.134
Side Effect	-.083	.105	.616	1	.433	.921
Access	.048	.025	3.678	1	.055	1.049
Stigma Ex	-.232	.066	12.191	1	<.001	.793
Social	-.027	.024	1.348	1	.246	.973
Healthcare	.009	.015	.335	1	.563	1.009
Housing	-.391	.332	1.384	1	.239	.677

Constant	.262	1.426	.034	1	.854	1.300
Likelihood-Ratio Stats for Model	Chi-Square= 54.962 df= 8 Sig = <.001					

Round Four: Remove Healthcare Experience

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.060	.019	9.959	1	.002	.942
OAM5	.134	.039	11.622	1	<.001	1.143
Side Effect	-.091	.104	.766	1	.381	.913
Access	.046	.025	3.485	1	.062	1.047
Stigma Ex	-.236	.066	12.729	1	<.001	.790
Social	-.028	.024	1.395	1	.238	.972
Housing	-.392	.332	1.392	1	.238	.676
Constant	.501	1.370	.134	1	.715	1.650
Likelihood-Ratio Stats for Model	Chi-Square= 54.902 df= 7 Sig = <.001					

Round Five: Remove Side Effects

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.062	.019	10.950	1	<.001	.940
OAM5	.139	.039	12.681	1	<.001	1.149
Access	.042	.024	3.049	1	.081	1.043
Stigma Ex	-.235	.066	12.599	1	<.001	.791
Social	-.024	.023	1.093	1	.296	.976
Housing	-.376	.331	1.289	1	.256	.687
Constant	.223	1.332	.028	1	.867	1.249
Likelihood-Ratio Stats for Model	Chi-Square= 54.141 df= 6 Sig = <.001					

Round Six: Remove Social Support

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.058	.018	9.963	1	.002	.944
OAM5	.127	.037	11.782	1	<.001	1.135
Access	.044	.024	3.332	1	.068	1.045
Stigma Ex	-.229	.066	12.147	1	<.001	.795
Housing	-.352	.330	1.143	1	.285	.703
Constant	-.617	1.066	.335	1	.563	.540
Likelihood-Ratio Stats for Model	Chi-Square= 53.032 df= 5 Sig = <.001					

Round Seven: Remove Housing

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.062	.018	12.247	1	<.001	.940
OAM5	.128	.037	12.164	1	<.001	1.137
Access	.043	.024	3.192	1	.074	1.044

Stigma Ex	-.224	.065	11.786	1	<.001	.799
Constant	-.731	1.057	.478	1	.489	.482
Likelihood-Ratio Stats for Model	Chi-Square= 51.900 df= 4 Sig = <.001					

Round Eight: Remove Access

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.057	.017	10.777	1	.001	.945
OAM5	.110	.035	10.201	1	.001	1.117
Stigma Ex	-.181	.060	9.182	1	.002	.835
Constant	.526	.781	.454	1	.501	1.693
Likelihood-Ratio Stats for Model	Chi-Square= 48.602 df= 3 Sig = <.001					

Round Nine: Final Model

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.062	.018	12.247	1	<.001	.940
OAM5	.128	.037	12.164	1	<.001	1.137
Access	.043	.024	3.192	1	.074	1.044
Stigma Ex	-.224	.065	11.786	1	<.001	.799
Constant	-.731	1.057	.478	1	.489	.482
Likelihood-Ratio Stats for Model	Chi-Square= 51.900 df= 4 Sig = <.001					

Adding Back Variables Excluded at Preliminary Analysis

Adding Legal Involvement:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.066	.018	13.068	1	<.001	.936
OAM5	.134	.037	12.858	1	<.001	1.144
Stigma Ex	-.211	.067	10.030	1	.002	.810
Access	.041	.024	2.926	1	.087	1.042
Legal	-.440	.464	.899	1	.343	.644
Constant	-.457	1.092	.175	1	.676	.633

Adding Employment:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.062	.018	11.867	1	<.001	.939
OAM5	.121	.037	10.537	1	.001	1.128
Stigma Ex	-.220	.066	11.134	1	<.001	.803
Access	.041	.025	2.790	1	.095	1.042
Employment	.099	.336	.086	1	.769	1.104
Constant	-.623	1.119	.310	1	.577	.536

Adding Peer Support:

	B	SE	Wald	Sf	Sig	Exp(B)

Crave	-.063	.018	12.326	1	<.001	.939
OAM5	.127	.037	11.780	1	<.001	1.135
Stigma Ex	-.225	.066	11.821	1	<.001	.798
Access	.044	.024	3.277	1	.070	1.045
Peer Support	.006	.018	.116	1	.733	1.006
Constant	-.918	1.193	.592	1	.442	.399

Adding Age:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.064	.018	12.247	1	<.001	.938
OAM5	.129	.037	12.263	1	<.001	1.137
Stigma Ex	-.223	.065	11.658	1	<.001	.800
Access	.044	.024	3.306	1	.069	1.045
Age	-.008	.018	.188	1	.665	.992
Constant	-.483	1.203	.161	1	.688	.617

Adding Type of OAT:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.063	.018	12.303	1	<.001	.939
OAM5	.127	.037	12.019	1	<.001	1.136
Stigma Ex	-.224	.065	11.733	1	<.001	.799
Access	.042	.025	2.881	1	.090	1.043
Type of OAT	.074	.343	.046	1	.830	1.076
Constant	-.711	1.060	.450	1	.502	.491

Adding Gender:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.064	.018	12.118	1	<.001	.938
OAM5	.129	.037	12.053	1	<.001	1.138
Stigma Ex	-.223	.066	11.429	1	<.001	.800
Access	.044	.024	3.226	1	.072	1.045
Gender			.264	2	.876	
Gender 1	-.159	.347	.210	1	.647	.853
Gender 2	-.207	.660	.098	1	.754	.813
Constant	-.678	1.075	.398	1	.528	.508

Adding Ethnicity:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.067	.018	13.335	1	<.001	.935
OAM5	.137	.037	13.318	1	<.001	1.146
Stigma Ex	-.216	.066	10.622	1	.001	.806
Access	.046	.024	3.482	1	.062	1.047
Ethnicity	-.561	.412	1.852	1	.174	.571
Constant	-.507	1.073	.223	1	.637	.602

Checking Linearity of Logit as Function of Covariate

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.429	.236	3.299	1	.069	.651

OAM5	.806	.877	.844	1	.358	2.238
Stigma Ex	.740	.641	1.332	1	.248	2.095
Access	.050	.635	.006	1	.938	1.051
Crave*INcrave	.102	.065	2.468	1	.116	1.107
OAM5*INOAM5	-.176	.228	.591	1	.442	.839
Access*INAccess	-.002	.147	.000	1	.987	.998
Stigma*INStima	-.376	.248	2.295	1	.130	.687
Constant	-4.020	5.477	.539	1	.463	.018

Interaction Analysis

Attitudes&Cravings:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.083	.020	17.190	1	<.001	.920
OAM5	.149	.039	14.892	1	<.001	1.161
Stigma Ex	-.194	.066	8.588	1	.003	.824
Access	.045	.024	3.341	1	.068	1.046
OAM5*Crave	-.010	.004	7.634	1	.006	.990
Constant	-1.184	1.072	1.221	1	.269	.306

Attitudes&Stigma:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.060	.018	11.060	1	<.001	.942
OAM5	.134	.038	12.745	1	<.001	1.144
Stigma Ex	-.241	.069	12.123	1	<.001	.786
Access	.043	.024	3.233	1	.072	1.044
OAM5*Stigma	-.011	.012	.725	1	.394	.989
Constant	-.796	1.053	.571	1	.450	.451

Attitudes & Access:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.062	.018	12.250	1	<.001	.940
OAM5	.131	.037	12.261	1	<.001	1.140
Stigma Ex	-.224	.065	11.778	1	<.001	.799
Access	.042	.024	3.051	1	.081	1.043
OAM5*Access	-.002	.005	.166	1	.683	.998
Constant	-.781	1.061	.542	1	.462	.458

Craving & Stigma:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.062	.020	10.081	1	.001	.940
OAM5	.128	.038	11.624	1	<.001	1.137
Stigma Ex	-.223	.069	10.532	1	.001	.800
Access	.043	.024	3.191	1	.074	1.044
Crave*Stigma	.000	.006	.001	1	.974	1.000
Constant	-.742	1.112	.446	1	.504	.476

Crave & Access:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.065	.018	12.729	1	<.001	.937

OAM5	.126	.037	11.764	1	<.001	1.134
Stigma Ex	-.225	.065	11.786	1	<.001	.799
Access	.038	.025	2.368	1	.124	1.039
Crave*Access	.002	.002	.546	1	.460	1.002
Constant	-.561	1.084	.268	1	.605	.571

Stigma & Access:

	B	SE	Wald	Sf	Sig	Exp(B)
Crave	-.064	.018	12.160	1	<.001	.938
OAM5	.125	.037	11.219	1	<.001	1.134
Stigma Ex	-.219	.067	10.829	1	<.001	.803
Access	.044	.024	3.287	1	.070	1.045
Stigma*Access	.000	.000	.126	1	.723	1.000
Constant	-.704	1.058	.442	1	.506	.495

APPENDIX I

Control Analysis

Logistic Regression Results Controlling for Legal, Employment, and Type of OAT

Variable	B	SE	Wald	Sig	Exp(B)
Crave	-.086	.021	17.485	<.001	.917
OAM5	.138	.040	11.874	<.001	1.148
Access	.032	.026	1.547	.214	1.033
Stigma Ex	-.166	.069	5.829	.016	.847
OAM5*Crave	-.011	.004	7.692	.006	.989
Type of OAT	.145	.357	.168	.682	1.158
Legal	-.303	.461	.432	.511	.739
Employment	.162	.343	.222	.638	1.176
Constant	-.657	1.194	.302	.582	.519