PREDICTORS OF TREATMENT RETENTION AND QUALITY OF RECOVERY

FROM OPIOID USE DISORDER USING BUPRENORPHINE IN

MEDICATION-ASSISTED TREATMENT:

A PILOT STUDY OF THE EFFECTS OF HOPE, GRIT,

AND READINESS TO CHANGE

by

John Sink Pulliam, Jr.

Liberty University

A Dissertation Presented in Partial Fulfillment of the Requirements for the Degree

Doctor of Philosophy

Liberty University

2020

PREDICTORS OF TREATMENT RETENTION AND QUALITY OF RECOVERY FROM

OPIOID USE DISORDER USING BUPRENORPHINE IN

MEDICATION-ASSISTED TREATMENT:

A PILOT STUDY OF THE EFFECTS OF HOPE, GRIT,

AND READINESS TO CHANGE

by John Sink Pulliam, Jr.

A Dissertation Presented in Partial Fulfillment of the Requirements for the Degree

Doctor of Philosophy

Liberty University, Lynchburg, VA

2020

APPROVED BY:

_____

David Jenkins, PhD, Committee Chair

_____

Fred Volk, PhD, Committee Member

_____

Karin Dumont, PhD, Committee Member

ABSTRACT

Opioid misuse remains at epidemic proportions in the United States and other countries. Buprenorphine has been found effective in treating opioid use disorder (OUD). Understanding the roles of personal characteristics and readiness to change in addiction treatment retention and quality of recovery could be beneficial in office-based medication-assisted treatment for OUD. Researchers have explored OUD treatment methods and outcomes and have examined various predictive factors in treatment results, including demographic, socioeconomic, and psychological variables. However, few characteristics have been found to be consistent indicators of treatment retention and recovery quality. The constructs of hope agency, hope pathways, grit, and readiness to change as predictors of treatment retention and recovery quality in office-based OUD programs and how these constructs relate to clinical application and future research were examined in this study. Data analysis indicated that hope agency, hope pathways, and grit were predictive of recovery quality but not of treatment retention. Readiness to change was not predictive of recovery quality or retention. The clinical implication is that identifying predictive personal characteristics can lead to enhanced treatment planning and better treatment outcomes. As a pilot study, the sample size was too small to establish statistical significance. However, these findings contribute to OUD treatment literature and highlight the need for additional research in this area, possibly validating these findings in larger populations.

Keywords: buprenorphine, hope, grit, readiness to change, opioid, recovery, treatment

Dedication

This work is dedicated to the Lord Jesus Christ, who brought me to this place in my life. He truly has done exceedingly abundantly above all I asked or thought. I also dedicate this to my three daughters, Caroline, Addison, and Victoria, as a hopeful example for their incredible futures in higher learning. I love you girls.

Acknowledgments

This accomplishment glorifies God and proves Him real to the people in my world. All the credit to Him and His promises. For Terrie, my best friend and partner, your support and love have brought us to this place. I am excited for our future. For my beautiful daughters, Caroline, Addison, and Victoria, you continue to inspire me every day to be my best self. Thanks to Traci for being a great mom. For Dr. Janice, we would not be here without you, especially in the early days. For Pastor Zane who helped me believe in me. For Mom and Dad, proudly looking down from heaven. I want to thank my committee members, Dr. Volk and Dr. Dumont, who have invested time in me and this project as well as in my professional development over the years. And finally, thank you Dr. Jenkins for your commitment to this project with me that has spanned years. I am forever thankful and grateful to you all.

TABLE OF CONTENTS

List of Tables

List of Abbreviations

Adult Hope Scale (AHS)

American Psychiatric Association (APA)

American Society of Addiction Medicine (ASAM)

Medication-assisted treatment (MAT)

National Institute on Drug Abuse (NIDA)

Opioid use disorder (OUD)

Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES)

Substance Abuse Recovery Evaluator (SURE)

CHAPTER ONE: INTRODUCTION

Drug addiction has been a significant health problem in the United States for decades, and for centuries in other countries (Springer et al., 2019; Pecoraro et al., 2012). Drug overdose death rates in the United States more than doubled from 1999 to 2016 in all age groups and among both males and females (Hedegaard et al., 2017). A dramatic increase in opioid abuse, including synthetic opioids and prescription pain medication, has contributed to the steady rise in these rates. Opioid use disorder (OUD) has emerged as a major issue in the United States as opiate-related overdose rates have soared to record highs (MacDonald et al., 2016). The National Institute on Drug Abuse (NIDA; 2018) reported that a staggering 115 Americans die every day as a result of an opioid overdose.

Research has shown opioid addiction to be treatment resistant (Molfenter et al., 2015; Nosyk et al., 2015), but some treatments are providing encouraging outcomes. Opioid substitution treatment has been shown to be safe and effective in reducing illicit opioid use in some cases, improving physical and mental well-being, and reducing overdose death rates (Sordo et al., 2017). Findings from several large clinical studies indicated that buprenorphine and a buprenorphine/naloxone combination are effective in helping individuals discontinue opiate use (Hser et al., 2014) and enjoy a higher quality of life (Öhlin et al., 2015). Buprenorphine differs from methadone maintenance therapy (which must be conducted in a highly structured clinic) in that it can be prescribed in office-based practices, significantly increasing treatment access. Even with enhanced medication-assisted treatment (MAT), patients with OUD often require multiple treatment attempts before achieving stable recovery (Unger, 2017). Disengagement rates are highest in the first 30 days of treatment, and return to use rates can be as high as 90% (Hui et al., 2017). Identifying these higher risk patients and addressing issues in treatment planning could

improve treatment retention. People who remain engaged in treatment are less likely to relapse and more likely to achieve longer term recovery (Hui et al., 2017; Socías & Ahamad, 2016).

Treatment retention and effectiveness may be associated with individual characteristics such as grit (Griffin et al., 2016), hope (Corrigan et al., 2017), and readiness to change (DiClemente, 2003). Identifying levels of these traits at treatment outset may predict higher or lower retention rates as well as steer prescribers and clinicians in specific areas of treatment focus.

Background of the Problem

Opioid analgesics have been used to treat acute pain as far back as the 3rd century BC, according to ancient medical texts from Mesopotamian archeological discoveries (Pecoraro et al., 2012). Opium was introduced to India and China by the 8th century, and then into Europe after the 10th century. Documentation regarding addiction and tolerance was discovered in 16th-century Egypt, so this problem has endured for the last 500 years at least (Pecoraro et al., 2012).

Opium was introduced in the United States in the late 1800s, but smoking opium was stigmatized as a Chinese practice. Morphine was used in the Civil War as a pain medication and was more widely accepted as medicinal and even recreational (Pecoraro et al., 2012). As morphine dependence increased, heroin was developed as a nonaddictive cure for morphine abuse and an over-the-counter cough medicine. Heroin was soon found to be more addictive than morphine, and it became the illicit drug of choice in America in the early 1900s. Heroin's recreational use has continued despite its well-known addictive and treatment-resistant nature (Dart et al., 2015; Streltzer et al., 2015). Opioid abuse has continued to be a problem in many countries (Vowles et al., 2015). Public health issues regarding opioid addiction and related overdose deaths have reached epidemic proportions globally (Dart et al., 2015). Prescription

opioid medication use has increased greatly in the United States since the early 2000s, further fueling the widespread abuse into smaller towns until the nation seemed saturated with opioid addiction and all of the related negative social and economic effects that follow (Main & Kelly, 2016; Springer et al., 2019).

Purpose of the Study

The purpose of this study was to examine the association of personal characteristics of hope, grit, and readiness to change and retention in office-based opioid MAT. The personal characteristics of grit, hope, and readiness to change were measured to determine their predictive strength in successful recovery in medication-assisted office-based buprenorphine programs. If the relationships among these variables are more clearly understood, future treatment plans and research involving substance abuse treatment could be better informed. The study goal was to determine if individuals with higher baseline scores on measures of grit, hope, and readiness to change at treatment outset are better able to successfully remain in MAT than those with lower scores on those baseline measurements.

Research Hypotheses

There were two hypotheses in this study. The first research hypothesis was that hope, grit, and readiness to change levels for individuals entering office-based buprenorphine programs are associated with quality of recovery scores. The second hypothesis was that there is an association between hope, grit, and readiness to change scores with retention in treatment.

The first null hypothesis was that there is no association between hope, grit, and readiness to change scores and treatment retention. The second null hypothesis stated that there is no association between hope, grit, and readiness to change scores and quality of recovery scores.

The dependent variables were treatment retention and quality of recovery. The independent

variables were hope scores, grit scores, and readiness to change scores.

Assumptions and Limitations

Limitations in this study decreased generalizability to certain populations. Participant

selection was limited to individuals seeking treatment for OUD; as such, study results may not

translate to the general population or those seeking treatment for other addictive and cooccurring

mental health issues. Also, each office-based buprenorphine program may have different

guidelines and procedures regarding frequency of appointments, drug screens and policies, etc.

that can affect retention and perceived quality of recovery. This study only generalizes to a

population that is similar to that represented in this study.

Measures used to gather data on the study's independent variables were self-report

instruments and may only be accurate to the extent that the individuals understood the questions

and provided honest answers. Also, quality of recovery as expressed by each participant must be

comparatively measured with some understood variability. The power of this study was limited

by the availability for new patients in these office-based programs as well as the limited length of

time committed for the trial.

Definition of Terms

The following terms were defined from recent and relevant research to provide clarity for

this study.

Addiction: Addiction can be viewed as a chronic but treatable mental condition that

produces dependence (usually pharmacological) and eventual self-destructive behavior (Pecoraro

et al., 2012). DiClemente (2018) identified three necessary components to define addiction: (a) a

fully established pattern of problematic pleasurable and reinforcing behavior; (b) dependence is

present with psychological and physiological dimensions; and (d) the interactions of these elements make the behavior important to the individual and very resistant to change.

Buprenorphine: Buprenorphine is an opioid partial agonist that produces effects such as euphoria or respiratory depression. With buprenorphine, however, there is a ceiling effect that makes the opiate effect weaker than methadone (and other full opiate agonists such as heroin, morphine, etc.), reducing the risk of misuse and level of impairment (MacDonald et al., 2016). Naloxone can be combined with buprenorphine to form a compound to dissuade misuse and diversion of buprenorphine by injection. Naloxone is more effective in blocking the opioid effect when injected, and studies have indicated that buprenorphine can be prescribed with less supervision and risk of abuse (Lobmaier et al., 2010).

Grit: Grit is defined as a higher order personality trait with primary components of perseverance of effort and consistency of interest (Credé et al., 2017). Duckworth (2016) presented grit as a process of developing the skill for a desired goal, and through sustained deliberate effort, achieving the goal by mastering the process. She stated:

> To be gritty is to keep putting one foot in front of the other. To be gritty is to hold fast to an interesting and purposeful goal. To be gritty is to invest, day after week after year, in challenging practice. To be gritty is to fall down seven times, and rise eight. (p. 275)

Grit from a substance use treatment perspective can be to maintain perseverance and focused motivation to not give up despite obstacles to the goal (Griffin et al., 2016).

Hope: Hope can be defined as a perception that goals can be achieved. Having positive thoughts and goal-directed activities play important roles in the subsequent achievement of positive outcomes (Snyder et al., 1996). Hope is being able to overcome obstacles to goals and continue with optimism. Snyder (2002) posited that hope can be divided into the two

components of agency and pathways. Agency can be understood as will power to stay the course to reach a goal, and pathways is to make a way or path to achieve a goal (May et al., 2015). Hope has been positively associated with self-esteem, physical and mental health, and positive affect as well as reduced anxiety, depression, and negative general affect (Brouwer et al., 2008).

Medication-assisted treatment (MAT): The Substance Abuse and Mental Health Services Administration (2020) defines MAT as using Food and Drug Administration-approved medications with counseling and behavioral therapies to treat substance use disorders and prevent opioid overdose.

Office-based treatment: Office-based treatment refers to prescribing buprenorphine in a primary care/general practice physician setting as opposed to a clinic or treatment center. Visit frequency can be extended to where an individual may only have to report to the prescriber on a monthly basis versus daily or a couple of times each week. This allows the patient to engage in "normal life" activities such as full-time employment (Hui et al., 2017).

Opioid use disorder (OUD): OUD can be defined as a problematic pattern of opioid use resulting in significant impairment and distress at a clinical level (American Psychiatric Association, 2013).

Readiness to change: In the scope of addiction treatment, readiness to change can be defined as an individual's current motivation and influences for engaging and continuing in treatment despite physiological and psychological dependence (DiClemente, 2003; DiClemente et al., 2004). Readiness to change takes into consideration personal reasons, experiences, and circumstances involved in deciding to contemplate or be willing to change.

Recovery: Recovery can be defined as a sustained process through which individuals, families, and communities impacted by addiction use all available resources to purposefully

solve the problems, actively manage vulnerability and inevitable temptation to reengage the behavior, and intentionally develop a productive and healthy lifestyle absent of the prior maladaptive behavior (el-Guebaly, 2012). The Betty Ford Institute Consensus Panel (2007) referred to recovery as a "voluntarily maintained lifestyle characterized by sobriety, personal health, and citizenship" (p. 221). Improvement in overall quality of life is also a major component of recovery.

Remission: Remission is defined as a sustained period of time without substance use problems (Peele, 2000). The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*; American Psychiatric Association [APA], 2013) classifies early remission as 3–12 months and sustained remission as 12 months and longer. Being able to maintain focus and engagement in a healthy and productive life is a component of remission (Peele, 2000).

Significance of the Study

As opioid-related overdose deaths continue to rise, treatment effectiveness is increasingly important. Several large clinical studies have shown buprenorphine effective in helping individuals discontinue opiate use (DeMaria & Risler, 2012) and lead stable and productive lives (Unger, 2017). Findings from the present study may add a layer of understanding to pretreatment predictors for treatment retention, and treatment retention is a key element in successful recovery (Tkacz et al., 2012). Improved knowledge of individual characteristics that predict treatment success can lead to more effective treatment planning for practitioners who work with this population. For example, if a client enters treatment with a deficit in any of the predictive categories, the required psychosocial treatment plan could be tailored to improve that particular element for that client. Additional support and counseling could be specifically targeted to help those who are at higher risk for lower treatment retention rates (Lee et al., 2017). This

pretreatment predictor research may possibly be generalized to treatments for other substance use disorders.

Theoretical and Conceptual Framework

An abundance of research indicates that OUD can be categorized as a worldwide health care problem, particularly in the United States where this condition has reached epidemic proportions (Streltzer et al., 2015). Addiction problems and overdose deaths continue to rise throughout the United States, affecting big cities and small towns alike. MAT has been found to provide some encouraging results in helping opioid dependent individuals achieve a level of abstinence and recovery (Soyka, 2013; Springer et al., 2019).

Opiate replacement medications such as methadone and buprenorphine are currently most often prescribed and seem most effective in helping individuals stay in treatment and reduce illicit opiate use (Blum et al., 2016; Griffin et al., 2014). When used to treat OUD, methadone is most often administered in a daily clinic setting and must be monitored more carefully as it is more easily abused (Gryczynski et al., 2013). Buprenorphine is a partial agonist with a ceiling effect that makes it much less prone to abuse. Naloxone can be combined with buprenorphine to enhance the latter's opioid-blocking properties, preventing the euphoric effect of further opiate use and greatly reducing risk of overdose (Debelak et al., 2013). This allows individuals to not feel withdrawal symptoms or experience the opiate-induced euphoria they strongly desire. When properly titrated, the net result is that individuals feel physically "normal" or "well." Mentally, the intensity of the craving is reduced because they know that the high cannot be felt, which allows them to proceed with activities of daily life such as employment, maintaining responsibilities, and engaging in healthy, productive relationships (Dhawan & Chopra, 2013).

Treatment retention could help increase individuals' appreciation for this benefit as well as strengthen their ability to resist the temptation to return to illicit opiate use.

Organization of the Remaining Chapters

Chapter One was a general overview of the context and background of this study. Chapter Two is a broad examination of the research and theories related to the study components. Chapter Three details the study methodology as well as the reliability and validity of the four assessment instruments used to compile data. Chapter Four is a submission of the data gathered for the study and the study results. Chapter Five summarizes the research data from the study, presents relevant conclusions from the findings, and offers recommendations for future research and clinical practice.

Summary

The association of hope, grit, and readiness to change with retention in office-based buprenorphine programs and quality of recovery was examined in this study. Higher levels of hope, grit, and readiness to change may be significant predictors of treatment retention and recovery stability. Identifying these data may be beneficial to treatment planning for individuals going forward in office-based MAT programs.

CHAPTER TWO: LITERATURE REVIEW

Previous research indicates that opioid abuse has been a significant problem since the early 1900s in the United States and continues to be an epidemic around the world (Brown & Altice, 2014; Larance et al, 2015; Strobbe et al., 2011). The diagnostic features and current treatment practices for opioid use disorder (OUD) are reviewed in this chapter. Recent research has indicated that medication-assisted treatment (MAT) can help opioid-addicted individuals maintain life without the problematic behavior brought on by illicit opioid use (Lobmaier et al., 2010; Martin & Finlayson, 2015; Rastegar et al., 2016; Unger, 2017). Data and literature on MAT and the potential for office-based MAT to produce improved recovery outcomes (Brezing & Bisaga, 2015; Moore et al., 2016) are examined in this chapter. Personal characteristics of hope, grit, and readiness to change, which may be predictors contributing to successful treatment results (Marcovitz et al., 2016; Perreault et al., 2015; Tsui et al., 2014) are also reviewed. The chapter concludes with a discussion of the relevance and importance of researching this topic.

Opioid Use Disorder

OUD can be defined as a problematic pattern of opioid use resulting in significant impairment and distress at a clinical level (APA, 2013). Addiction can also be viewed as a chronic but treatable mental condition characterized by dependence and self-destructive behavior (Pecoraro et al., 2012). DiClemente (2018) defined addiction as an established pattern of maladaptive behavior where dependence is present with psychological and physiological dimensions and the individual is very resistant to change.

An opioid is a psychoactive chemical related to and interacting with opioid receptors on nerve cells in the brain and nervous system designed primarily to relieve pain. Opioids can also produce pleasurable effects such as increased energy and a sense of well-being, even euphoria

depending on the amount ingested. These drugs can be used orally or by inhalation, smoking, or intravenous injection. Opioids are a class of drugs that include the illicit drug heroin as well as prescription pain relievers such as oxycodone, hydrocodone, codeine, morphine, and fentanyl (Westreich, 2015).

History of Opiate Use

Medical texts indicate that opium was used in India and China as an analgesic as far back as the 8th century (Pecoraro et al., 2012), and later throughout all of Europe. Sixteenth-century references to addiction in Germany, England, and Egypt indicated problematic use and the inability to discontinue use of the substance. Opium dens became popular in 17th-century China and continued through the 19th century, spreading into England and later to the United States. Morphine was already a problem in the United States, following its use as an effective pain medication on the battlefields of the Civil War. The hypodermic needle was introduced in 1853 (Pecoraro et al., 2012), and injecting the drug became the most efficient delivery method.

Whereas opium was stigmatized and associated as the drug of the poor or minorities, morphine was accepted as medicinal, and its use became widespread in the United States and Europe (Pecoraro et al., 2012). As a result, addiction problems became evident across higher socioeconomic levels. In an attempt to find a pharmacological remedy for opiate dependence, Bayer Pharmaceuticals developed heroine and marketed it as a nonaddictive cough medicine and cure for morphine dependence. Ten years later, in the early 1900s, heroin was the most abused substance in the United States. Between opium, morphine, and heroin, the country had a significant opioid use problem in the early 20th century. The Harrison Narcotics Act of 1914 outlawed the purchase of nonprescription heroin, and the Heroin Act of 1924 banned any production or sale of the drug (Pecoraro et al., 2012). Heroin use continued to be a problem

across all socioeconomic levels, with an estimated 500,000 users in the United States in 1970. Despite worldwide governmental efforts to curb opioid production and sale, the United Nations Office on Drugs and Crime estimated in 2007 that opiate users worldwide totaled between 15,000,000 and 20,000,000, with 11,000,000 using heroin (Hedegaard et al., 2017). Although U.S. heroin use had stabilized to approximately 1,200,000 users, 5,200,000 people reported abusing prescription opioids. The American Society of Addiction Medicine (ASAM, 2016) reported that in 2015, approximately 2,000,000 individuals were diagnosed with a substance use disorder involving prescription pain relievers; over 500,000 of these diagnoses involved heroin. The Centers for Disease Control and Prevention estimated the total economic burden of prescription opioid misuse alone in the United States at $78,500,000,000 per year, including the costs of health care, lost productivity, addiction treatment, and criminal justice involvement as well as the rising incidence of neonatal abstinence syndrome due to opioid use and misuse during pregnancy (NIDA, 2018). When factoring in all aspects, including overdose deaths, the total economic cost approaches $700,000,000,000 per year (NIDA, 2018)

In response to the current opioid crisis, improving access to treatment and recovery services is one of the U.S. Department of Health and Human Services' main focuses. This includes further developing and improving MAT programs and outcomes (NIDA, 2018). While opioid pain medication prescriptions are increasingly being regulated and reduced, a high percentage of the opioid-addicted population will convert to heroin based on supply and demand, so the problem must continue to be aggressively addressed going forward (Martin & Finlayson, 2015). Hedegaard et al. (2017) estimated that up to 80% of American heroin users began their addiction with prescription pain medication.

All prescription pain medication use does not lead to heroin addiction. Based on information from the 2017 National Survey on Drug Use and Health, most people do not misuse prescription pain medication, although 2,000,000 Americans misused prescription pain relievers for the first time in 2017 (NIDA, 2018).

Diagnostic Features of Opioid Use Disorder

Opioids are psychoactive chemicals commonly used for pain management (Molfenter et al., 2015). They are abused at an epidemic rate across the United States in both big cities and small towns. Opioid abuse affects many other countries as well, including Canada (Socías & Ahamad, 2016), Europe (Sordo et al., 2017), and China (Lee et al., 2017). OUD can be defined as a problematic pattern of opioid use resulting in significant impairment and distress at a clinical level (APA, 2013). Symptomology includes being unable to stop or reduce use; significant time spent obtaining, using, or recovering from opioid's effects; failure to fulfill major life role obligations; persistent or recurrent social or interpersonal problems caused by use; physically hazardous situations; and continued use despite knowledge of having persistent or recurrent physical or psychological problems caused or exacerbated by opioids (APA, 2013). Opiate users are often polysubstance abusers, using other substances such as methamphetamine, alcohol, cannabis, and benzodiazepines, with the last possibly leading to respiratory distress and failure. Individuals with OUD are at risk of developing mild to severe depression on a short- or long-term basis. Common medical conditions associated with OUD are HIV, hepatitis C, and infective endocarditis, especially for intravenous users (Suzuki, 2016). Antisocial personality disorder and posttraumatic stress disorder are seen more frequently in OUD than in the general population (Carroll & Weiss, 2017; Meier et al., 2014).

One of the more prevalent features associated with OUD is the presence of clinically significant problematic psychological or behavioral changes that developed during or after opioid use, leading to job loss, damaged relationships, or legal consequences (Levin et al., 2016). Intoxication is evidenced by pupillary constriction, drowsiness, slurred speech, and impairment in memory or attention. These symptoms are not attributable to another medical condition or better explained by another mental disorder. Opioid use can begin at any age. Once OUD develops, it can continue for years with significant and increasingly negative consequences. Given the intensity of withdrawal symptoms, OUD can be more difficult to overcome than other substance disorders (Levin et al., 2016).

Treatment Models

Severe withdrawal symptoms that accompany opiate addiction create a special challenge for conventional substance abuse treatment models. Many substance use disorder treatment programs, including 12-step programs and cognitive behavioral therapy-focused treatments, are abstinence based. MAT is becoming increasingly recognized as an appropriate, if not preferred, OUD treatment. Abstinence-based OUD treatments often have lower retention rates, particularly in their early stages (Marcovitz et al., 2016) than medication-assisted programs due to extreme withdrawal symptoms and cravings. The first 30 days of treatment seem to be the most critical in MAT as well (Hser et al., 2014).

Abstinence-Based Programs

The primary goal of abstinence-based treatment programs is to completely discontinue use of abused substance. Many abstinence-based programs are modeled after Alcoholics Anonymous (AA), a 12-step recovery program founded in 1935. This is a mutual support abstinence-based fellowship that relies on the foundation of the 12 steps of character reform.

Narcotics Anonymous (NA), a similar program developed for drug abusers, was founded in 1953. Both programs have global membership, which means an alcoholic or an addict can usually find a recovery meeting almost anywhere in the world. Online meetings for both are available, so there is ongoing, readily accessible, and consistent support (Brown & Altice, 2014). AA and NA are not usually compatible with MAT, and long-standing attitudes insisting abstinence only and the lack of acceptance of medication-assisted recovery can create disconnects for MAT patients (Friedmann et al., 2010). As research continues to support MAT, innovative approaches like these could be increasingly more accepted as hybrid-type therapies in the abstinence-based community. There will not always be agreement between programs and professional groups regarding these blended and less strenuous methods. For physicians, there is a dilemma between accepting polydrug use during treatment as a means to improve retention, with an obligation to do more good than harm for their patients (Strike et al., 2013). Harm reduction is a relevant strategy when dealing with OUD, depending on addiction severity (including length of use, method, and substance) and individual treatment goals. Harm reduction offers an option for avoiding criminal behavior and safely obtaining substances for addicts with low motivation and minimal readiness to change (Marchand & Oviedo-Joekes, 2017).

Other abstinence-based programs utilizing cognitive behavioral therapy or any other treatment approach are not as effective for treating opiate addiction as MAT programs but are better than placebo or no treatment (Sigmon et al., 2012). While psychosocial therapy has been proven to be a valuable adjunct (Pecoraro et al., 2012), it is not as effective as a stand-alone treatment. However, 12-step programs can be an effective supplemental adjunct for MAT of OUD (Lobmaier et al., 2010).

Methadone

Methadone is a synthetic opioid used in MAT to help people reduce or stop heroin use or other illicit opiate use. Methadone was developed in 1937 during World War II in Germany as a pain reliever and is still sometimes used to treat chronic pain in a variety of settings (Tucker et al., 2015). Methadone was introduced in the United States in 1947 and has been used to treat heroin addiction and to prevent and improve withdrawal symptoms since 1965 (Lee et al., 2017). As an opiate maintenance treatment medication, methadone can be safe and effective when taken as prescribed and is considered the frontline treatment for severely addicted heroin users (Maremmani & Gerra, 2010). It is most often prescribed in a treatment clinic setting in a program that includes psychosocial support and is usually administered to patients on a daily basis. After a period of progress with proven stability and compliance, individuals can earn take-home doses; even then, patients usually have to come to the clinic a minimum of 4 times a week (Lobmaier et al., 2010), which can make maintaining steady employment and other normal life activities more difficult. Any take-home doses are strictly regulated to prevent misuse or diversion.

Methadone can be effective for increased treatment retention as well as reduced heroin use and criminal behavior. This treatment approach is a safer way for the individual to get the substance that produces the desired effect in a controlled and regulated environment, reducing the probability of participating in risky behavior (Lobmaier et al., 2010). However, more opioids can be used with methadone to increase the effect, whereas with Suboxone (buprenorphine and naloxone combined), additional opiate euphoria and effects are blocked and cannot be experienced.

Participants in a methadone study conducted by Tucker et al. (2015) expressed several negative attitudes regarding methadone's harmful physical effects, including perceived ineffectiveness in reducing heroin cravings, increased cravings for other drugs, lack of motivation and economic productivity, and even death. Tucker et al. reported that fatal methadone overdoses have increased over the years in several demographics across Canada. the country. These and other negative characteristics such as required frequency of visits to the prescriber (often on a daily basis, especially for the first few months), methadone's impairing effect, and the stigma of "not really being in recovery" are in addition to methadone addiction (Gryczynski et al., 2013).

Buprenorphine

Buprenorphine is often viewed as a better treatment alternative than methadone (Gryczynski et al., 2013). Risks of overdose, respiratory distress/failure, and sedation in methadone treatment are not present with buprenorphine. MAT with buprenorphine derivatives allows patients to lead normal, productive, and stable lives (Unger, 2017). Several participants in a study by Sohler et al. (2013) expressed the same idea of being able to lead a normal life and feeling like themselves when comparing methadone to the benefits of transitioning to buprenorphine. Former methadone participants typically expressed their choice to switch to buprenorphine treatment as a decision against methadone. Buprenorphine was perceived as a helpful medication while methadone was thought to be a harmful narcotic with several difficult side effects. Positive experiences with nonprescribed buprenorphine were a strong factor leading these individuals to seek buprenorphine treatment (Sohler et al., 2013)

Buprenorphine has been used to treat opioid dependency since 1996 (Nosyk et al., 2015). Buprenorphine has both agonist and antagonist properties and is considered a partial agonist. It

produces the opiate effect of stopping withdrawal symptoms as the dose is increased up to a certain point. Beyond that point, further dosage increases do not cause any greater activation; thus producing a ceiling effect. When taking buprenorphine in a properly titrated dose, the individual does not experience the euphoria of an opiate but does get enough effect to offset withdrawal symptoms. The individual will not be high, but will not be sick either. Addicts must develop the desire to change to be greater than the temptation to use. Buprenorphine patients often try to use in between doctor visits and get back on buprenorphine to pass the next drug screen. Unscheduled drug screens and pill counts can help deter this behavior (DeMaria & Risler, 2012).

Naloxone

The Food and Drug Administration approved the fixed dose combination of buprenorphine and naloxone in 2002 (Unger, 2017). Naloxone is present in this combination to discourage misuse; it serves no other purpose. Naloxone blocks the effect of opioids, so if an individual taking the combination uses an opiate, the euphoric effect will not be experienced. This combination was thought to decrease the potential for diversion and misuse of buprenorphine because, if injected, the naloxone will cause immediate withdrawal symptoms in those already physically dependent on other opioids. In a qualitative study on opioid abusers in New York City, Sohler et al. (2013) included some comments from study participants regarding beginning use of buprenorphine/naloxone such as "You feel yourself again, you feel normal. That's what I'm looking for" (p. 116). Another study participant stated,

> Look, it's offering me a way out without suffering so much, that's what I'm interested in. I'm chicken s**t, I don't want to feel the withdrawals, I don't want to go through all that,

and that's what I'm interested in. And then it can maintain me. So, you know, it's

definitely beneficial for me. To me it's like a miracle drug. (p. 116)

A third participant stated,

And I tried suboxone I felt—I felt energetic. I felt like I haven't ever touched dope. I felt

alive. I felt totally different like my mind was free, wasn't cloudy, you know. I was

awake. I was energetic. It was like I was a new me. (Sohler et al., 2013, p. 116)

Unger (2017) estimated that approximately 80% of the 2,000,000 people in the United

States who are opioid dependent are not receiving the treatment they need to change and get

well. Unfortunately, uninsured individuals often do not have access to treatment. They are some

programs for those without insurance, and funding for them should increase over the next few

years, including increased access to insurance for those with substance use disorder (Hutchinson

et al., 2014). The treatment pendulum is swinging in a positive direction, but change takes time,

and people are dying every day from opioid overdose, which includes buprenorphine being taken

with benzodiazepines (Lintzeris & Nielsen, 2010). But it is also understood that not every one of

those 2,000,000 people was ready to take action to change.

Office-Based Buprenorphine

The United States is motivated for change, but office-based buprenorphine treatment

continues to be significantly underutilized, primarily due to physician concerns regarding patient

nonadherence (Hutchinson et al., 2014). Primary care physicians are now the largest prescribing

group for buprenorphine products, making the treatment more accessible. There were an

estimated 2,100,000 ambulatory buprenorphine treatment visits in 2013 (Turner et al., 2015).

Primary care physicians and general practitioners can take the 8-hr online course provided by the

ASAM to obtain a U.S. Drug Enforcement Administration waiver for prescribing buprenorphine,

which will allow them to provide office-based opioid dependency interventions per the Drug Addiction Treatment Act of 2000 (Unger, 2017). There is some resistance to increasing access to buprenorphine from primary care physicians, however. Blum et al. (2016) recommend that only physicians who are certified in addiction medicine or addiction psychiatry should be able to prescribe to 200 patients and that general practice prescribers should maintain a limit of 100. This treatment would save lives and money. Every dollar invested in opioid addiction treatment saves society an estimated seven dollars in drug-related crime and criminal justice costs (Unger, 2017).

Unger (2017) posited that roughly 50% to 80% of opioid-dependent patients remain opioid free for 12 months while taking buprenorphine. The ability to get the medication on a weekly or monthly basis allows individuals to live a more normal life as they do not have to visit the clinic as often.

Research has indicated the necessity of ongoing treatment after opioid cessation (Westermeyer & McCance-Katz, 2012). Effective treatment for opioid addiction will always require a combined physiological and psychological approach. Most treatment programs do not adequately address the neurological and physiological issues of substance dependence (Dehghani-Arani et al., 2013). Improved treatment retention produces better treatment outcomes. Studies have shown that noncompliant patients have significantly higher relapse rates than those who are compliant (Bolek et al., 2016; Dhawan & Chopra, 2013; Griffin et al., 2014). MAT has a positive influence on illicit heroin use as well as on HIV risk taking and criminal behavior (Lobmaier et al., 2010). Understanding factors that drive treatment compliance and noncompliance may assist providers in supporting patient retention and recovery (Tkacz et al.,

2012). Since improved MAT compliance supports improved abstinence and recovery, strengthening compliance could lead to decreased relapse rates for MAT.

These three treatment models—abstinence, methadone, and buprenorphine—are significantly different in concept and delivery and do not overlap well, particularly in the psychosocial treatment component. Even people who successfully utilize either MAT program may not blend well with people in an abstinence-based program (often 12-step or religious based), especially individuals in OUD recovery. Strobbe et al. (2011) identified this phenomenon in a clinical trial of mixed treatment models. Patients receiving buprenorphine did not have their own dedicated group for concurrent psychosocial treatment, and significant tension often surfaced between those in the abstinence-based program and those in the MAT groups. Gryczynski et al. (2013) found that perceptions of Suboxone as a helpful medication were growing while methadone was perceived as a harmful narcotic with multiple unwanted physical effects. Positive experiences with nonprescribed "street buprenorphine" were a central factor in participants' decisions to seek buprenorphine treatment (Gryczynski et al., 2013). Despite an abundance of research indicating that MAT is a safe and effective treatment for opiate addiction, this treatment approach continues to be ignorantly stigmatized (Kelly et al., 2012), which can discourage patients from entering treatment (Roose et al., 2012).

Treatment Outcomes

Unfortunately, overdose deaths are a reality in the OUD population. People diagnosed with OUD who seek traditional abstinence-based substance abuse treatment without medication often have higher relapse rates than those in MAT, primarily due to withdrawal severity and postacute cravings (Brown & Altice, 2014). Even individuals in pharmacotherapy treatment can relapse and die, especially if their tolerance has declined and they attempt to use at pretreatment

levels. Helping individuals with OUD remain connected in treatment gives them the best chance to recover (Tsui et al., 2014).

Treatment retention is an important predictor of favorable treatment outcomes (Hser et al., 2014). Improved treatment retention produces better treatment outcomes (Kampman & Jarvis, 2015). Studies have shown that noncompliant patients have significantly higher relapse rates than those who are compliant (Carroll & Weiss, 2017; Gryczynski et al., 2013). Understanding factors that drive treatment compliance and noncompliance may help providers better support patient retention and recovery (Tkacz et al., 2012). Since improved MAT compliance supports improved abstinence and recovery, strengthening compliance could lead to decreased MAT relapse rates.

In a multisite trial comparing methadone and buprenorphine programs over a 3-year period that involved over 1,200 participants, Hser et al. (2014) concluded that 25% of the buprenorphine participants dropped out within the first month of treatment. This finding suggested that the first month is a critical period and that special efforts are needed to help these individuals develop resilience and overcome treatment resistance that seems to occur in early treatment (Hser et al., 2014). Other conclusions from this large study were that methadone appeared to be associated with better treatment retention for individuals with OUD than buprenorphine, buprenorphine was associated with lower continued use of illicit opioids, and that with higher doses of both medications, treatment retention increased proportionately (Hser et al., 2014).

In a study involving over 700 new buprenorphine patients in a national sample, Tkacz et al. (2012) found that noncompliant patients who did remain in treatment were more than 10 times more likely to relapse. Being able to identify motivation levels might help determine which

treatment is most appropriate for each individual. Also, the ability to develop a relapse profile would help treatment providers to recognize those with lower motivation for treatment and higher risk for relapse (Tkacz et al., 2012).

Streltzer et al. (2015) conducted an observational study of prescription opioid-dependent pain patients being treated with buprenorphine. Forty-three patients were monitored for 5 years. Study findings showed that buprenorphine treatment was effective for these patients and that most had reduced pain levels with buprenorphine compared to when they were being treated with other pain medication. They also reported less preoccupation with pain. Streltzer et al. found no differences in treatment outcomes between patients with a history of substance abuse and those without a history of substance abuse.

Soyka et al. (2011) found cognitive impairment to be similar in a study comparing methadone and buprenorphine patients. These patients compared favorably with those receiving long-term heroin treatment but not as well with healthy controls. The buprenorphine patients performed better in psychomotor performance under stress conditions than the methadone group.

Marsch et al. (2016) conducted a randomized controlled trial of buprenorphine taper with opioid-dependent young adults and adolescents. They compared a 56-day taper to a 28-day taper and found the 56-day group was retained in treatment significantly longer than those in the 28-day group. Surprisingly, they found daily attendance requirements to be associated with shorter retention and decreased abstinence compared to the group that attended two or three times weekly, and these results were independent of taper duration.

Marcovitz et al., (2016) retrospectively reviewed medical records from 202 patients in MAT programs using buprenorphine and naloxone from two different facilities to identify predictors of early dropout. The results showed that more than 1 in 4 patients dropped out of

treatment. Significant dropout predictors included being 25 years of age and opioid use in the first month of treatment. Patients with suicide attempt histories were much less likely to disengage from the program.

Griffin et al. (2015) assessed health-related quality of life for 653 prescription opioid-dependent patients and compared test scores with the general population. The sample of OUD patients reported worse physical and mental quality of life scores than the general population but similar to other OUD populations. Griffin et al. recommended addressing the assessment needs of the growing population of individuals who primarily abuse primarily prescription opioid pain medication. This group is more likely to be treated for chronic pain, not to have hepatitis C, and never to have used intravenously.

<div align="center">**Access to Care**</div>

Beginning in 2015, cultural perceptions changed regarding both the level and severity of prescription pain medication addiction. Heroin is an appropriately stigmatized substance, but opioids have been accepted as prescription drugs. The percentage of people in the United States who are addicted to opioid pain medication is at an epidemic level (NIDA, 2018). In 2015, seven people died every day from a prescription medication overdose (ASAM, 2016). As this information continues to be publicly circulated, general awareness is improving, leading to increased resources being committed to opioid treatment nationwide.

People without health insurance are often unable to access adequate treatment services to overcome their addictions. Even those who are insured but have higher copays and deductibles have limited access to treatment (Abraham et al., 2017). Unfortunately, in the current U.S. health care structure, insurance, not necessity, greatly dictates treatment. The uninsured or underinsured often have to rely on less effective community care treatments. Fortunately, national health care

monies are being allocated to help individuals who would not otherwise be able to enter treatment, and MAT is gaining momentum as a treatment for these individuals (Abraham et al., 2017).

Individual Characteristics

Identifying how motivation to change relates to positive outcomes is important for understanding how treatment for alcohol abuse or other behavioral problems can work. Maremmani and Gerra (2010) indicated that additional behavioral research is needed to evaluate treatment outcomes of particular subgroups and individual characteristics. Cadet (2016) posited that substance use disorder treatment should include an element of resilience enhancement, particularly for higher risk individuals. The pretreatment stage of change has been identified as an important predictor of outcomes for a wide range of disorders. Pretreatment motivation also strongly predicts both treatment retention and recovery quality during treatment (DiClemente et al., 2004). Motivation is a well-established predictor of recovery for addictive behaviors. DiClemente et al. (2017) found no research that addressed motivation and OUD treatment and identified two studies that incorporated brief motivational interventions into current opioid treatment. Higher levels of personal motivation defined as grit and hope could prove to be indicators of successful treatment outcomes.

Hope

Snyder et al. (1991) defined hope as a cognitive set comprising a derived sense of successful agency (goal-directed determination) and pathways (planning of ways to meet goals). In a family addiction intervention setting, being prepared for change at initial assessment predicted higher hope and coping skills after intervention for the addicted family member (Bradshaw et al., 2015). Initial levels of hope also predicted family coping skills following the

family member's treatment. Research has indicated that hope can be a positive indicator of quality outcomes in mental health treatment. Arnau et al. (2007) found higher levels of hope agency to predict reduced anxiety and depression scores over a 1-month span. In a longitudinal study of 45 mutual-help recovery home residents, Dekhtyar et al. (2012) also found hope agency to be a significant predictor of positive treatment outcomes and lower reincarceration rates. Lower hope pathways scores were not predictive in that particular study. In a longitudinal sample of men and women in substance abuse recovery who lived in sober living homes, higher hope agency was again predictive of lower anxiety and depression levels (May et al., 2015).

When recovery can be seen as a process, a journey that includes hope where individual goals are defined and pursued regardless of symptoms or stigmas, then hope can grow and contribute to a stronger and more optimistic recovery (Corrigan et al., 2017). Hope provides energy and perspective to the recovery process. Treatment models are often viewed as a goal of abstinence, and all else is failure. Addicts with failed attempts to get sober may feel further devalued in this process. Individual hope can be cultivated and multiplied to be drawn from when difficult struggles arise, such as cravings or triggers for the addict.

Hopelessness is a defining characteristic of addiction, as behavior that was once just a habit without significant consequences and thought of as fun is now a consuming desire that cannot be controlled (Bradshaw et al., 2015). Self-regulation is gone from an activity that was once manageable. The individual struggles to make sense of the change, trying desperately to return to the former level of use, but to no avail. The feeling of hopelessness tells the addict that change is not possible and a return to the healthy self will never happen. Frustration and fear drive the individual to continue in the maladaptive behavior, as loss continues to dominate.

Having hope brings an organic change at the core of one's self (Snyder, 2002). Hope creates momentum and motivation and positive energy to begin to restore the loss and replace it with achievement and gain. The addict can be empowered with hope to make amends, return to employment or school, and repair valuable relationships that were destroyed with the lies of addictive behavior. Hope allows addicts to see that change is possible, that they just might be able to return to sanity and become the person they really want to be and not live incongruently between actual behavior and desired behavior. Certainly, a goal-oriented mindset, including self-efficacy and hope, could be a productive and key component in the addiction recovery process (May et al., 2015).

Grit

Grit can be defined as perseverance and passion for achieving long-term goals (Duckworth et al., 2007). Debelak et al. (2013) described grit as a higher level operational construct comprising perseverance of effort and consistency of interest toward accomplishing goals and achieving success. Grit does not depend on intelligence, IQ, or talent, but is the sustained and focused application of talent over time to achieve a goal in spite of setbacks or obstacles (Duckworth et al., 2007). Duckworth et al. (2007), in two separate studies, evaluated over 2,500 first-year West Point cadets and found that higher grit scores were predictive of success in the grueling first-year program. Grit scores were more accurate in predicting which cadets would endure the challenge and which ones would give up and quit than the whole candidate score, which is a weighted combination of SAT scores, high school ranking, physical fitness, and leadership ability. Furthermore, grit was a stronger predictor of graduation than conscientiousness toward studies, caring about the school, or having a feeling of safety (Duckworth, 2016). The importance of intellectual talent in achievement in all professional

domains is well established, but less is known about other individual differences that can predict success. Grit demonstrated incremental predictive validity of success measures over and beyond IQ and conscientiousness in the West Point study as well as in two other academic achievement measures (Duckworth et al., 2007).

Perseverance and sustained focus are two key elements in successful addiction recovery (Cook et al., 2015). Addiction recovery is about strengthening the ability to resist fear and temptation while continuing to pursue the goals and success of sustained sobriety. Recovery is an undertaking that requires significant willpower to resist strong temptations to quit or give in. Griffin et al. (2016) posited that developing interventions to improve grittiness could be useful for some individuals in certain contexts with specific deficits levels. Surprisingly, reward processing, self-control, and impulsivity are not consistent predictors of successful addiction treatment outcomes (Griffin et al., 2016). Marcovitz et al. (2016) identified early opioid use as a predictor of treatment dropout. Commitment to persevere toward treatment goals could strengthen resistance to temptation. An individual's grittiness level could be a predictor of success in substance use disorder treatment outcomes.

Stages of Change

Evaluate an individual's readiness for change is one of the best ways to measure motivation for treatment. Connors et al.'s (2013) updated stages of change model is designed to assist clinicians in this process so that accurate assessment and appropriate treatment recommendations can be made. This model was designed to represent the typical process that can be followed and changing addiction behavior (DiClemente, 2003). Understanding an individual's current motivation to change can lead to more accurate treatment strategies, thereby improving probability of a successful treatment outcome. Also, helping clients to understand

where they are in the stages of change process helps them to know and better understand what they must do going forward in setting and achieving treatment goals.

This transtheoretical model comprises five basic stages of change readiness. The precontemplation stage indicates that the individual has a low awareness for the need to change, while the contemplation stage reflects an awareness of the need to change without yet making a decision to take action. In the preparation stage there is planning and commitment to change, leading into the action stage of implementation of the strategies and revision as necessary (DiClemente et al., 2004). The maintenance stage is the process of converting behavior and integrating the new behavior into a lifestyle. It is important to recognize that even though this is a linear model where one step progresses to the next, people often regress to previous stages, especially in addiction (Connors et al., 2013). Although much stages of change research was initially conducted with smoking and tobacco cessation and later alcohol abuse, these categories and attributes appear to translate appropriately for other drugs of abuse (DiClemente, 2003).

Precontemplation

Individuals in this first stage of change have the mindset that no change is really needed and that the issue is not really a problem. They may lack awareness of the severity of the situation or the reality of the maladaptive behavior (Connors et al., 2013). These individuals may be defensive, feeling pressured by significant others to seek treatment or have an honest self-assessment of the current situation. They may be resistant to engaging in any evaluation or activity that may change their perception of the current situation as well as avoiding steps to change such as rejecting offers for evaluation or treatment. They are not convinced that the benefits of not using a substance are greater than the consequences of continued use (DiClemente et al., 2004). They may categorize their use as normal, in spite of negative outcomes or results,

and may acknowledge no need for change, reflecting a mindset of denial. However, some individuals in the precontemplation stage do still seek treatment, often to satisfy others or to avoid significant negative consequences such as jail or divorce. The individuals are usually in denial of how their addiction affects everyone involved.

Goals for this population could be honest self-assessment or self-reevaluation, environmental reassessment, and raising awareness and consciousness of the reality of the current situation (Connors et al., 2013). Projecting future outcomes with continued current behavior (e.g., "Where do you see this going in 6 months?") could help force change-resistant individuals to an honest self-assessment and allow for transition to the next stage of change.

Contemplation

The contemplation stage's basic goals include compiling decisional information and considerations, examining these data, and engaging the comparative process to resolve decisional conflict, which is necessary to successfully transition into the preparation stage (DiClemente, 2003). Individuals in the contemplation stage have begun to consider making a change in behavior but have not yet committed to taking action to effect the change. The current maladaptive behavior may be critically evaluated more frequently, with the individual acknowledging the consequences and being more receptive to honest self-assessment of the current behavior. In this stage, the individual recognizes that a problem exists and is often trying to devise a way to continue the behavior while minimizing the consequences. Individuals may enter treatment but still be in the contemplation stage and not necessarily the action stage, as they may be evaluating the extended range of the treatment process without actually committing to sustained change.

DiClemente et al.'s (1991) smoking cessation study categorized individuals in the contemplation stage as those who did not quit for more than a day over the past year and who did not expect to quit during the next month but had tried to quit in the past 30 days. Although they were considering behavior change and seeking treatment, their Action scale scores were below average. The contemplation stage is not always the launchpad into the preparation stage and then action (Connors et al., 2013). Moving forward is the goal, but some people can remain in this stage for longer periods of time, and some shift back to precontemplation, losing motivation to change. Once this decisional conflict is resolved, the individual can progress to the preparation stage.

Preparation

The preparation stage involves primarily strengthening the commitment to change and making an action plan to accomplish the goal of changed behavior. In this stage, the individual has developed an intention and a readiness to change in both behavior and attitude and is on the verge of taking action. Some level of change may have already occurred in some areas; for example, reducing time and/or money spent toward the behavior. These individuals may have a higher level of confidence in their ability to be successful in treatment. Those in the preparation stage rate the positives of the behavior lower and the negatives of the behavior higher than those in the two previous stages (Connors et al., 2013). A sense of purpose and ownership of the recovery plan is developed, further enhancing motivation to action. The feeling of self-liberation that can begin in this stage is also highly motivating.

There are peripheral issues that often must be addressed in this transitional stage such as dual diagnosis mental disorder, family obligations, legal situations or employment responsibilities, and other substance use (Rogers et al., 2019). Some may need to remove

themselves from toxic individuals or situations that would hinder taking action toward change. The environments of people in the preparation stage should be thoroughly evaluated in order to identify stumbling blocks to recovery (DiClemente et al., 2017). All of these components should be included in the action plan developed during this stage. A well thought out plan anticipates potential threats to taking and maintaining action identified and addressed in the preparation stage. Psychotherapy may help these individuals deal with feelings and emotions that may unexpectedly arise during the change process.

Action

The four main components of the action stage of changing addictive behaviors are (a) gaining freedom from the old behavior by engaging change processes and the strategies of the action plan, (b) developing a significant level of commitment, (c) being able to revise the action plan and make adjustments as needed, and (d) managing temptations and cravings that could lead to relapse, which would interrupt the process of developing new behavior (DiClemente et al., 2003). A relapse could possibly cause individuals to regress back to the precontemplative stage, and it could take an extended period of time—even years—for the individual to regain motivation and build back to the action stage of behavior change and recovery. Therefore, relapse prevention is a major component of the action stage. Relapse prevention and recovery growth are primary elements of the maintenance phase, but they are also critical in the action stage. A period of abstinence is necessary in order to reestablish self-regulatory control, which is lost in addiction (Connors et al., 2013). Once the addiction develops to a certain level, the individual loses the ability to control the problematic behavior, which allows for strengthening the maladaptive habits and the related thought patterns. Regaining self-regulation can be a very difficult process, as the individual has to redevelop the ability to resist engaging in the old

behavior, no matter the situation. Depending on the severity of the condition, this may only be accomplished in an inpatient or detoxification setting at the beginning of treatment. Behavior reinforcement and counterconditioning are necessary elements for early treatment as well (Connors et al., 2013).

The action phase is the time when individuals who are committed to making a change begin to disconnect from the social element (people, places, and things) of the old behavior, and resist the physical cravings and mental temptations of the addiction (Connors et al., 2013). This may include involving a physician to use medication if appropriate. Medication can be a key component in allowing the individual to avoid the severe physical cravings and withdrawal symptoms of opioid use. The medication can also reduce the severity and intensity of the psychological temptations. Also, a physical exercise program recommended by the physician could be helpful because motion can change emotion. Individuals who have advanced to the action stage and many individuals in successful addiction recovery have reported that incorporating exercise into the action plan for change was very beneficial, as the pursuit of well-being and health seemed to replace the feeling of getting high and offset the reduced social circle (DiClemente, 2003).

Some action may be temporary on purpose, such as a pregnant woman stopping smoking only for the term of the pregnancy or someone not using drugs while on probation with the court. While this may seem counterproductive, this temporary change in behavior allows the individual to experience some of the benefits of abstinence, even though the plan is to return to the old behavior. The client's attitude may shift in acknowledging the benefits of recovery, even unintentionally, which can be helpful in future attempts to change, allowing for a potentially quicker path to the action stage.

Maintenance

Strengthening relapse prevention skills is a key goal for individuals entering into the maintenance stage of change (Connors et al., 2013). As abstinence from the maladaptive behavior is maintained, the client is better able to maintain and build on gains that have been realized in treatment or the action stage. At this point, the individual is incorporating the new behavior pattern into an extended lifestyle, making the new behavior the new normal. Individuals in the maintenance phase must continue to be mindful of relapse's consequences, being careful not to operate in a false sense of security or forgetting the severity of the difficulty that the old behavior caused. Complacency can be the enemy of recovery. Loneliness can also be a factor to address in maintenance. A complete shift in an individual's social life can be a difficult process, as many of the previous social connections that were healthy have been damaged or broken. Many addicts relapse during this time of social change because when the negative friends and acquaintances are removed, old friends who were lost because they did not participate in the maladaptive behavior may not wish to reconnect until change is evident. This leaves the individual seeking change feeling lonely as the social connections are usually not quickly replaced, and loneliness can lead to relapse.

Unfortunately, relapse is common with addiction recovery (DiClemente, 2003). Whether it is a one-time slip or an extended relapse, some momentum is lost. Abstinence-based treatment and recovery are more apt to regard a one- or two-time use as a catastrophic event, and recovery starts back at Step 1. Behavioral theories tend to be a bit more lenient, viewing a slipup as an opportunity to learn and grow stronger in recovery (DiClemente et al., 2017). There are differences between a slipup and a full-blown relapse, depending on how long and deeply the individual reengages in the problematic behavior (DiClemente, 2003). The longer the relapse, the

further back the individual may regress in the stages of change. Addiction is considered a progressive disease; a relapse can take the individual deeper into the addiction than before, possibly resorting to new actions to get more of the desired substance.

Recycling is the term used to describe a relapsed individual going back to earlier stages of change in order to resume recovery action (DiClemente, 2003). Relapse can be particularly discouraging in the maintenance stage, but understanding the concept of recycling can help the relapsed individual to not lose all hope and not completely give up and quit. Relapse rates for opiate users can be worse than those of other substance users, given the severity of the physical withdrawal symptoms, so understanding and including the principle of recycling in OUD treatment can help keep individuals connected to treatment even after relapse. Individuals who are successful in long-term recovery seem to be able to minimize lapses or slipups and avoid full-blown relapse, which is a return to dependence (McDonough, 2015).

Recognizing and understanding the individual characteristics of motivation for treatment success will allow providers to make focused and specialized efforts to improve resilience and treatment outcomes (Ahmadi & Jahromi, 2017). Understanding the stages of change and identifying the client's current position in this model can be beneficial in developing an individualized plan for the particular client. External motivations (probation, job loss, divorce, financial loss) and internal motivations (self-image, guilt, shame, stress, depression) are factors in treatment retention and successful outcomes. Chronic pain is also a significant factor to overcome with the OUD population (Oberleitner et al., 2019).

Individual personality characteristics and attitudes such as grit and hope may also be predictors of the ability to remain abstinent and engaged in recovery as these qualities can reflect motivation, and motivation is a well-established predictor of recovery for addictive behaviors

(DiClemente et al., 2017). Marchand and Oviedo-Joekes (2017) noted that patient-centered approaches would help to identify each client's unique values, preferences, and needs, which is important to improve treatment retention and successful outcomes. Research has indicated that better and more frequent assessment and measurement may improve understanding of the components of readiness to change and motivation as well as how they translate into successful addiction treatment (DiClemente et al., 2004). The intention in the present study was to identify and quantify personal characteristics that may help predict treatment outcomes for individuals entering into an office-based opioid maintenance therapy program.

Summary

A review of the literature showed several points relevant to this study. Opioid abuse has been a problem worldwide for centuries and has been an issue in the United States since the Civil War (Pecoraro et al., 2012). Additionally, prescription pain medication abuse has increased dramatically over the last 20 years (ASAM, 2016), compounding this national dilemma to epidemic proportion. Opioid-related overdose death rates continue to increase in all age groups and across all socioeconomic demographics (Hedegaard et al., 2017; NIDA, 2018). Research has indicated that this condition could continue to worsen (Unger, 2017).

With more restrictive and accountable opioid pain medication prescribing practices being implemented, the need for OUD treatment will inversely increase, providing individuals with this disorder an alternative to transitioning to heroin or other illicit substances. Research has strongly indicated that MAT is one of the better methods for effectively treating OUD (Turner et al., 2015; Wilson & Fagan, 2017).

Treatment retention has been strongly associated with positive recovery outcomes (Suzuki et al., 2015; Weiss et al., 2011), and understanding the predictors associated with better

retention could help direct treatment strategies (Griffin et al., 2015). Precisely targeted strategies could help providers address the diverse needs of substance abusers and treatment seekers, support more proactive interventions, create a concentration on motivational enhancement, and helps researchers understand the larger process of change where addict and treatment provider meet.

Motivation is a well-established predictor of treatment retention (Cook et al., 2015) and recovery from addictive behaviors (DiClemente et al., 2017), so being able to measure pretreatment motivation as represented by the traits of grit, hope, and readiness to change may result in more accurate treatment planning, possibly leading to more effective strategies and better treatment outcomes. This study's focus was on measuring these indicators and treatment outcomes with individuals participating in an office-based opioid maintenance therapy program.

CHAPTER THREE: METHOD

The purpose of this study was to examine the relationship between personal characteristics of hope, grit, and readiness to change with the efficacy of medication-assisted treatment (MAT) for opioid use disorder (OUD) delivered in an office-based buprenorphine program. Participants entering the program during the study completed the Adult Hope Scale (AHS; Snyder et al. 1991), the stages of Change Readiness and Treatment Eagerness Scale (SOCRATES): Drug Version 7D (Miller & Tonigan, 1996), and 12-Item Grit Scale (Duckworth et al., 2007) to quantify these three personal characteristics. Each participant was evaluated after 60 days for treatment retention and recovery quality. Recovery quality was assessed using the Substance Abuse Recovery Evaluator (SURE; Neale et al., 2016). Participant demographics were detailed, and descriptive statistics were detailed and separated into groups.

Correlations were completed for the participants who remained in treatment for 60 days to determine the relationship between hope agency, hope pathways, grit, and readiness to change with recovery quality. Simultaneous multiple regressions were used to determine how much of the variance in recovery quality could be explained by the three predictor variables of hope agency, hope pathway, and grit. Readiness scores were eliminated from this regression equation as the existing clients were 60 days into treatment and did not have readiness scores. Another regression was conducted for only new clients; this regression included all four variables to examine the effect of readiness score on recovery quality in this smaller group. A logistic regression was used to investigate how well each of the four independent variables of hope agency, hope pathway, grit, and readiness to change could predict the dichotomous dependent variable of treatment retention for 60 days.

Research Design

The predictive usefulness of the four personal characteristics of hope agency, hope pathways, grit, and readiness to change with outcome variables of treatment retention and quality of recovery after 60 days in an office-based buprenorphine treatment program was examined in this study. Multiple linear regression models and a logistic regression model were used with the four predictor variables to determine their relationship with the two dependent variables of recovery quality and treatment retention.

Participants were assessed at treatment entrance to measure the three internal factors of readiness to change, grit, and hope. After 2 months in treatment, participants were evaluated for treatment retention and quality of recovery. Data gathered from these participants at these two points were used to test each predictive variable. Additional data on hope, grit, and quality of recovery were gathered from existing clients who had been retained in treatment over 60 days at the beginning of the study to supplement the power of the research.

Variables

Independent Variable

The predictive value of the four three internal factors of hope agency, hope pathways, grit, and readiness to change on treatment retention and quality of recovery in the first 60 days in an office-based buprenorphine treatment program was examined in this study. The four independent variables for the two hypotheses were the scores on the hope (agency and pathways), grit, and readiness to change measures. Baseline assessment scores for these four personal characteristic measures were established at treatment entrance.

Dependent Variables

The dependent variables for this study were treatment retention and quality of recovery scores, both of which were measured after 60 days of treatment. The individuals who did not remain in treatment did not have quality of recovery scores.

Selection of Participants

Participants were adult men and women of various ages, ethnicities, socioeconomic statuses, and treatment/recovery histories from an office-based outpatient buprenorphine program. All potential participants met *DSM-5* criteria for OUD, moderate to severe (American Psychiatric Association, 2013), and those willing to participate enrolled in the study at the beginning of treatment. Exclusionary criteria for participants included active psychosis or an untreated psychotic disorder, under age 18 years, or pending legal action that might result in incarceration during the term of the study. All participants signed an informed consent form, including release of information approval (see Appendix A) for obtaining the appropriate data.

Instrumentation

A standardized intake format developed for the present study was used to gather participant background and demographic information during intake and clinical interviews. Hope, grit, and readiness to change scores were measured at treatment outset for new clients and at the next session for existing clients. Recovery quality and treatment retention were assessed after 60 days.

Measurements

The rationale for using these three measurements was that hope agency, hope pathways, grit, and readiness to change seem to be predictive factors in positive outcomes in substance abuse and other mental health treatment efforts (see Stein et al., 2015).

Adult Hope Scale

The AHS; Snyder et al., 1991; see Appendix B) measures the participant's level of hope for the future. This scale is divided into two subscales: Agency and Pathways. Agency is goal-directed energy, and the Pathways scale measures planning to accomplish goals. This 12-item measure uses an 8-point Likert-type scale ranging from *Definitely False* to *Definitely Tru*e. Four items measure agency, four measure pathways, and the other four are fillers/nonindicators. The four agency items identify an individual's general sense of successful determination related to goals, with one item reflecting the future, two for the present, and one item reflecting the past. The four pathways items are related to an individual's cognitive assessment of the capacity to create solutions for overcoming obstacles to achieve a goal. This is a pencil and paper exam that takes most people less than 5 min to complete. Higher scores represent higher levels of confident expectations to pursue and achieve goals. In this context, hope is not merely optimism or wishfulness but also a construct including a focus on success, an analytic perspective of a good probability of goal attainment, and an overall realistic expectation of a positive outcome.

Snyder et al. (1991) examined the reliability of the AHS with six separate samples of University of Kansas undergraduate students and two samples of individuals in psychological treatment. The scale's internal consistency was acceptable, as the coefficient alphas ranged from .74 to .84 for the entire instrument, with the Agency subscale .from 71 to .76 and the Pathways subscale from .63 to .80. The test–retest scores were .85 at 3-week interval, .73 over an 8-week interval, and .76 and .82 in two separate 10-week interval samples, indicating the stability, reliability and reproducibility of the test scores. A subsequent study (Snyder et al., 1991) examined the scale's validity with 241 University of Kansas introductory psychology students, in which the AHS correlated moderately with several other hope scales. These results were

replicated in two additional studies (Snyder et al., 1991). Also, Bailey et al. (2007) found the

AHS to be a better predictor of life satisfaction compared to Life Orientation Test-Revised in

two separate studies ($N = 331$ and $N = 215$).

Grit Scale

The 12-item Grit Scale (Duckworth et al., 2007; see Appendix C) was developed to

measure the construct of grit, or perseverance and passion. This 12-item measure uses a 5-point

Likert-type scale ranging from *Very Much Like Me* to *Not Like Me at All*. Six items measure

Consistency of Interest, and six measure Perseverance of Effort, and the two subscales correlate

at $r = .45$. This is a pencil and paper exam that takes most people less than 5 min to complete.

Higher scores represent higher levels of passion and perseverance to achieve a desired goal. One

of the motivations for developing this scale was to examine whether or not grit may be as

essential as IQ in higher achievement. Duckworth posited that grit, more than self-control or

conscientiousness, may set apart exceptional individuals who make maximal use of their abilities

(talent + effort = maximum achievement).

The Grit Scale was validated across six studies indicating the stability, reliability and

reproducibility of the test results (Duckworth et al., 2007). The first study involved gathering

data from a large sample of adults to assess the predictive validity of grit with higher levels of

lifetime schooling, while the second study used a similar sample of adults but controlled for

personality traits (Big Five) of openness, conscientiousness, extraversion, agreeableness, and

neuroticism. With the association between grit and educational achievement established, Study 3

examined the association between grit and grade point average (GPA) in 139 undergraduates at

an elite university. Higher grit scores indicated higher GPAs but lower SAT scores, indicating

that less intelligent students compensated for their shortcomings by determination and working

harder. In Study 4, grit was expected to predict retention in a rigorous summer program and GPA and military performance scores 1 year later for over 1,200 West Point cadets. Grit predicted program retention better than any other predictor. However, grit was not the best predictor of cumulative first-year academic GPAs and military performance scores among cadets who remained at West Point. In that particular sample, the scale had a reliability coefficient of .79. Study 5 replicated and extended Study 4, and grit was found to be a predictor of program retention, whereas Conscientiousness and Whole Candidate scores were not. Study 6 included 175 finalists from the 2005 National Spelling Bee. Results indicated that the students with higher grit scores worked longer and harder than lower scoring peers, leading the grittier students to better performance. The Grit Scale had an internal reliability coefficient of .80 in this study.

The Grit Scale demonstrated high internal consistency with a coefficient alpha of .85 for the overall scale. Subscale alphas were .84 for Consistency of Interests and .78 for Perseverance of Effort (Duckworth, 2007). Neither factor was more consistently predictive of outcomes than the other in later analyses, and the two together were more predictive than either one alone. These findings indicate that both the individual sections and the scale as a whole are internally consistent.

Stages of Change Readiness and Treatment Eagerness Scale

The SOCRATES: Drug Version 7D (Miller & Tonigan, 1996; see Appendix D) is a 40-item instrument with Likert-type 5-point scales from 5 (*strongly agree*) to 1 (*strongly disagree*) used to categorize an individual's readiness to change into one of five defined stages: These stages are precontemplative (P), contemplative (C), preparation (D), action, (A) and maintenance (M). This transtheoretical model comprises five basic stages of change readiness. The precontemplation stage indicates that the individual has a low awareness for the need to change,

while the contemplation stage reflects an awareness of the need to change without yet making a decision to take action. In the preparation stage, there is planning and commitment to change, leading into the action stage of implementing the strategies and revision as necessary (DiClemente et al., 2004). The maintenance stage is the process of converting behavior and integrating the new behavior into a lifestyle. It is important to recognize that even though this is a linear model where one step progresses to the next, people often regress to previous stages, especially in addiction (Connors et al., 2013). Although much of the stages of change research was initially conducted with smoking and tobacco cessation and later alcohol abuse, these categories and attributes appear to translate appropriately for other drugs of abuse (DiClemente, 2003).

Miller initially developed SOCRATES in 1987 to be a parallel instrument with the University of Rhode Island Change Assessment by DiClemente and Hughes (1990) to measure stages of change. SOCRATES was found to be reliable when administered to 1,726 individuals in the Project Match, which was a multisite clinical trial of psychosocial alcohol abuse treatment, as well as in a test–retest study. Cronbach's alpha coefficients of internal consistency were computed for the entire scale (.72) and for the four subscales (P = .84, C = .67, D = .90, and A = .89). Maintenance (M) stage items were not included in the original version because it was intended for use with clients initially presenting for treatment, but this omission was later corrected in the interest of including all stages. Shorter forms were developed, but scales were modified to only three in the 20-item version 5.0. The 40-item questionnaire was used in the present study as it best reflects Connors et al.'s (2013) five stages of change.

Substance Use Recovery Evaluator

Treatment retention was measured by the participant being actively engaged in the program after 60 days. Individuals not remaining in treatment were not assessed for quality of recovery. The SURE (Neale et al., 2016; see Appendix E) was used to measure quality of recovery in more detailed terms than just abstinence. The SURE is a 21-item questionnaire of recovery statements that individuals answer by looking back on the past week. These statements are rated *all the time*, *most of the time*, *a fair amount of time*, *a little of the time*, or *none of the time*. Three substance use statements are rated *never*, *1–2 days*, *3–4 days*, *5–6 days*, or *every day*. The instrument is divided into five subscales of Substance Use (six items), Material Resources (three items) Outlook on Life (three items), Self-Care (five items), and Relationships (four items). A 5-point scoring scale (0–4) is used, with higher scores indicate stronger recovery overall and in each domain. This is a pencil and paper questionnaire that takes most people 5–15 min to complete.

Neale et al. (2016) developed a 30-item beta measure that was administered to 575 individuals receiving addiction treatment services. With item refinement and a full assessment of psychometric properties, the 21-item measure was found to be reliable and valid. The alpha coefficient was .92 for the entire instrument, indicating high internal consistency, and test–retest reliability was acceptable since there were no significant mean differences between scales and total score. The five scales correlated positively with similar subscale scores from other instruments, indicating convergent validity. SURE is a stable, reliable, and reproducible instrument that can be used as a stand-alone tool or alongside other patient-reported outcome measures (Neale et al., 2016).

Research Procedures

Approval for this study was granted by Liberty University's Institutional Review Board (see Appendix F) according to the following procedures. Participants were recruited by letter (see Appendix G), and informed consent (see Appendix A) was discussed with each participant. A signed consent form initiated data collection. Each participant was assigned a number that was used throughout the study to protect anonymity and confidentiality. Birthdate was used as a second identification method. The data from the three pretest and two posttest measures were entered into an Excel spreadsheet created for this purpose. Records were checked randomly to ensure accuracy.

Ethical considerations for this study were addressed. This study did not require withholding or delaying treatment for any participant. Confidentiality of information was discussed with each participant, with study contact information provided to all participants in case further information or clarification was needed later. Assessment scores were not shared with any outside party not relevant to this study. All data were stored securely on password-protected computers, with paper records stored behind two locks (door and file cabinet), as required by the U.S. Department of Health and Human Services. All related flash drives are stored in a locked file cabinet.

Research Questions and Hypotheses

The following research questions and hypotheses were addressed in this study.

RQ1: Can hope agency, hope pathways, grit, and readiness to change scores predict recovery quality scores?

$H1_0$: Hope agency, hope pathways, grit, and readiness to change scores are not predictive of recovery quality scores.

$H1_a$: Hope agency, hope pathways, grit, and readiness to change scores are predictive of recovery quality scores.

RQ2: Can hope agency, hope pathways, grit, and readiness to change scores predict treatment retention?

$H2_0$: Hope agency, hope pathways, grit, and readiness to change scores are not predictive of treatment retention.

$H2_a$: Hope agency, hope pathways, grit, and readiness to change scores are predictive of treatment retention.

Data Processing and Analysis

Data were coded and downloaded into SPSS Version 24, where it was screened, and missing data were excluded from the analysis. Incomplete survey responses were excluded before preliminary data screening was conducted to determine if scores on the measures were normally distributed and if any outliers were present. A correlation, simultaneous multiple regressions, and a logistic regression were used to determine the predictive strength of the four independent variables with the two dependent variables.

Role of the Researcher

The researcher conducting this study has worked as a substance abuse/mental health counselor for 10 years and has been associated with office-based MAT for 4 years. This experience with literally hundreds of clients and four different programs provided the researcher with a unique inside perspective to see when MAT works well and when it is not effective. The researcher's roles in this study were that of a counselor, a program director, and a researcher gathering data that may be helpful for future MAT clients and programs.

Summary

The present study was designed to evaluate the effect of personal internal motivational characteristics of hope agency, hope pathways, grit, and readiness to change on treatment retention and recovery quality for individuals participating in an office-based buprenorphine program. Given the current level of nationwide attention on treatment and solutions for OUD and prescription medication abuse, data gathered in this study were relevant and beneficial to the field.

CHAPTER FOUR: RESULTS

The purpose of this study was to measure the effect of the personal characteristics of hope agency, hope pathways, grit, and readiness to change on each participant's quality of recovery from opioid use disorder (OUD) and treatment retention in an office-based buprenorphine program. Hope agency, hope pathways, grit, and readiness to change were measured at treatment outset, and retention and recovery quality were measured after 60 days. Data were also gathered from existing clients who remained in treatment over 60 days at the time of study to measure hope agency, hope pathways, grit, and recovery quality. A model that asserted two hypotheses regarding the relationship between these variables was used in this study. The first overall study hypothesis stated that hope agency, hope pathways, grit, and readiness to change scores would be predictive of recovery scores; the second hypothesis stated that hope agency, hope pathways, grit, and readiness to change scores would be predictive of treatment retention.

The study goal was to involve a minimum of 50 participants. However, just after initiation of data collection, one of the programs closed the office that was expected to grow and provide additional clients for this study. This resulted in a smaller sample size than expected. A total of 31 adults who met the criteria for OUD and were participating in an office-based buprenorphine program agreed to the informed consent and completed the recruitment questionnaires to determine eligibility to participate in the survey. Of them, 16 were new enrollments to the program, and 15 were existing clients who had successfully participated in the program for over 60 days at the start of the study. The data analysis process used to examine whether the data supported the hypotheses is described in this chapter. Study findings are also summarized.

Data Screening

A sample of 31 participants was obtained and data were collected from September 19, 2019 to December 31, 2019. The participants were categorized as new or existing clients, and the appropriate assessments were provided. All responses were believed to be correct as information was gathered in session with a counselor. When scoring the responses to each instrument, the data were inspected to identify the cases in which participants selected the same response for eight or more consecutive items on any of the scales. This never occurred, so all client scores were retained.

For each client, hope scores were calculated on the Adult Hope Scale (AHS) and recorded for two subscales, Agency and Pathways. Grit scores were recorded. Readiness to change scores were calculated for five subscales, Precontemplation, Contemplation, Preparation, Action, and Maintenance, and the highest score was used as the client's readiness to change score, coded 1–5. Existing clients did not have readiness to change scores as they were already in action and maintenance. Quality of recovery scores were recorded for existing clients and new clients who retained for 60 days. Retention scores were dichotomous. Those who did not complete the 60 days were given scores of 0, and those who retained for 60 days were given retention scores of 1.

Before the main statistical analyses were performed, all the variables of interest were examined through SPSS for accuracy of data entry and to identify any missing values, the normality of distributions, and multivariate outliers. Additionally, means, standard deviations, skewness, and kurtosis were computed for each of the study variables and for the descriptive variables in the sample. Pearson correlation coefficients were calculated to address the two study hypotheses. Finally, logistic and multiple regression analyses were conducted to examine how

much of the variance in each of the two dependent variables (recovery quality and treatment retention) could be explained by each of the predictor variables (hope agency, hope pathways, grit, and readiness to change).

Participant Demographics

Participant demographics were reviewed after data screening. All participants identified as Caucasian, which can be somewhat attributed to the population demographic in the area; however, research from buprenorphine programs nationwide reflect a disproportionately higher rate of Caucasian participation compared to the local ethnic population mix (Hansen et al., 2013). Data on age, gender, education level, marital status, and employment status are shown in Table 1.

Table 1

Participant Demographics

Characteristic	n	%
Age range (in years)		
18–24	4	12.9
25–34	11	35.5
35–44	9	29.0
45–54	7	22.6
Gender		
Male	20	64.5
Female	11	35.5
Education level		
Some high school	5	16.1
High school graduate	17	54.8
Some college	7	22.6
Bachelor of arts/bachelor of science degree	2	6.5
Marital status		
Married/partnered	13	41.9
Never married	12	38.7
Divorced	5	16.1
Widowed	1	3.2
Employment status		
Employed for wages	18	58.1
Out of work	4	16.1
Self-employed	4	12.9
Unable to work	5	12.9

Sample Means

Mean, median, mode and standard deviations were calculated for each measure for all participants. Results were separated into three groups, including participants who were retained in treatment for 60 days ($n = 10$), the group that did not retain in treatment ($n = 6$), and a group

of participants surveyed who had been in treatment 60 days when the trial began ($n = 15$).

Results are summarized in Table 2.

Table 2

Variable Statistics for Each Outcome Group

Group and measure	M	Mdn	SD
Retained in treatment ($n = 10$)			
Readiness	3.80	4.00	0.632
Hope agency	21.00	19.00	5.454
Hope pathway	23.20	25.00	5.493
Grit	37.50	37.00	7.835
Recovery quality	52.40	53.00	4.169
Not retained in treatment ($n = 6$)			
Readiness	3.83	4.00	0.408
Hope agency	17.67	17.00	5.680
Hope pathway	19.38	18.00	5.456
Grit	36.67	36.00	7.840
Recovery quality	—	—	—
In treatment 60 days when trial began ($n = 15$)			
Readiness	—	—	—
Hope agency	26.20	27.00	5.454
Hope pathway	26.67	27.00	5.314
Grit	43.73	43.00	7.156
Recovery quality	57.13	58.00	5.854

Means and standard deviations for each of the four independent variables and recovery quality were calculated for each group. The existing treatment group had higher mean scores for hope agency, hope pathways, and grit than did the other two groups, and as expected, the retained in treatment group had higher scores in hope agency, hope pathways, and grit than the group that did not complete treatment. These results are shown in Table 3.

Table 3

Descriptive Statistics for Each Group by Variable

	Variable					
	Hope agency		Hope pathways		Grit	
Group	M	SD	M	SD	M	SD
Retained in treatment (*n* = 10)	21.00	5.45	23.20	5.49	37.50	7.84
Not retained in treatment (*n* = 6)	17.67	5.68	19.83	5.46	35.67	7.84
In treatment 60 days when trial began (*n* = 15)	26.20	5.45	26.67	5.31	43.73	7.16

Participants in the group that did not complete treatment (*n* = 6) did not have quality of recovery scores. The group of existing participants (*n* = 15) had higher mean scores (57.13, *SD* = 5.85) in quality of recovery than did the new participants (*n* = 10) who completed treatment (*M* = 52.40, *SD* = 4.17). Longer recovery time allowing for continued improvement could account for the higher quality score.

Data Analysis

Data analysis was performed using SPSS. Participants completed all measures with a counselor, so all the items for each measure were completed, and no one was excluded from the analysis. Multivariate correlations were completed between the dependent variable of recovery quality and independent variables of hope agency, hope pathway, and grit for the group of 25 participants who completed treatment (15 in treatment for 60 days at the time of the study, 10 new enrollments who remained in treatment for 60 days at study completion). Simultaneous multiple regression analyses were completed to examine how much of the variance in recovery quality was explained by the three predictor variables—hope agency, hope pathway, and grit— for the two groups (*n* = 15 and *n* = 10). A logistical regression analysis was completed to

determine how well the four independent variables of hope agency, hope pathway, grit, and readiness to change could predict the dichotomous dependent variable of treatment retention for 60 days for the 16 participants who began treatment during the study. This was a pilot study with a small sample size, so none of the results can be considered statistically significant. The data from these analyses are presented next.

Correlations

Pearson correlations were completed for the 25 participants retained in treatment to determine the relationship between scores for recovery quality, hope agency, hope pathway, and grit. The analysis suggested positive correlations between recovery quality and hope agency ($r = .733$, $p < .01$), hope pathway ($r = .583$, $p < .01$), and grit ($r = .658$, $p < .01$). These results suggested that the subjects who were retained in treatment and who indicated higher levels of hope agency, hope pathway, and grit tended to have higher quality of recovery scores. Therefore, the null hypothesis for RQ1 was rejected for this group of participants.

Simultaneous Multiple Regressions

Simultaneous multiple regression analysis was conducted to determine how much of the variance in recovery quality reported by the 25 subjects who successfully retained in treatment for 60 days could be explained by the three predictor variables: hope agency, hope pathway, and grit. The original intention was to include readiness scores; however, there were 15 missing cases for this variable, so it was eliminated from this regression equation. These 15 cases represented individuals who had already successfully completed 60 days of treatment, so their readiness scores were not relevant. See Table 4 for analysis of variance (ANOVA) results and the significance level for this experimental sample. The three independent variables accounted for 54% of the variance in recovery quality, $R^2 = .54$, adjusted $R^2 = .475$, $F(3, 21) = 8.230$, $p < .001$.

The results indicated that for this small sample size, the model was a predictor of recovery quality scores ($R = .735$, $R^2 = .540$, adjusted $R^2 = .475$, SEE = 4.107). Of the three independent variables, hope agency accounted for most of the variance in recovery quality ($\beta = .599$). The null hypothesis for Question 1 was rejected for this group ($n = 25$), as hope agency, hope pathways, and grit were predictors of recovery quality scores in this limited sample. These results are consistent with research correlating hope (Marcovitz et al., 2016) and grit (Griffin et al., 2016) with successful treatment outcomes.

Table 4

*Quality of Recovery Regression (Analysis of Variance) Results (*n *= 25)*

Model	Sum of squares	*df*	Mean square	*F*	Sig.
Regression	416.399	3	138.800	8.230	.001
Residual	354.161	21	16.865		
Total	770.560	24			

Simultaneous multiple regression analysis was conducted to determine if higher readiness to change scores were predictive of higher recovery quality scores.. The regression equations used the four predictor variables—hope agency, hope pathways, grit, and readiness to change— to predict the outcome variable of recovery quality. Readiness scores could only predict recovery quality for the 16 participants who began treatment in the study, and only 10 completed treatment, so $n = 10$. The other 15 came into the study as existing clients and were not reflected in this analysis. See Table 5 for analysis results. This sample's smaller size was a factor in lack of statistical significance. The null hypothesis for RQ1 was not rejected for this group.

Table 5

*Quality of Recovery Regression (Analysis of Variance) Results (*n *= 10)*

Model	Sum of squares	*df*	Mean square	*F*	Sig.
Regression	45.091	4	11.273	.506	.735
Residual	111.309	5	22.262		
Total	156.400	9			

Logistic Regression

Finally, the null hypothesis for RQ2 (Can hope agency, hope pathways, grit, and readiness to change scores predict treatment retention) was examined for the 16 new clients (retained in treatment, *n* = 10, not retained in treatment, *n* = 6) for treatment retention for 60 days. A logistic regression was used to investigate how well each of the four independent variables of hope agency, hope pathway, grit and readiness to change could predict the dichotomous dependent variable of treatment retention for 60 days. The results of the logistic regression showed that none of the independent variables were significant ($p > .05$). The null hypothesis for RQ2 was not rejected.

<div align="center">

Chapter Summary

</div>

The statistical analyses for this study were reported in this chapter. The data screening process was presented, then subject demographics were detailed. Descriptive statistics were separated into groups and presented. Then a correlation, multiple regression models, and a logistical regression model were presented to test the hypotheses for the two research questions. The null hypothesis for RQ1 was rejected for hope agency, hope pathways, and grit as they were predictors of recovery quality scores. The null hypothesis for RQ1 was not rejected for readiness scores. The null hypothesis for RQ2 was not rejected as none of the independent variables had an

effect on treatment retention for 60 days. Although not statistically significant, the correlation

between hope agency ($r = .733$), hope pathways ($r = .583$), grit ($r = .658$), and recovery quality

was encouraging. Further review of the study's statistical implications, conclusions, and

recommendations are in the following chapter.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to examine the relationship of personal characteristics of hope agency, hope pathways, grit, and readiness to change with the efficacy of medication-assisted treatment (MAT) for opioid use disorder (OUD) delivered in an office-based buprenorphine program. Participants entering the program during the study completed the Adult Hope Scale (AHS), the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES): Drug Version 7D, and 12-Item Grit Scale (Duckworth et al., 2007) in order to quantify these three personal characteristics. Each participant was evaluated after 60 days for treatment retention and quality of recovery. Recovery quality was assessed for those still in treatment using the Substance Abuse Recovery Evaluator (SURE; Neale et al., 2016).

Problematic opioid use has occurred for centuries (Corrigan et al., 2017). Recent treatment methods include abstinence-based strategies and medication-assisted harm reduction programs such as methadone treatment (Hser et al., 2014). Office-based buprenorphine programs have gained traction as an effective treatment process, especially since 2010 as the recent opioid epidemic has spiked (Blum et al., 2016). The present study focused on identifying predictors of treatment retention and recovery quality in office-based buprenorphine programs.

The data analysis results were presented in Chapter Four. Chapter Five includes additional findings and their implications. This chapter also provides a discussion of the study's two research questions. Limitations of the study, implications for practice, and suggestions for future research are also reviewed in this chapter.

Summary of Findings and Implications

The study participants were recruited from an office-based outpatient buprenorphine treatment program for OUD from September 19, 2019 to December 31, 2019. A sample of 31

participants was obtained during data collection. They were categorized as new or existing

clients and the appropriate assessments were provided. The participants were all Caucasian, ages

18–54 years. Most were male (64.5%), married or partnered (41.9%), employed (58.1%), and

high school graduates (54.8%). Two research questions were addressed in this study and are

discussed next.

Research Question 1

The first research question asked if hope agency, hope pathways, grit, and readiness to

change scores were predictive of recovery quality scores. A regression analysis on a group that

combined new and existing clients who remained in treatment supported the variables of hope

agency, hope pathways, grit being predictive of recovery quality. These three independent

variables in this analysis accounted for 54% of the variance in recovery quality. A secondary

analysis suggested positive correlations between recovery quality and hope agency ($r = .733$),

hope pathway ($r = .583$), and grit ($r = .658$). These results were somewhat expected since the

literature has shown hope (Bradshaw et al., 2014) and grit (Duckworth, 2016) to be predictive

traits in various types of successful outcomes. Though not significant statistically due to the

small sample size in this pilot study, the results are encouraging for future researchers to further

explore.

A second analysis that reflected new clients only who completed treatment included the

fourth predictor variable, readiness to change. This analysis did not support readiness to change

as a predictor of recovery quality, as all four independent variables accounted for only 29% of

variance in the analysis for this group. Fewer reportable participants accounted for some of this

finding, but readiness to change mean scores were slightly higher for those who did not complete

treatment than for those who did (3.83 versus 3.80). Mean scores for the other three predictor

variables were higher for those who completed compared to those who did not. Hope and grit are traits, while readiness is a present state of mind (DiClemente, 2018). Research has indicated that readiness to change can be predictive of treatment outcomes (Connors et al., 2013), but these findings did not support this research.

Research Question 2

The second research question asked if hope agency, hope pathways, grit, and readiness to change scores were predictive of treatment retention. All four predictor variables combined only accounted for 18% of the variance in retention, suggesting that they did not predict treatment retention. A linear regression analysis for the group of new treatment participants indicated that none of the independent variables were significant in predicting treatment retention. Despite increased research on OUD treatment (Martin & Finlayson, 2015) and demographic/situational predictors of success (Thomas et al., 2013), there appears to be limited research regarding the effect of personality characteristics and traits on treatment success. Unfortunately, recovery quality scores were not obtainable from those who did not complete treatment, so the effect of dropout on recovery quality score could not be determined for this group. However, research has indicated that treatment retention is a predictor of higher recovery quality (Meier et al., 2014).

<div align="center">

Limitations of the Study

</div>

Sample size was the first limitation in this study. The assumption was that there would be no interruption in services provided in the office-based buprenorphine program. However, the program's main prescriber left the practice early in the study to relocate out of state. Since the study had already started, it was continued. The assumption was that the study would include many more participants. Because it did not, the sample size was less relevant, especially for predicting treatment retention. Also, the data were possibly less representative of the population

and therefore less generalizable to other populations. Future research on this topic would benefit from larger sample sizes, which could be attained by involving several prescribers to minimize the possibility of a reduced participant pool.

Another study limitation was that all 31 participants were Caucasian. However, national surveys of medication-assisted treatment (MAT) program patients have indicated that buprenorphine patients were more likely to be Caucasian (92%) as compared to 53% of methadone program patients (Main & Kelly, 2016). Even in ethnically and racially diverse New York City, buprenorphine treatment was found to be unevenly distributed to Caucasian populations (Hansen et al., 2013). In this current study, only those with health insurance (including Medicaid) or the ability to self-pay were included, which could be an economic limitation, but including Medicaid recipients seems to balance out the participants' overall socioeconomic status.

Regrettably, participants who did not complete treatment had no recovery quality scores. This methodology deficiency could have been corrected with specific effort to gather the data by attempting to follow up with these clients and obtain a quality score after 60 days, even though the participants had left the program, instead of just having no score. This deficiency could be corrected in future research efforts.

Another limitation in this study was the assumption that the instruments measured what they were intended to measure. All four assessments have support for their reliability and validity, but their reliability and validity remain an assumption. Also, the AHS and the Grit Scale have only 12 questions each, while the other two instruments are more robust. Future research could consider additional scales for further support and clarity.

A conceptual limitation of this study was the likelihood that the predictive variables used did not include all relevant elements of predicting treatment retention and quality of recovery for office-based opioid treatment clients. Also, the variables that were used—hope, grit, and readiness to change—can be influenced by situational variables such as current quality of intimate relationships, pending legal issues, or physical health. Comorbid mental health diagnoses were not taken into consideration and could have influenced client responses (see Heikman et al., 2017).

Another limitation was that all four instruments used are self-report, so the information cannot really be independently verified and must be taken at face value. Participants could have misinterpreted the questions or misunderstand some of the terminology, or there could be biases such as selective memory, exaggeration, or social desirability bias (see Van de Mortel, 2008). Also, with the addicted population, the possibility of any level of impairment could skew survey responses (DiClemente et al., 2017).

Suggestions for Future Research

Gaps in the literature regarding individual traits and states and office-based opioid buprenorphine treatment retention and recovery quality were addressed in this study. Research is available on demographics and other physical and situational variables as predictors of substance abuse treatment results (Stein et al., 2015), but few studies have included individual traits in office-based MAT. As opioid use continues to be a global public health epidemic (Thomas et al., 2013), future research should continue to pursue the importance of these variables and others related to opioid treatment and recovery to better understand the possibilities for improved outcomes. A future research possibility could be to validate the present study's findings to determine if these characteristics are predictive of treatment outcomes in other OUD populations.

A larger sample size would be greatly beneficial in gaining further understanding of treatment predictors and outcomes. Obtaining a larger sample could be accomplished by using multiple prescribers and/or facilities to secure more study participants and a more diverse population. This study was confined to 60 days, whereas a longitudinal study covering 6 or 12 months could provide additional data for a greater effect size. Conducting a mixed methods study could also yield more robust data and additional relevant information regarding treatment retention and recovery.

Future research could also include gathering follow-up data from participants who do not complete treatment. More thoroughly investigating the circumstances of individuals who do not continue in treatment could reveal significant information in unsuccessful outcomes. This research could provide greater insights into addressing client deficits at the beginning of treatment for improved retention. A more individualized treatment plan can greatly improve the probability of a successful outcome (Dhawan & Chopra, 2013; Heikman et al., 2017).

Future research measuring other traits of individuals in opioid treatment programs could also provide broader predictive data. For example, God concept, honesty, adaptability, or emotion regulation skills could influence treatment outcomes (Oberleitner et al., 2019). Comorbid mental diagnoses, psychiatric stress, and dependence severity and history, as well as chronic pain, which is often present in OUD, are also measurable risk factors for treatment (Rogers et al., 2019). The individual participant's life circumstances and situations that may also affect treatment outcome, such as life stress or abuse history could be measured and lend insights on positive or negative recovery results (Tate et al., 2005). Psychosocial intervention data can be further studied as a predictor of OUD recovery (Anyimukwu & Omondi, 2020). Additionally, future research could examine treatment retention and recovery quality across social and

economic measures. All these differences could be investigated to help gain greater insights into predictive characteristics of treatment success or failure. Using integrative models that consider biological, psychological, social, and spiritual dimensions could be beneficial for providing a deeper understanding of clients' predictive needs.

The field of performance measurement continues to progress, as does the availability of MAT programs, particularly office-based buprenorphine prescribers, to treat OUD (Thomas et al., 2013). This is encouraging, as the number of individuals with OUD diagnoses continues to increase (Yang et al., 2020). Findings from the current study and future research on predictors of treatment retention and recovery quality could be beneficial for individuals entering OUD treatment programs and possibly for other mental health disorder treatment. Therefore, there is benefit for future research on personal traits as predictive factors influencing OUD treatment outcomes.

Clinical Implications

This pilot study has important clinical implications for counselors in several areas. The findings showed a pattern of better recovery quality for participants with higher hope and grit scores. If this study can be further validated and generalized to other OUD populations, the assessments employed in this study could be used to examine these characteristics of interest before entering treatment to determine individual strengths and weaknesses in these areas. Hopelessness and lack of perseverance and motivation can be significant barriers to successful treatment outcomes (Duckworth, 2016). Having this predictive information would provide counselors with relevant prognostic information to influence treatment planning to address deficits as needed, as well as to cultivate client strengths. Based on these scores, counseling and

even prescriber visit frequency could be scheduled appropriately. This would make treatment more personal and, at the same time, more evidence based.

A clinical implication of this study for counselors would be that lower scores in these assessments could be indicative of other mental health disorders such as depression, anxiety, posttraumatic stress disorder, etc. Comorbid diagnoses can complicate treatment efforts and can be a barrier to successful outcomes (Meier et al., 2014). However, co-occurring disorders can be even more problematic if not addressed. The substance abuse population is one with a high rate of comorbidity (Weiss et al., 2011), so identifying this condition can improve the probability of a better treatment outcome.

Another counseling implication could be the self-awareness clients could gain from the results of these assessments. These results could help clients recognize the connection between change and the increased probability of a positive treatment outcome. This insight to self could motivate clients to take ownership of the change needed to overcome a potential hindrance to treatment. Personal adjustment in these areas is possible even though grit and hope are traits and not states.

Much still needs to be learned about how to best utilize office-based buprenorphine treatment for OUD. But if these characteristics can be identified at the beginning of treatment, and addressed, clients may be more able to achieve a potentially better recovery outcome. Heikman et al. (2017) stated that treatment success can significantly vary depending on certain individual attributes. This is relevant not only at treatment outset but also for therapeutic gains achieved to be maintained after treatment ends. The study findings should be applied in clinical practice.

Summary of Chapter

This chapter was a summary of the study findings and limitations, clinical implications, and recommendations for future research. As an exploratory study, the sample size was too small to establish statistical significance. Three main findings were discussed in this chapter. First, there was a positive correlation between recovery quality and hope agency ($r = .733$), hope pathway ($r = .583$), and grit ($r = .658$). Further analysis showed that the three independent variables accounted for 54% of the variance in recovery quality. Second, contrary to findings in previous studies, no relationship was found between readiness to change and recovery quality. This may be partially attributed to a smaller sample size and other factors discussed in the limitations section. Third, hope agency, hope pathways, grit, and readiness to change scores were not predictive of treatment retention.

The study limitations included a small sample size, limited racial/ethnical diversity, the data collection procedures and methods, and self-reported information. Future research should include larger sample sizes and other populations and demographics. Qualitative methods for more robust insight and exploring other factors that could predict treatment retention should also be considered. Counseling implications include recognizing the impact of identifying personal characteristics at treatment outset to inform treatment planning that compensates for patient deficits and uses their strengths. Identifying these traits may also reveal other mental health conditions as well as provide self-awareness for motivation to clients.

Summary of Study

An investigation of extant literature indicated a connection between hope, grit, and readiness to change with successful outcomes. Few studies have focused on these three individual characteristics for treating individuals diagnosed with OUD in office-based

buprenorphine programs. The study focus was on determining if these characteristics would predict treatment outcomes. Study participants were recruited from a large practice facilitating this treatment. All 31 participants were retained after screening. Correlation and regression models showed hope agency, hope pathways, and grit to be predictive of recovery quality but not treatment retention. Further analysis showed readiness to change to not be predictive of either quality or retention. Future research on these characteristics and others of individuals participating in office-based OUD treatment would be beneficial to provide further insights for treatment planning for optimum outcomes. Clinicians can use this information to cultivate more productive therapeutic relationships. Despite the small sample size and lack of statistical significance in this pilot study, these results are encouraging and important clinically and for future research.

REFERENCES

Abraham, A. J., Andrews, C. M., Grogan, C. M., Pollack, H. A., D'Aunno, T., Humphreys, K., & Friedmann, P. D. (2017). State-targeted funding and technical assistance to increase access to medication treatment for opioid use disorder. *Psychiatric Services*, *69*(4), 448–455. https://doi.org/10.1176/appi.ps.201700196

Ahmadi, J., & Jahromi, M. S. (2017). Anxiety treatment of opioid dependent patients with buprenorphine: A randomized, double-blind, clinical trial. *Indian Journal of Psychological Medicine*, *39*(4), 445–449. https://doi.org/10.4103/0253-7176.211765

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

American Society of Addiction Medicine. (2016). *Opioid addiction 2016 facts & figures*. https://www.asam.org/docs/default-source/advocacy/opioid-addiction-disease-facts-figures.pdf

Anyimukwu, C., & Omondi, A. (2020). Assessment of psychosocial interventions in opioid cessation: A systematic review. *Journal of Alcohol & Drug Education*, *64*(2), 62–86.

Arnau, R. C., Rosen, D. H., Finch, J. F., Rhudy, J. L., & Fortunato, V. J. (2007). Longitudinal effects of hope on depression and anxiety: A latent variable analysis. *Journal of Personality*, *75*(1), 43–64. https://doi.org/10.1111/j.1467-6494.2006.00432.x

Bailey, T. C., Eng, W., Frisch, M. B., & Snyder, C. R. (2007). Hope and optimism as related to life satisfaction. *The Journal of Positive Psychology*, *2*(3), 168–175. https://doi.org/10.1080/17439760701409546

Betty Ford Institute Consensus Panel. (2007). What is recovery? A working definition from the

    Betty Ford Institute. *Journal of Substance Abuse Treatment*, *33*(3), 221.

    https://doi.org/doi:10.1016/j.jsat.2007.06.001

Blum, K., Gold, M., Clark, H. W., Dushaj, K., & Badgaiyan, R. D. (2016). Should the United

    States government repeal restrictions on buprenorphine/naloxone treatment? *Substance*

    Use & Misuse, *51*(12), 1674–1679. https://doi.org/10.1080/10826084.2016.1200097

Bolek, S., Yargic, I., & Ekinci, O. (2016). The effects of buprenorphine/naloxone maintenance

    treatment on the quality of life, substance use and functionality in opiate dependence: A

    follow-up study. *Klinik Psikofarmakoloji Bulteni*, *26*(2), 141–151.

    https://doi.org/10.5455/bcp.20151101022909

Bradshaw, S., Shumway, S. T., Wang, E. W., Harris, K. S., Smith, D. B., & Austin-Robillard, H.

    (2015). Hope, readiness, and coping in family recovery from addiction. *Journal of*

    Groups in Addiction & Recovery, *10*(4), 313–336.

    https://doi.org/10.1080/1556035x.2015.1099125

Brezing, C., & Bisaga, A. (2015). Opioid use disorder: Update on diagnosis and treatment.

    Psychiatric Times, *32*(4), 16–20. https://www.psychiatrictimes.com/view/opioid-use-

    disorder-update-diagnosis-and-treatment

Brouwer, D., Meijer, R. R., Weekers, A. M., & Baneke, J. J. (2008). On the dimensionality of the

    Dispositional Hope Scale. *Psychological Assessment*, *20*(3), 310–315.

    https://doi.org/10.1037/1040-3590.20.3.310

Brown, S. E., & Altice, F. L. (2014). Self-management of buprenorphine/naloxone among online

    discussion board users. *Substance Use & Misuse*, *49*, 1017–1024.

    https://doi.org/10.3109/10826084.2014.888449

Cadet, J. L. (2016). Epigenetics of stress, addiction, and resilience: Therapeutic implications.

    Molecular Neurobiology, *53*(1), 545–560. https://doi.org/10.1007/s12035-014-9040-y

Carroll, K. M., & Weiss, R. D. (2017). The role of behavioral interventions in buprenorphine

    https://doi.org/10.1176/appi.ajp.2016.16070792

Connors, G. J., DiClemente, C. C., Velasquez, M. M., & Donovan, D. M. (2013). *Substance*

    abuse treatment and the stages of change: Selecting and planning interventions (2nd ed.).

    Guilford Press.

Cook, S., Heather, N., & McCambridge, J. (2015). Posttreatment motivation and alcohol

    treatment outcome 9 months later: Findings from structural equation modeling. *Journal*

    of Consulting and Clinical Psychology, 83(1), 232–237.

    https://doi.org/10.1037/a0037981

Corrigan, P., Schomerus, G., & Smelson, D. (2017). Are some of the stigmas of addictions

    culturally sanctioned? *The British Journal of Psychiatry*, *210*(3), 180–181.

    https://doi.org/10.1192/bjp.bp.116.185421

Credé, M., Tynan, M. C., & Harms, P. D. (2017). Much ado about grit: A meta-analytic

    synthesis of the grit literature. *Journal of Personality and Social Psychology*, *113*(3),

    492–511. https://doi.org/10.1037/pspp0000102

Dart, R. C., Surratt, H. L., Cicero, T. J., Parrino, M. W., Severtson, S. G., Bucher-Bartelson, B.,

    & Green, J. L. (2015). Trends in opioid analgesic abuse and mortality in the United

    States. *New England Journal of Medicine*, *372*(3), 241–248.

    https://doi.org/10.1056/NEJMsa406143

Debelak, K., Morrone, W. R., O'Grady, K. E., & Jones, H. E. (2013). Buprenorphine + naloxone

    in the treatment of opioid dependence during pregnancy-Initial patient care and outcome

data. *The American Journal on Addictions*, *22*(3), 252–254.

https://doi.org/10.1111/j.1521-0391.2012. 12005.x

Dehghani-Arani, F., Rostami, R., & Nadali, H. (2013). Neurofeedback training for opiate

addiction: Improvement of mental health and craving. *Applied Psychophysiology and*

Biofeedback, *38*(2), 133–141. https://doi.org/10.1007/s10484-013-9218-5

Dekhtyar, M., Beasley, C. R., Jason, L. A., & Ferrari, J. R. (2012). Hope as a predictor of

reincarceration among mutual-help recovery residents. *Journal of Offender*

Rehabilitation, *51*(7), 474–483. https://doi.org/10.1080/10509674.2012.711806

DeMaria, P. A., & Risler, R. B. (2012). Buprenorphine compliance. *The American Journal on*

Addictions, *21*(5), 491. https://doi.org/10.1111/j.1521-0391.2012.00265.x

Dhawan, A., & Chopra, A. (2013). Does buprenorphine maintenance improve the quality of life

of opioid users? *Indian Journal of Medical Research*, *137*(1), 130–135.

DiClemente, C. C. (2003). *Addiction and change: How addictions develop and addicted people*

recover. Guilford Press.

DiClemente, C. C. (2018). *Addiction and change: How addictions develop and addicted people*

recover (2nd ed.). Guilford Press.

DiClemente, C. C., Corno, C. M., Graydon, M. M., Wiprovnick, A. E., & Knoblach, D. (2017).

Motivational interviewing, enhancement, and brief interventions over the last decade: A

review of reviews of efficacy and effectiveness. *Psychology of Addictive Behaviors,*

31(8), 862–887. https://doi.org/10.1037/adb0000318

DiClemente, C. C., & Hughes, S. O. (1990). Stages of change profiles in outpatient alcoholism

treatment. *Journal of Substance Abuse*, *2*(2), 217–235. https://doi.org/10.1016/S0899-

3289(05)80057-4

DiClemente, C. C., Prochaska, J. O., Fairhurst, S. K., Velicer, W. F., Velasquez, M. M., & Rossi, J. S. (1991). The process of smoking cessation: An analysis of precontemplation, contemplation, and preparation stages of change. *Journal of Consulting and Clinical Psychology*, *59*(2), 295–304. https://doi.org/10.1037/0022-006X.59.2.295

DiClemente, C. C., Schlundt, D., & Gemmell, L. (2004). Readiness and stages of change in addiction treatment. *The American Journal on Addictions*, *13*(2), 103–119. https://doi.org/10.1080/10550490490435777

Duckworth, A. (2016). *Grit: The power of passion and perseverance*. Scribner.

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, *92*(6), 1087–1101. https://doi.org/10.1037/0022-3514.92.6.1087

el-Guebaly, N. (2012). The meanings of recovery from addiction: Evolution and promises. *Journal of Addiction Medicine*, *6*(1), 1–9. https://doi.org/10.1097/adm.0b013e31823ae540

Friedmann, P. D., Jiang, L., & Alexander, J. A. (2010). Top manager effects on buprenorphine adoption in outpatient substance abuse treatment programs. *The Journal of Behavioral Health Services & Research*, *37*(3), 322–337. https://doi.org/10.1007/s11414-009-9169-z

Griffin, M. L., Bennett, H. E., Fitzmaurice, G. M., Hill, K. P., Provost, S. E., & Weiss, R. D. (2015). Health-related quality of life among prescription opioid-dependent patients: Results from a multi-site study. *The American Journal on Addictions*, *24*(4), 308–314. https://doi.org/10.1111/ajad.12188

Griffin, M. L., Dodd, D. R., Potter, J. S., Rice, L. S., Dickinson, W., Sparenborg, S., & Weiss, R. (2014). Baseline characteristics and treatment outcomes in prescription opioid dependent

patients with and without co-occurring psychiatric disorder. *The American Journal of Drug & Alcohol Abuse*, *40*(2), 157–162. https://doi.org/10.3109/00952990.2013.842241

Griffin, M. L., McDermott, K. A., McHugh, R. K., Fitzmaurice, G. M., & Weiss, R. D. (2016). Grit in patients with substance use disorders. *The American Journal on Addictions*, *25*(8), 652–658. https://doi.org/10.1111/ajad.12460

Gryczynski, J., Jaffe, J. H., Schwartz, R. P., Dušek, K. A., Gugsa, N., Monroe, C. L., O'Grady, K. E., Olsen, Y. K., & Mitchell, S. G. (2013). Patient perspectives on choosing buprenorphine over methadone in an urban, equal-access system. *The American Journal on Addictions*, *22*(3), 285–291. https://doi.org/10.1111/j.1521-0391.2013.12004.x

Hansen, H. B., Siegel, C. E., Case, B. G., Bertollo, D. N., DiRocco, D., & Galanter, M. (2013). Variation in use of buprenorphine and methadone treatment by racial, ethnic, and income characteristics of residential social areas in New York City. *The Journal of Behavioral Health Services & Research*, *40*(3), 367–377. https://doi.org/10.1007/s11414-013-9341-3

Heikman, P. K., Muhonen, L. H., & Ojanperä, I. A. (2017). Polydrug abuse among opioid maintenance treatment patients is related to inadequate dose of maintenance treatment medicine. *BMC Psychiatry*, *17*(1), Article No. 245. https://doi.org/10.1186/s12888-017-1415-y

Hedegaard, H., Warner, M., & Miniño, A. M. (2017). *Drug overdose deaths in the United States, 1999–2016* (NCHS Data Brief, No. 294). Centers for Disease Control. https://www.cdc.gov/nchs/data/databriefs/db294.pdf

Hser, Y., Saxon, A. J., Huang, D., Hasson, A., Thomas, C., Hillhouse, M., Jacobs, P., Teruya, C., McLaughlin, P., Wiest, K., Cohen, A., & Ling, W. (2014). Treatment retention among

patients randomized to buprenorphine/naloxone compared to methadone in a multi-site trial. *Addiction*, *109*(1), 79–87. https://doi.org/10.1111/add.12333

Hui, D., Weinstein, Z. M., Cheng, D. M., Quinn, E., Kim, H., Labelle, C., & Samet, J. H. (2017). Very early disengagement and subsequent re-engagement in primary care office based opioid treatment (OBOT) with buprenorphine. *Journal of Substance Abuse Treatment*, *79*, 12–19. https://doi.org/10.1016/j.jsat.2017.05.010

Hutchinson, E., Catlin, M., Andrilla, C. A., Baldwin, L., & Rosenblatt, R. A. (2014). Barriers to primary care physicians prescribing buprenorphine. *Annals of Family Medicine*, *12*(2), 128–133. https://doi.org/10.1370/afm.1595

Kampman, K., & Jarvis, M. (2015). American Society of Addiction Medicine (ASAM) national practice guideline for the use of medications in the treatment of addiction involving opioid use. *Journal of Addiction Medicine, 9*(5), 358–367. https://doi.org/10.1097/ADM.0000000000000166

Kelly, S. M., Brown, B. S., Katz, E. C., O'Grady, K. E., Mitchell, S. G., King, S., & Schwartz, R. P. (2012). A comparison of attitudes toward opioid agonist treatment among short-term buprenorphine patients. *The American Journal of Drug and Alcohol Abuse*, *38*(3), 233–238. https://doi.org/10.3109/00952990.2011.643983

Larance, B., Dietze, P., Ali, R., Lintzeris, N., White, N., Jenkinson, R., & Degenhardt, L. (2015). The introduction of buprenorphine-naloxone film in opioid substitution therapy in Australia: Uptake and issues arising from changing buprenorphine formulations. *Drug and Alcohol Review*, *34*(6), 603–610. https://doi.org/10.1111/dar.12277

Lee, J. F., Lo, S. M., Chang, Y.-H., Chang, Y.-C., Lee, S.-Y., & Lu, R.-B. (2017). Factors associated with retention in a methadone maintenance treatment program in heroin-

dependent Han Chinese in Taiwan. *Neuropsychiatry*, *7*(3), 204–211.

https://www.jneuropsychiatry.org/peer-review/factors-associated-with-retention-in-a-methadone-maintenance-treatment-program-in-heroindependent-han-chinese-in-taiwan.html

Levin, F. R., Bisaga, A., Sullivan, M. A., Williams, A. R., & Cates-Wessel, K. (2016). A review of a national training initiative to increase provider use of MAT to address the opioid epidemic. *The American Journal on Addictions*, *25*(8), 603–609. https://doi.org/10.1111/ajad.12454

Lintzeris, N., & Nielsen, S. (2010). Benzodiazepines, methadone and buprenorphine: Interactions and clinical management. *The American Journal on Addictions*, *19*(1), 59–72. https://doi.org/10.1111/j.1521-0391.2009.00007.x

Lobmaier, P., Gossop, M., Waal, H., & Bramness, J. (2010). The pharmacological treatment of opioid addiction—A clinical perspective. *European Journal of Clinical Pharmacology*, *66*(6), 537–545. https://doi.org/10.1007/s00228-010-0793-6

MacDonald, K., Lamb, K., Thomas, M. L., & Khentigan, W. (2016). Buprenorphine maintenance treatment of opiate dependence: Correlations between prescriber beliefs and practices. *Substance Use & Misuse*, *51*(1), 85–90. https://doi.org/10.3109/10826084.2015.1089905

Main, F., & Kelly, L. (2016). Systematic literature review on buprenorphine/naloxone use in outpatient opioid dependence treatment. *Canadian Journal of Addiction*, *7*(1), 12–18. Main, F., & Kelly, L. (2016). Systematic literature review on buprenorphine/naloxone use in outpatient opioid dependence treatment. *Canadian Journal of Addiction*, *7*(1), 12–18.

Marchand, K., & Oviedo-Joekes, E. (2017). Prioritizing the patient in patient-centered addictions treatment. *Addiction*, *112*(3), 466–467. https://doi.org/10.1111/add.13680

Marcovitz, D. E., McHugh, R. K., Volpe, J., Votaw, V., & Connery, H. S. (2016). Predictors of early dropout in outpatient buprenorphine/naloxone treatment. *The American Journal on Addictions*, *25*(6), 472–477. https://doi.org/10.1111/ajad.12414

Maremmani, I., & Gerra, G. (2010). Buprenorphine-based regimens and methadone for the medical management of opioid dependence: Selecting the appropriate drug for treatment. *The American Journal on Addictions*, *19*(6), 557–568. https://doi.org/10.1111/j.1521-0391.2010.00086.x

Marsch, L. A., Moore, S. K., Borodovsky, J. T., Solhkhah, R., Badger, G. J., Semino, S., Jarrett. K., Condon, K. D., Rossettie, K., Vincent, P., Hajizadeh, N., & Ducat, E. (2016). A randomized controlled trial of buprenorphine taper duration among opioid-dependent adolescents and young adults. *Addiction*, *111*, 1406–1415. https://doi.org/10.1111/add.13363

Martin, P. R., & Finlayson, A. R. (2015). Opioid use disorder during pregnancy in Tennessee: Expediency vs. science. *The American Journal of Drug & Alcohol Abuse*, *41*(5), 367–370. https://doi.org/10.3109/00952990.2015.1047502

May, E. M., Hunter, B. A., Ferrari, J., Noel, N., & Jason, L. A. (2015). Hope and abstinence self-efficacy: Positive predictors of negative affect in substance abuse recovery. *Community Mental Health Journal*, *51*(6), 695–700. https://doi.org/10.1007/s10597-015-9888-y

McDonough, M. (2015). Update on medicines for smoking cessation. *Australian Prescriber*, *38*(4), 106–111. https://doi.org/10.18773/austprescr.2015.038

Meier, A., Lambert-Harris, C., McGovern, M. P., Xie, H., An, M., & McLeman, B. (2014). Co-occurring prescription opioid use problems and posttraumatic stress disorder symptom severity. *The American Journal of Drug & Alcohol Abuse*, *40*(4), 304–311. https://doi.org/10.3109/00952990.2014.910519

Miller, W. R., & Tonigan, J. S. (1996) Assessing drinkers' motivation for change: the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES). *Psychology of Addictive Behaviors*, *10*(2), 81–89. https://doi.org/10.1037/0893-164X.10.2.81

Molfenter, T., Sherbeck, C., Zehner, M., Quanbeck, A., McCarty, D., Jee-Seon, K., & Starr, S. (2015). Implementing buprenorphine in addiction treatment: Payer and provider perspectives in Ohio. *Substance Abuse Treatment, Prevention & Policy*, *10*(1), 1–10. https://doi.org/10.1186/s13011-015-0009-2

Moore, B. A., Fiellin, D. A., Cutter, C. J., Buono, F. D., Barry, D. T., Fiellin, L. E., O'Connor, P. G., & Schottenfeld, R. S. (2016). Cognitive behavioral therapy improves treatment outcomes for prescription opioid users in primary care buprenorphine treatment. *Journal of Substance Abuse Treatment*, *71*, 54–57. https://doi.org/10.1016/j.jsat.2016.08.016

National Institute on Drug Abuse. (2018). *Opioid overdose crisis*. https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-crisis

Neale, J., Vitoratou, S., Finch, E., Lennon, P., Mitcheson, L., Panebianco, D., Rose, D., Strang, J., & Marsden, J. (2016). Development and validation of 'SURE': A patient reported outcome measure (PROM) for recovery from drug and alcohol dependence. *Drug and Alcohol Dependence*, *165*, 159–167. https://doi.org/10.1016/j.drugalcdep.2016.06.006

Nosyk, B., Bray, J., Wittenberg, E., Aden, B., Eggman, A., Weiss, R., Potter, J., Ang, A., Hser, Y.-I., Ling, W., & Schackman, B. R. (2015). Short term health-related quality of life

improvement during opioid agonist treatment. *Drug and Alcohol Dependence*, *157*, 121–128. https://doi.org/10.1016/j.drugalcdep.2015.10.009

Oberleitner, L. M. S., Lumley, M. A., Grekin, E. R., M. Z. Smith, K., Loree, A. M., Carty, J. N., & Valentino, D. (2019). Problematic prescription opioid use in a chronic pain treatment facility: The role of emotional processes. *Substance Use & Misuse*, *54*(3), 495–505. https://doi.org/10.1080/10826084.2018.1521426

Öhlin, L., Fridell, M., & Nyhlén, A. (2015). Buprenorphine maintenance program with contracted work/education and low tolerance for non-prescribed drug use: A cohort study of outcome for women and men after seven years. *BMC Psychiatry*, *15*(1), 1–13. https://doi.org/10.1186/s12888-015-0415-z

Pecoraro, A., Ma, M., & Woody, G. E. (2012). The science and practice of medication-assisted treatments for opioid dependence. *Substance Use & Misuse*, *47*(8/9), 1026–1040. https://doi.org/10.3109/10826084.2012.663292

Peele, S. (2000). What addiction is and is not: The impact of mistaken notions of addiction. *Addiction Research*, *8*(6), 599–607. https://doi.org/10.3109/16066350008998991

Perreault, M., Julien, D., White, N. D., Rabouin, D., Lauzon, P., & Milton, D. (2015). Psychological predictors of retention in a low-threshold methadone maintenance treatment for opioid addicts: A 1-year follow-up study. *Substance Use & Misuse*, *50*(1), 24–31. https://doi.org/10.3109/10826084.2014.957769

Rastegar, D. A., Sharfstein Kawasaki, S., King, V. L., Harris, E. E., & Brooner, R. K. (2016). Criminal charges prior to and after enrollment in opioid agonist treatment: A comparison of methadone maintenance and office-based buprenorphine. *Substance Use & Misuse*, *51*(7), 803–811. https://doi.org/10.3109/10826084.2016.1155608

Rogers, A. H., Shepherd, J. M., Paulus, D. J., Orr, M. F., Ditre, J. W., Bakhshaie, J., & Zvolensky, M. J. (2019). The interaction of alcohol use and cannabis use problems in relation to opioid misuse among adults with chronic pain. *International Journal of Behavioral Medicine*, *26*(5), 569–575. https://doi.org/10.1007/s12529-019-09813-3

Roose, R., Fuentes, L., & Cheema, M. (2012). Messages about methadone and buprenorphine in reality television: A content analysis of celebrity rehab with Dr. Drew. *Substance Use & Misuse*, *47*(10), 1117–1124. https://doi.org/10.3109/10826084.2012.680172

Sigmon, S. C., Bisaga, A., Nunes, E. V., O'Connor, P. G., Kosten, T., & Woody, G. (2012). Opioid detoxification and naltrexone induction strategies: Recommendations for clinical practice. *The American Journal of Drug & Alcohol Abuse, 38*(3), 187–199. https://doi.org/10.3109/00952990.2011.653426

Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., Yoshinobu, L., Gibb, J., Langelle, C., & Harney, P. (1991). The will and the ways: Development and validation of an individual differences measure of hope. *Journal of Personality and Social Psychology*, *60*(4), 570–585. https://doi.org/10.1037/0022-3514.60.4.570

Snyder, C. R., Sympson, S. C., Ybasco, F. C., Borders, T. F., Babyak, M. A., & Higgins, R. L. (1996). Development and validation of the State Hope Scale. *Journal of Personality and Social Psychology*, *70*(2), 321–335. https://doi.org/10.1037//0022-3514.70.2.321

Socías, M. E., & Ahamad, K. (2016). An urgent call to increase access to evidence-based opioid agonist therapy for prescription opioid use disorders. *Canadian Medical Association Journal*, *188*(17–18), 12081209. https://doi.org/10.1503/cmaj.160554

Sohler, N., Weiss, L., Egan, J. E., Lopez, C., Favaro, J., Cordero, R., & Cunningham, C. (2013). Consumer attitudes about opioid addiction treatment: A focus group study in New York City. *Journal of Opioid Management*, *9*(2), 111–119. https://doi.org/10.5055/jom.2013.0152

Sordo, L., Barrio, G., Bravo, M. J., Indave, B. I., Degenhardt, L., Wiessing, L., Ferri, M., & Pastor-Barriuso, R. (2017). Mortality risk during and after opioid substitution treatment: Systematic review and meta-analysis of cohort studies. *British Medical Journal*, *357*, j1550. https://doi.org/10.1136/bmj.j1550

Soyka, M. (2013). Buprenorphine use in pregnant opioid users: A critical review. *CNS Drugs*, *27*(8), 653–662. https://doi.org/10.1007/s40263-013-0072-z

Soyka, M., Limmer, C., Lehnert, R., Koller, G., Martin, G., Küfner, H., Kagerer, S., & Haberthür, A. (2011). A comparison of cognitive function in patients under maintenance treatment with heroin, methadone, or buprenorphine and healthy controls: An open pilot study. *The American Journal of Drug and Alcohol Abuse*, *37*(6), 497–508. https://doi.org/10.3109/00952990.2011.600381

Springer, R., Marino, M., Bailey, S. R., Angier, H., O'Malley, J. P., Hoopes, M., Lindner, S., DeVoe, J. E., & Huguet, N. (2019). Prescription opioid use patterns, use disorder diagnoses and addiction treatment receipt after the 2014 Medicaid expansion in Oregon. *Addiction*, *114*(10), 1775–1784. https://doi.org/10.1111/add.14667

Stein, B. D., Pacula, R. L., Gordon, A. J., Burns, R. M., Leslie, D. L., Sorbero, M. J., Bauhoff, S., Mandell, T. W., & Dick, A. W. (2015). Where is buprenorphine dispensed to treat opioid use disorders? The role of private offices, opioid treatment programs, and

substance abuse treatment facilities in urban and rural counties. *The Milbank Quarterly*, *93*(3), 561–583. https://doi.org/10.1111/1468-0009.12137

Streltzer, J., Davidson, R., & Goebert, D. (2015). An observational study of buprenorphine treatment of the prescription opioid dependent pain patient. *The American Journal on Addictions*, *24*, 357–361. https://doi.org/10.1111/ajad.12198

Strike, C., Millson, M., Hopkins, S., & Smith, C. (2013). What is low threshold methadone maintenance treatment? *International Journal of Drug Policy*, *24*(6), 51–56. https://doi.org/10.1016/j.drugpo.2013.05.005

Strobbe, S., Mathias, L., Gibbons, P. W., Humenay, E., & Brower, K. J. (2011). Buprenorphine clinic for opioid maintenance therapy: Program description, process measures, and patient satisfaction. *Journal of Addictions Nursing*, *22*(1/2), 8–12. https://doi.org/10.3109/10884602.2010.545090

Substance Abuse and Mental Health Services Administration. (2020). *Medication-assisted treatment*. https://www.samhsa.gov/medication-assisted-treatment

Suzuki, J. (2016). Medication-assisted treatment for hospitalized patients with intravenous-drug-use related infective endocarditis. *The American Journal on Addictions*, *25*(3), 191–194. https://doi.org/10.1111/ajad.12349

Suzuki, J., DeVido, J., Kalra, I., Mittal, L., Shah, S., Zinser, J., & Weiss, R. D. (2015). Initiating buprenorphine treatment for hospitalized patients with opioid dependence: A case series. *The American Journal on Addictions*, *24*(1), 10–14. https://doi.org/10.1002/ajad.12161.x

Tate, S. R., McQuaid, J. R., & Brown, S. A. (2005). Characteristics of life stressors predictive of substance treatment outcomes. *Journal of Substance Abuse Treatment*, *29*(2), 107–115. https://doi.org/10.1016/j.jsat.2005.05.003

Thomas, C. P., Garnick, D. W., Horgan, C. M., Miller, K., Harris, A. H., & Rosen, M. M. (2013). Establishing the feasibility of measuring performance in use of addiction pharmacotherapy. *Journal of Substance Abuse Treatment*, *45*(1), 11–18. https://doi.org/10.1016/j.jsat.2013.01.004

Tkacz, J., Severt, J., Cacciola, J., & Ruetsch, C. (2012). Compliance with buprenorphine medication-assisted treatment and relapse to opioid use. *The American Journal on Addictions, 21*(1), 55–62. https://doi.org/10.1111/j.1521-0391.2011.00186.x

Tsui, J. I., Anderson, B. J., Strong, D. R., & Stein, M. D. (2014). Craving predicts opioid use in opioid-dependent patients initiating buprenorphine treatment: A longitudinal study. *The American Journal of Drug & Alcohol Abuse*, *40*(2), 163–169. https://doi.org/10.3109/00952990.2013.848875

Tucker, D., Milloy, M., Hayashi, K., Nguyen, P., Kerr, T., & Wood, E. (2015). Factors associated with illicit methadone injecting in a Canadian setting. *The American Journal on Addictions*, *24*(6), 532–537. https://doi.org/10.1111/ajad.12257

Turner, L., Kruszewski, S. P., & Alexander, G. C. (2015). Trends in the use of buprenorphine by office-based physicians in the United States, 2003-2013. *The American Journal on Addictions*, *24*(1), 24–29. https://doi.org/10.1111/j.1521-0391.2014.12174.x

Unger, J. R. (2017). Staring down the opioid epidemic. *Journal of Family Practice*, *66*(1), 8.

Van de Mortel, T. F. (2008). Faking it: Social desirability response bias in self-report research. *Australian Journal of Advanced Nursing*, *25*(4), 40–48. https://www.researchgate.net/publication/46574012_Faking_it_Social_desirability_response_bias_in_self-report_research

Vowles, K. E., McEntee, M. L., Julnes, P. S., Frohe, T., Ney, J. P., & van der Goes, D. N. (2015). Rates of opioid misuse, abuse, and addiction in chronic pain: A systematic review and data synthesis. *Pain*, *156*(4), 569–576. https://doi.org/10.1097/01.j.pain.0000460357.01998.f1

Weiss, R. D., Potter, J. S., Fiellin, D. A., Byrne, M., Connery, H. S., Dickinson, W., Gardin, J., Griffin, M. L., Gourevitch, M. N., Haller, D. L., Hasson, A. L., Huang, Z., Jacobs, P., Kosinski, A. S., Lindblad, R., McCance-Katz, E. F., Provost, S. E., Selzer, J., Somoza, E. C., . . . Ling, W. (2011). Adjunctive counseling during brief and extended buprenorphine-naloxone treatment for prescription opioid dependence. *Archives of General Psychiatry, 68*(12), 1238–1246. https://doi.org/10.1001/archgenpsychiatry.2011.121

Westermeyer, J., & McCance-Katz, E. F. (2012). Course and treatment of buprenorphine/naloxone withdrawal: An analysis of case reports. *The American Journal on Addictions*, *21*(5), 401–403. https://doi.org/10.1111/j.1521-0391.2012.00259.x

Westreich, L. (2015). Medication-assisted treatment and drug courts. *Psychiatric Times*, *32*(11), 25–26. https://www.psychiatrictimes.com/view/medication-assisted-treatment-and-drug-courts

Wilson, C. G., & Fagan, E. B. (2017). Providing office-based treatment of opioid use disorder. *Annals of Family Medicine*, *15*(5), 481. https://doi.org/10.1370/afm.2139

Yang, J. C., Roman-Urrestarazu, A., & Brayne, C. (2020). Responses among substance abuse treatment providers to the opioid epidemic in the USA: Variations in buprenorphine and methadone treatment by geography, operational, and payment characteristics, 2007–16. *PLOS ONE*, *15*(3), 1–13. https://doi.org/10.1371/journal.pone.0229787

APPENDIX A: Informed Consent

CONSENT FORM

PREDICTORS OF TREATMENT RETENTION AND QUALITY OF RECOVERY FROM
OPIOID USE DISORDER USING BUPRENORPHINE IN MEDICATION ASSISTED
TREATMENT: THE EFFECTS OF HOPE, GRIT, AND READINESS TO CHANGE

John Pulliam
Liberty University
Department of Counselor Education and Family Studies

You are invited to be in a research study on predictors of treatment success of buprenorphine outpatient medication assisted treatment (MAT). You were selected as a possible participant because you are currently seeking this treatment. You are eligible to participate, unless you are under 18, currently experiencing psychosis or have an untreated psychotic disorder, or are facing impending incarceration. Please read this form and ask any questions you may have before agreeing to be in the study.

John Pulliam, a doctoral candidate in the Department of Counselor Education and Family Studies at Liberty University, is conducting this study.

Background Information: The purpose of this study is to determine if certain personal characteristics, such as hope, grit and readiness to change, can predict retention and success in the MAT program.

Procedures: If you agree to be in this study, I would ask you to do the following things:

New Clients:
1. Complete the demographic survey, Adult Hope Scale, Grit Scale, and Socrates 7D at program enrollment/first visit. This will take between 20-60 minutes
2. Complete Substance Use Recovery Evaluation Scale at next visit after 60 days enrolled. This will take between 15-30 minutes

Existing Clients:
1. For existing clients, complete the Adult Hope Scale and Grit Scale. This will take between 15-30 minutes

Risks: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

Benefits: Participants should not expect to receive a direct benefit from participating in this research; however, this research could benefit MAT in the future.

Compensation: Participants will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

- A coding system will be used to conceal all participant identities
- All research data will be stored separately and securely on password-protected computers. Any related flash drives will be stored in a locked file cabinet.

Conflicts of Interest Disclosure: The researcher serves as owner/counselor at Choose Life. Your answers on the questionnaires will not affect you in any way in the program. This is for research only and will be separate from your patient chart. This disclosure is made so that you can decide if this relationship will affect your willingness to participate in this study. No action will be taken against an individual based on his or her decision to participate in this study. This research study is completely voluntary.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

How to Withdraw from the Study: If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

Contacts and Questions: The researcher conducting this study is John Pulliam. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at ▨▨▨▨▨ or ▨▨▨▨▨▨▨▨. You may also contact the researcher's faculty chair, Dr. David Jenkins a ▨▨▨▨▨▨

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

_____
Signature of Participant   Date

_____
Signature of Investigator   Date

APPENDIX B: Adult Hope Scale

Scale (taken from http://www.ppc.sas.upenn.edu/hopescale.pdf)

Directions: Read each item carefully. Using the scale shown below, please select the number that best describes YOU and put that number in the blank provided.

1. = Definitely False
2. = Mostly False
3. = Somewhat False
4. = Slightly False
5. = Slightly True
6. = Somewhat True
7. = Mostly True
8. = Definitely True

___ 1. I can think of many ways to get out of a jam.

___ 2. I energetically pursue my goals.

___ 3. I feel tired most of the time.

___ 4. There are lots of ways around any problem.

___ 5. I am easily downed in an argument.

___ 6. I can think of many ways to get the things in life that are important to me.

___ 7. I worry about my health.

___ 8. Even when others get discouraged, I know I can find a way to solve the problem.

___ 9. My past experiences have prepared me well for my future.

___10. I've been pretty successful in life.

___11. I usually find myself worrying about something.

___12. I meet the goals that I set for myself.

Scoring:

Items 2, 9, 10, and 12 make up the agency subscale.
Items 1, 4, 6, and 8 make up the pathway subscale.

Researchers can either examine results at the subscale level or combine the two subscales to create a total hope score.

APPENDIX C: 12-Hour Grit Scale

12-Item Grit Scale

Objective: To learn about the concept of grit and how it applies to academic success

Respond to the following 12 items. Be honest – there are no right or wrong answers.

1. I have overcome setbacks to conquer an important challenge.
   - ☐ Very much like me
   - ☐ Mostly like me
   - ☐ Somewhat like me
   - ☐ Not much like me
   - ☐ Not like me at all

2. New ideas and projects sometimes distract me from previous ones.*
   - ☐ Very much like me
   - ☐ Mostly like me
   - ☐ Somewhat like me
   - ☐ Not much like me
   - ☐ Not like me at all

3. My interests change from year to year.*
   - ☐ Very much like me
   - ☐ Mostly like me
   - ☐ Somewhat like me
   - ☐ Not much like me
   - ☐ Not like me at all

4. Setbacks do not discourage me.
   - ☐ Very much like me
   - ☐ Mostly like me
   - ☐ Somewhat like me
   - ☐ Not much like me
   - ☐ Not like me at all

5. I have been obsessed with a certain idea or project for a short time but later lost interest.*
   - ☐ Very much like me
   - ☐ Mostly like me
   - ☐ Somewhat like me
   - ☐ Not much like me
   - ☐ Not like me at all

6. I am a hard worker.
   - ☐ Very much like me
   - ☐ Mostly like me
   - ☐ Somewhat like me
   - ☐ Not much like me
   - ☐ Not like me at all

7. I often set a goal but later choose to pursue a different one.*
   - ☐ Very much like me
   - ☐ Mostly like me
   - ☐ Somewhat like me
   - ☐ Not much like me
   - ☐ Not like me at all

8. I have difficulty maintaining my focus on projects that take more than a few months to complete.*
   - ☐ Very much like me
   - ☐ Mostly like me
   - ☐ Somewhat like me
   - ☐ Not much like me
   - ☐ Not like me at all

9. I finish what I begin.
   - ☐ Very much like me
   - ☐ Mostly like me
   - ☐ Somewhat like me
   - ☐ Not much like me
   - ☐ Not like me at all

10. I have achieved a goal that took years of work.
    - ☐ Very much like me
    - ☐ Mostly like me
    - ☐ Somewhat like me
    - ☐ Not much like me
    - ☐ Not like me at all

11. I become interested in new pursuits every few months.*
    - ☐ Very much like me
    - ☐ Mostly like me
    - ☐ Somewhat like me
    - ☐ Not much like me
    - ☐ Not like me at all

12. I am diligent.
    - ☐ Very much like me
    - ☐ Mostly like me
    - ☐ Somewhat like me
    - ☐ Not much like me
    - ☐ Not like me at all

APPENDIX D: Stages of Change Readiness and Treatment Eagerness Scale,

Drug Version 7D

CASAA Research Division*

Personal Drug Use Questionnaire (SOCRATES 7D)

INSTRUCTIONS: Please read the following statements carefully. Each one describes a way that you might (or might not) feel <u>about your drug use</u>. For each statement, circle one number from 1 to 5, to indicate how much you agree or disagree with it <u>right now</u>. Please circle one and only one number for every statement.

	Strongly Disagree	Disagree	Undecided or Unsure	Agree	Strongly Agree
1. I really want to make changes in my use of drugs.	1	2	3	4	5
2. There are times when I wonder whether I use drugs too much.	1	2	3	4	5
3. I definitely have some problems related to drugs.	1	2	3	4	5
4. I have already started making some changes in my use of drugs.	1	2	3	4	5
5. I was using drugs too much at one time, but I've managed to change that.	1	2	3	4	5
6. The only reason I'm here is that somebody made me come.	1	2	3	4	5
7. Sometimes I wonder if I am an addict.	1	2	3	4	5
8. I really want to do something about my use of drugs.	1	2	3	4	5
9. I'm not just thinking about changing my drug use, I'm already doing something about it.	1	2	3	4	5
10. I have already changed my drug use, and I am looking for ways to keep from slipping back to my old pattern.	1	2	3	4	5
11. I have serious problems with drugs.	1	2	3	4	5
12. Sometimes I wonder if my drug use is hurting other people.	1	2	3	4	5

	Strongly Disagree	Disagree	Undecided or Unsure	Agree	Strongly Agree
13. I use drugs too much at times.	1	2	3	4	5
14. I am actively doing things now to cut down or stop my use of drugs.	1	2	3	4	5
15. I used to have problems with drugs, but not any more.	1	2	3	4	5
16. I think I need to be coming to treatment for help with my drug use.	1	2	3	4	5
17. I question whether drugs are good for me.	1	2	3	4	5
18. If I don't change my drug use soon, my problems are going to get worse.	1	2	3	4	5
19. I have already been trying to change my drug use, and I am here to get more help with it.	1	2	3	4	5
20. Now that I have changed my drug use, it is important for me to hold onto the changes I've made.	1	2	3	4	5
21. I know that I have a drug problem.	1	2	3	4	5
22. I am uncertain whether I use drugs too much.	1	2	3	4	5
23. It is definitely time for me to do something about the problems I have been having with drugs.	1	2	3	4	5
24. I have started to carry out a plan to cut down or stop my drug use.	1	2	3	4	5
25. I want help to keep from going back to the drug problems that I had before.	1	2	3	4	5
26. I am fairly normal in my use of drugs.	1	2	3	4	5
27. Sometimes I wonder if I am in control of my drug use.	1	2	3	4	5
28. I am a drug addict.	1	2	3	4	5
29. I am working hard to change my drug use.	1	2	3	4	5
30. I am worried that my previous problems with drugs might come back.	1	2	3	4	5

	Strongly Disagree	Disagree	Undecided or Unsure	Agree	Strongly Agree
31. I've had more trouble because of drugs than most people do.	1	2	3	4	5
32. I don't think I have "a problem" with drugs, but there are times when I wonder if I use drugs too much.	1	2	3	4	5
33. I have a drug problem.	1	2	3	4	5
34. I know that my drug use has caused problems, and I am trying to do something about it.	1	2	3	4	5
35. I have made some changes in my drug use, and I want some help to keep going.	1	2	3	4	5
36. My problems are at least partly due to my own drug use.	1	2	3	4	5
37. I don't know whether or not I should change my drug use.	1	2	3	4	5
38. My drug use is causing a lot of harm.	1	2	3	4	5
39. I have a serious problem with drugs, and I have already started to overcome it.	1	2	3	4	5
40. I am clean and sober, and I want to stay that way.	1	2	3	4	5

CASAA Research Division

SOCRATES Scoring Form
All 40-Item Versions (7A and 7D)

Transfer the clients' answers from questionnaire (see note below):

P Scale	C Scale	D Scale	A Scale	M Scale
*1_____	2_____	3_____	4_____	5____
6_____	7_____	8_____	9_____	10____
*11_____	12_____	13____	14_____	15____
*16_____	17_____	18____	19_____	20___
*21_____	22_____	23____	24_____	25___
26_____	27_____	28____	29_____	30___
*31_____	32_____	33____	34_____	35___
*36_____	37_____	38____	39_____	40___

TOTALS   P_____   C _____   D_____   A_____   M___

Possible score range = 8 - 40 on each of the five scales

_____

IMPORTANT SCORING NOTE

For items 1, 11, 16, 21, 31, and 36 (also marked with *) reverse the direction of scoring before recording the raw score.

If the client circled:	You record above:
5	1
4	2
3	3
2	4
1	5

For all other items (not marked with *) simply transfer the answer that the client circled.

_____

APPENDIX E: Substance Use Recovery Evaluator

SUBSTANCE USE RECOVERY EVALUATOR

SURE

| CONFIDENTIAL |

THESE QUESTIONS ARE TO HELP YOU MEASURE YOUR PERSONAL RECOVERY
FROM DRUG AND/ OR ALCOHOL DEPENDENCE

THEY HAVE BEEN DESIGNED WITH THE HELP OF SERVICE USERS SO THAT
THEY MEASURE WHAT IS IMPORTANT TO PEOPLE IN RECOVERY

How to fill in this questionnaire

1. Please complete all sections of the questionnaire (A, B & C)
2. Please **think about the last week** when completing each question
3. Please provide **one answer** for each statement. For example...

Example statement

Never	On 1 or 2 days	On 3 or 4 days	On 5 or 6 days	Every day
O	O	✗	O	O

SECTION A

Thinking about the last week, please rate yourself on each of the following statements

DRINKING AND DRUG USE (Part 1) – *Thinking about the last week*

1. I have drunk too much

Never	On 1 or 2 days	On 3 or 4 days	On 5 or 6 days	Every day
O	O	O	O	O

2. I have used street drugs

Never	On 1 or 2 days	On 3 or 4 days	On 5 or 6 days	Every day
O	O	O	O	O

3. I have experienced cravings

Never	On 1 or 2 days	On 3 or 4 days	On 5 or 6 days	Every day
O	O	O	O	O

DRINKING AND DRUG USE (Part 2) – *Still thinking about the last week*

4. I have coped with problems without misusing drugs or alcohol

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

5. I have managed pains and ill-health without misusing drugs or alcohol

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

6. I have been spending my free time on hobbies and interests that do not involve drugs or alcohol

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

SECTION B

Please continue to read all questions & response options carefully

SELF-CARE – *Still thinking about the last week*

7. I have been taking care of my mental health				
All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

8. I have been taking care of my physical health				
All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

9. I have been eating a good diet				
All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

10. I have slept well				
All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

11. I have had a good daily routine				
All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

RELATIONSHIPS – *Still thinking about the last week*

12. I have been getting on well with people				
All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

13. I have felt supported by people around me				
All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

14. I have been treated with respect and consideration by people around me

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

15. I have treated others with respect and consideration

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

MATERIAL RESOURCES – *Still thinking about the last week*

16. I have had stable housing

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

17. I have had a regular income (from benefits, work, or other legal sources)

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

18. I have been managing my money well

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

OUTLOOK ON LIFE – *Still thinking about the last week*

19. I have felt happy with my overall quality of life

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

20. I have felt positive

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

21. I have had realistic hopes and goals for myself

All of the time	Most of the time	A fair amount of the time	A little of the time	None of the time
O	O	O	O	O

SECTION C

Still thinking about the last week, *please record how* **important** *each of the following have been to you*

1. Reducing or abstaining from drinking or drug taking			
Not important	A little important	Important	Very important
O	O	O	O

2. Looking after yourself (physically taking care of yourself, mentally taking care of yourself, having a good diet , sleeping well, having a good routine)			
Not important	A little important	Important	Very important
O	O	O	O

3. Having good relationships with other people (getting on with people, feeling supported by people, being treated with respect, treating others with respect)			
Not important	A little important	Important	Very important
O	O	O	O

4. Having resources and belongings (stable housing, regular income, managing money)			
Not important	A little important	Important	Very important
O	O	O	O

5. Outlook on life (having a good quality of life, feeling positive, having realistic hopes and goals)			
Not important	A little important	Important	Very important
O	O	O	O

SCORING:

Questions 1-3	Score	Score range
'Never' OR *'On 1 or 2 days'*	**= 3**	Drinking and drug use = 6-18
'On 3 or 4 days'	**= 2**	
'On 5 or 6 days' OR *'Every day'*	**= 1**	Self-care = 5-15
Questions 4-21		Relationships = 4-12
'All of the time' OR *'Most of the time'*	**= 3**	Material resources = 3-9
'A fair amount of the time'	**= 2**	Outlook on life = 3-9
'A little of the time' OR *'None of the time'*	**= 1**	Total Score = 21-63
Section C = Not scored	--	

MY TOTAL SCORE: _____

DATE: _____

APPENDIX F: Liberty University Institutional Review Board Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

September 19, 2019

John Pulliam, LPC
IRB Approval 3867.091919: Predictors of Treatment Retention and Quality of Recovery from Opioid Use Disorder Using Buprenorphine in Medication Assisted Treatment: The Effects of Hope, Grit, and Readiness to Change

Dear John Pulliam, LPC,

We are pleased to inform you that your study has been approved by the Liberty University IRB. This approval is extended to you for one year from the date provided above with your protocol number. If data collection proceeds past one year or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Your study falls under the expedited review category (45 CFR 46.110), which is applicable to specific, minimal risk studies and minor changes to approved studies for the following reason(s):

> 7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.)

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,
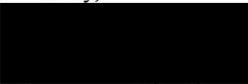
Administrative Chair of Institutional Research
Research Ethics Office

LIBERTY
UNIVERSITY.
Liberty University | Training Champions for Christ since 1971

APPENDIX G: Recruitment Letter

Greetings,

I am inviting you to participate in a clinical study.

John Pulliam, a doctoral candidate in the Department of Counselor Education and Family Studies at Liberty University, is conducting this study. I am conducting research to better understand predictors of success in an outpatient buprenorphine program. The purpose of my research is to measure the personal characteristics of hope, grit, and readiness to change in relation to treatment retention and quality of recovery.

Since you are seeking this specific treatment, you are eligible to participate. If you are willing, you will be asked to:

1. Complete the Adult Hope Scale, Grit Scale, and Socrates 7D at program enrollment/first visit. This will take between 20-60 minutes

2. Complete Substance Use Recovery Evaluation Scale at next visit after 60 days enrolled. This will take between 15-30 minutes

This information will be completely anonymous and will remain confidential.

To participate, first review and sign the attached consent document, which contains additional information about the research. Then, complete the attached three questionnaires, which we will collect and file in your confidential chart. We will do these in session, so the counselor can answer any questions you may have. On your next visit after 60 days in the program, you will complete the final questionnaire.

Thank you for participating. The information gathered in this study could help to improve treatment outcomes.

Sincerely,

John Pulliam MA, LPC, LCAS, CCS