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Examining the Relationship Between Personality, Values, and Treatment Retention in Substance Abuse Programs: A Quantitative Correlation Analysis

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This is to certify that the doctoral dissertation by

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Dissertation Submitted in Partial Fulfillment

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Abstract

Substance Use Disorder (SUD) continues to be a global issue with devasting effects on the community, loved ones, and individuals suffering from SUD. Healthcare professionals continue to develop improved treatments for addressing patient needs, yet treatment abandonment remains high. While studies have examined treatment retention factors, few have examined the relationship between personality traits, values, and treatment retention. This study examined the relationship between the five-factor model of personality traits, the theory of formal axiology of values, and the days in treatment for adults in a telehealth substance abuse outpatient clinic in the United States. The study assessed the combined relative effects of personality traits and values in explaining the variance in treatment retention. The study was grounded in the five-factor model of personality traits and the theory of formal axiology of values. The research design used a secondary dataset and a quantitative cross-sectional correlational analysis approach to evaluate the combined and relative effects of the big five aspect scale and the Hartman value profile to days in treatment. The data analysis included multiple linear regression using SPSS version 29. The results indicated that values were a significant predictor of treatment retention. Additional exploratory analysis showed personality traits and not values were significant predictors of treatment retention. The results may be used to improve social change through SUD treatment outcomes that enhance the lives of individuals affected by SUD and their communities.

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Dedication

This dissertation is dedicated to my wife for constantly challenging and sparring with me. She brings out the best in me, and this dissertation is a small example of her influence on my thirst for knowledge. Additionally, I dedicate this to Dr. David Kan. He is an inspiration and consummate academic with the rare ability to bring his deep knowledge into practice.

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Chapter 1: Introduction to the Study

Introduction

Substance use disorder (SUD) is a global issue that causes physical, mental, and spiritual suffering in the individual, family, and community (Jalali et al., 2019). In 2020, substance abuse-related deaths increased by 15% annually to 105,000, partly due to the prevalence and potency of synthetic opioids such as fentanyl (Harton et al., 2023; Hercyzk et al., 2023). An additional 178,000 deaths occurred from alcohol abuse (National Institute of Alcohol Abuse and Alcoholism, n.d.). Deaths related to substance use disorders surpassed all accidental deaths, including guns and car accidents combined (Stobbe, 2021). Beyond the mortality risks, SUD-related costs exceeded half a trillion dollars in health care, criminal justice, occupational, and societal costs (Ali et al., 2017; Fletcher et al., 2014). Thus, SUD is lethal and expensive.

In the United States in 2014, approximately 22 million people needed SUD treatment services, yet few seek it out, and even fewer complete treatment (Lipari & Van Horn, 2017). Individuals seeking SUD treatment have remained relatively flat at about 10% annually since the early 2000s (Lee & O'Malley, 2018; Zenmore et al., 2021). Of those initiating treatment, completion rates may be as low as 1 out of 10 (Herczyk et al., 2023). Moreover, treatment abandonment increases the likelihood of a fatal overdose due to reduced tolerance, with post-discharge overdoses higher than average (Ledberg & Reitan, 2022). Therefore, the small portion of individuals with SUD who seek treatment are more likely to fail and encounter higher mortality risks, thereby underscoring the importance of treatment retention.

Studies of treatment dropout have centered around medical and behavioral therapies (Anton et al., 2003). More recently, SUD treatment has shifted toward a medical model approach that has paralleled the rise of pharmacotherapies (Brorson et al., 2013). The popularity of the medical model and research supporting the effectiveness of medications in treating SUD have contributed to the focus on pharmacologic therapies (Ray et al., 2020). Yet, evidence suggests that personal and social factors are more critical to treatment retention (Arun et al., 2004).

Addressing the psychological factors associated with SUD is more complex than the physiological factors, such as cravings and withdrawal (Jalali et al., 2019). Most treatment approaches utilize a symptom or diagnosis approach that narrowly focuses on SUD-specific factors (Jalali et al., 2019). Additionally, unlike mental health conditions, whereby initial exposure to behavioral therapy provides outsized benefits, SUD therapies require considerably more time to achieve similar effects (Brorson et al., 2013). Thus, treatment providers encounter challenges retaining patients to obtain long-term benefits.

Limited evidence supports one behavioral therapy over another (Jalali et al., 2019). However, behavioral therapies have similar effect sizes, suggesting success lies in their common elements (Knuuttilla et al., 2010). More recently, a "third-wave" of therapies has indicated that transdiagnostic, broad-based psychological factors may be better targets for SUD treatment (Dalton et al., 2021). Unlike traditional therapies that infer from SUD symptoms an underlying latent pathology, third-wave therapies target more generalized psychological processes that transcend psychopathologies (Hayes & Hoffman, 2021). Core factors among Third-wave therapies are cognitive flexibility,

values, and temporal orientation (Byrne et al., 2019; Hayes & Hoffman, 2021). Recovery from SUD has been characterized as changes in an individual's attitudes and beliefs (Jalali et al., 2019). Moreover, patient-centered medical decision-making has improved outcomes by aligning treatment options with patients' attitudes and beliefs (Liu & Xiao, 2023). Hence, therapies targeting meta-cognitive processes instead of substance-related cognitions may positively influence treatment retention.

Few studies have examined personality traits and value structures in SUD treatment retention. Personality traits are relatively stable patterns of thought, emotion, and behaviors that influence how an individual perceives and engages the world (Bleidorn et al., 2021). Personality traits have been associated with substance abuse, choice of substance, and more extended periods of abstinence after SUD (Dash et al., 2019; Myers, 2019; Ribadier et al., 2016). Values are trans-situational goals or motives that serve as standards in decision-making and affect an individual's attitudes, beliefs, and behaviors (Schwartz, 2012). Differences in value priorities have been observed by researchers among individuals in recovery, in treatment, and the general public (Brown & Peterson, 1990; Dollinger & Kobayashi, 2003; Toler, 1975). However, few studies have examined these personality traits and values concerning SUD treatment dropout. Thus, this study investigated the relationship between personality traits, values, and SUD treatment retention.

This chapter includes a review of the background literature, problem statement, purpose of the study, research questions and hypotheses, theoretical framework, nature of

the study, definitions, scope and delimitations, assumptions, limitations, and significance. This section concludes with a summary that transitions to the Literature Review chapter.

Background

SUD treatment abandonment rates have been reported as high as 91% (Herczyk et al., 2023). A full continuum of care is available to meet a patient's condition severity and needs, with the most acute cases being treated in inpatient or detox settings and more mild cases being treated in outpatient settings. Comprehensive assessment tools have also been created to better match patients to the appropriate care (American Society of Addiction Medicine, n.d.). Nonetheless, dropout remains a pernicious problem (Mark et al., 2021).

Hundreds of studies have examined treatment retention, with few generalizable findings. Several systematic reviews have identified the benefits of pharmacotherapy combined with behavioral therapy as superior to behavioral therapy alone when effective medications are available (Anton et al., 2006; Dalton et al., 2021; Ray et al., 2020; Timko et al., 2015). However, these approaches have not substantially impacted retention (Jalali et al., 2019). Additionally, a systematic review of 122 studies found that age, cognitive deficits, co-occurring issues, and treatment alliance were significant factors in retention (Brorson et al., 2013). Emerging adults have the lowest retention rate, while evidence on the relationship between co-occurring disorders and retention has been mixed (Daigre et al., 2021; Dalton et al., 2021). However, cognitive deficits and treatment alliance demonstrate a reliable impact on retention (Brorson et al., 2013). Thus, only some factors have been consistently associated with poor treatment retention.

Examination of SUD therapies and their impact on treatment retention have shown cognitive behavioral therapy (CBT), relapse prevention, contingency management, and motivational interviewing to be effective (Ball, 2008; Knuuttila et al., 2011). However, evidence does not support one therapy as superior to another (SAMHSA, 1997). Thus, the different therapeutic approaches suggest the shared element across therapies may yield improvement (Knuuttilla et al., 2010).

Beyond medications and cognitive and behavioral therapies, patient psychological and social factors appear more consequential. Both mental health conditions and sub-clinical psychopathologies and processes, such as emotional regulation, motivation, and stress, have been linked to treatment dropout (Ali et al., 2017; Daigre et al., 2021; Fletcher et al., 2014; Leza et al., 2021; Lyvers et al., 2018)., Additionally, social factors have been connected to treatment retention, with the patient-staff relationship being crucial (Ball et al., 2006; Laudet et al., 2009; Yang et al., 2018; Zemore et al., 2021). Evidence remains equivocal, and few practical approaches have successfully increased retention.

This has contributed to developing third-wave therapies that target general psychological processes. Unlike traditional cognitive and behavioral therapies focusing on controlling and ameliorating SUD-related cognitive processes, third-wave therapies emphasize cognitive awareness and acceptance of thoughts and feelings to block maladapted behavioral responses (Byrne et al., 2019). Third-wave therapies take a more holistic approach by targeting general attitudes, beliefs, and behaviors, emphasizing

distress tolerance, cognitive flexibility, and temporal orientation (Hayes & Hoffman, 2021). Third-wave therapies also focus on reactivity and values (Garey et al., 2020).

A central aspect of third-wave therapies and treatment retention may be personality traits. Personality traits are stable patterns of thought, feelings, and beliefs that guide how an individual experiences the world (Niemeijer et al., 2023). However, few studies have examined the relationship to substance abuse. Patients being treated for alcohol use disorder exhibited behaviors of isolation, denial, acting out, and passive-aggressiveness that align with neuroticism personality traits (Ribadier et al., 2016). Additionally, studies have shown a connection between personality traits and substance abuse (Dash et al., 2019). Other studies have shown a link between retention and a combination of personality traits with high neuroticism and low extraversion, openness, agreeableness, or conscientiousness (Niemeijer et al., 2023; Schmidt et al., 2018; Zemore et al., 2021). Thus, it appears that personality traits may influence substance use disorder and treatment outcomes.

While third-wave therapies target values, few studies have investigated values and SUD treatment retention. Values are psychological constructs of an individual's desires that influence motivation (Schwartz, 2021). Values significantly affect attitudes, beliefs, and behaviors (Sagiv & Roccas 2021). Studies have shown that individuals engaging in substance abuse share similar value rankings, and value priorities are established early in life (Benish-Weisman et al., 2017; Besika, 2022). Additionally, several studies examined the relative importance of values and SUD, noting that individuals in recovery possessed different value rankings than patients in SUD treatment and compared to the general

public (Brown & Peterson, 1990; Toler, 1975). Further, motivation is a core component of treatment retention, and values influence motivation. Thus, values may be a significant factor in treatment retention.

Problem Statement

Substance use disorders remain a top priority for public health professionals, health care providers, and community-based organizations. The deleterious effects of SUD go beyond the individual and impact loved ones and the community. However, the recent prevalence of synthetic opioids and stimulants has led to increased fatalities associated with substance abuse (Hoffman, 2024). For example, fentanyl is commonly found in illicit marijuana, benzodiazepine, and methamphetamine drugs (DEA, n.d.). Moreover, polysubstance abuse is an increasing problem (Coleman, 2023). While a small portion of individuals with SUD will seek professional care, the problem is that individuals who enter SUD treatment have high dropout rates that increase the potential for overdose and return to use.

Multiple studies have investigated factors related to premature discontinuation of SUD care (Ball et al., 2006; Brorson et al., 2013; Daigre et al., 2021; Dalton et al., 2021; Crapanzano et al, 2019; Ledberg & Reitan, 2022; Lin et al., 2013; McCaul et al., 2001; Palmer et al., 2009; Ware et al., 2023; Zemore et al., 2021). Polysubstance use, co-occurring mental health disorders, age, gender, ethnicity, socioeconomic status, and motivation have been investigated (Ali et al., 2017; Daigre et al., 2021; Dalton et al., 2021; Ware et al., 2023). Moreover, advancements in pharmacotherapy have been essential to treating substance abuse related to opiates, alcohol, sedatives, and

methamphetamine (SAMHSA, n.d.). While medications and psychotherapy techniques are essential elements of SUD treatment, retention rates have not materially changed (Jalali et al., 2019). Recent research suggests that more general cognitive processes may underly the challenges related to SUD treatment and retention (George & Guzman, 2015; Hayes & Hoffman, 2021). These factors may indicate that personality traits and values affect retention. Yet, little research has investigated the impact of personality traits and values on treatment retention. Thus, this quantitative study examined the relationship between personality traits, values, and patient retention in substance abuse treatment.

Purpose of the Study

The purpose of this quantitative study was to examine the relationship between personality traits using the five-factor model of personality, the theory of formal axiology of values, and treatment retention in adults enrolled in a telehealth substance abuse outpatient clinic in the United States. Several studies have associated personality traits with maladapted behaviors, including impulsivity, low distress tolerance, well-being, and SUD (Dash et al., 2019; Gori et al., 2020; Kazemi & Khosravi, 2016; Lyvers et al., 2018; Myers, 2019; Ribadier et al., 2016). Additionally, personality traits in patients who discontinued depression treatment differed from retained patients (Niemeijer et al., 2023; Schmidt et al., 2018). Therefore, personality traits may offer insights into the disposition and perspective of patients in care that elevate their risk of premature discharge.

Similarly, values are general psychological constructs that influence an individual perspective of a situation and other individuals (Schwartz, 2012). Values affect decision-making and influence an individual's attitudes, beliefs, and behaviors (Sagiv & Roccas,

2021). Changes in value priorities were observed by researchers analyzing individuals in SUD recovery compared to those in SUD treatment or the general population (Brown & Peterson, 1990; Toler, 1975). Additionally, some researchers have described SUD therapy as value therapy and have underscored the importance of value shifts (Brown & Peterson, 1990; Rokeach & Regan, 1980). Therefore, this study may offer insights into the factors contributing to dropout.

Research Question and Hypotheses

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

RQ: What are the combined (R^2) and relative effects (sr^2) of personality traits and values in explaining the variance in treatment retention in adults at a telehealth SUD outpatient clinic in the US?

H_0: Personality traits and values do not explain the variance in treatment retention in adults at a tele-behavioral health outpatient clinic in the US.

H_1: Personality traits and values do explain the variance in treatment retention in adults at a tele-behavioral health outpatient clinic in the US.

Theoretical Framework for the Study

This study evaluated the relationship between personality traits, values, and treatment retention for adult patients being treated for substance abuse. It leverages the five-factor model and formal axiology. The five-factor model is a well-studied and widely utilized personality trait model developed by McCrae and Costa in 1987 (McCrae & John, 1992). Conversely, formal axiology is a lesser-known and studied theory of values developed by Robert S. Hartman in 1973 (Hartman, 2011).

McCrae and Costa's five-factor model outlines five personality traits: extraversion, conscientiousness, agreeableness, openness, and neuroticism (McCrae & John, 1992). The model indicates that the strength of a trait corresponds to personality characteristics. The five-factor model has been shown to influence behaviors, distress tolerance, openness to change, and compliance.

Hartman's (2011) theory of formal axiology assesses value structures through three hierarchical dimensions—intrinsic, extrinsic, and systemic. The intrinsic dimension prioritizes the uniqueness of humans and their singularity in the world. The extrinsic prioritizes instruments and practical things for achieving an end, while the systemic prioritizes ideas and concepts. Value structures influence the evaluative process, affecting attitudes, beliefs, and behaviors (Blankenship et al., 2012; Pomeroy, 2005; Sagiv & Schwartz, 2022; Schwartz, 2012). An individual's value structure may alter attitudes, beliefs, and behaviors toward treatment, thus affecting retention.

Nature of the Study

The study used a quantitative cross-sectional correlation study approach to evaluate the combined (R^2) and relative effects (sr^2) of the five-factor model of personality traits and formal axiology of values in explaining the variance in treatment retention of adults at a tele-behavioral health outpatient clinic in the US. The study analyzed the big five aspect scales and the Hartman value profile to days retained in treatment (DeYoung et al., 2007; Hartman, 2006). The big 5 aspect scales have participants rate 100 statements using a 5-point Likert scale. The Hartman value profile has participants rank two sets of 18 statements. The scales were analyzed against

retention measured in days. Data were deidentified, approved for study, and supplied by a tele-behavioral health clinic. Multiple linear regression analysis assessed the relationship between the independent and dependent variables. The measures were all continuous and aligned with regression analysis. Regression analysis supported the research question and purpose of the study by evaluating the relationship between the independent and dependent variables.

The big five Aspect Scales is an evidence-based instrument for measuring personality traits. DeYoung et al. (2007) identified 10 sub-traits, or two sub-traits for each big five trait. The five basic traits and two of the ten sub-traits will be analyzed to understand the effects of extraversion, openness, agreeableness, conscientiousness, and neuroticism on retention. Additionally, the sub-traits of neuroticism (volatility and withdrawal) and extraversion (enthusiasm and assertiveness) may relate to resiliency and motivation in treatment. Meanwhile, the subscales for agreeableness (politeness), openness (openness), and conscientiousness (orderliness) may indicate a willingness to engage in new ways of thinking or a closed perspective.

The Hartman value profile is a validated psychometric instrument for assessing value structures and how values influence judgments. The Hartman value profile consists of 101 indexes, with 47 indexes measuring judgments of the world view, 47 indexes measuring judgments of the self view, and seven combined measures (Hartman, 2006). For this study, the world and self indexes will be analyzed. The world view contains 47 separate items and provides insight into an individual's perception of the benefits of treatment and acceptance of others versus binary judgments of treatment that characterize

it as good or bad. The self view contains 47 items and describes how a person's self-concept is structured: resiliency, openness to change, contingent worth, and proneness to ineffective comparisons. These two indexes encompass common factors for treatment abandonment (Ali et al., 2017; Ware et al., 2023). Thus, the two instruments provide a lens into general psychological constructs affecting thoughts and beliefs potentially related to treatment retention.

Definitions

The following definitions pertain to the terms used within this manuscript:

Big Five Aspect Scale: The big five aspect scale (BFAS) is an instrument developed by DeYoung et al. (2007). The instrument incorporates two sub-traits per personality trait dimension of the five-factor model. DeYoung et al. (2007) found that the five-factor model of personality is composed of two sub-traits that sit between the five dimensions of personality and the six facets that comprise each dimension.

Five-Factor Model: Costa and McCrae developed the five-factor model, a popular theory of personality that identifies five basic personality traits: openness, conscientiousness, extraversion, agreeableness, and agreeableness (McCrae & John, 1992). The five-factor model is also known as the big five or OCEAN.

Formal Axiology: Robert S. Hartman developed the theory of formal axiology, which describes how value structures are conceptualized and influence decision-making (Hartman, 2011). Formal axiology is a theory of values that focuses on an individual's perception and corresponding framing of valuation that defines their value hierarchy. Unlike other value theories that measure specific values, formal axiology assesses an

individual's evaluative process and how valuation is conceptualized. The capacity of each dimension, the relative strength of each dimension, and the relation between external and internal perspectives influence attitudes, beliefs, and behaviors. For example, formal axiology explains how an individual perceives value in a situation, thing, person, or idea based on their value structure. According to the theory, value structures adhere to a scientific axiom that distinguishes three value dimensions: intrinsic, extrinsic, and systemic. Individuals use one set of the three value dimensions to evaluate the world, while another applies to evaluations of themselves.

Hartman Value Profile: Robert S. Hartman developed the Hartman value profile to assess value structures according to his theory of formal axiology (Hartman, 2006). The assessment measures an individual's capacity within the three value dimensions and composite scores that explain value priorities that link to attitudes, beliefs, and behaviors. Scores obtained by the Hartman value profile provide insights into how a value is conceptualized and how a person interprets a situation from a value perspective.

Meta-cognitive: Meta-cognitive refers to psychological processes that transcend situations or contexts. Mega-cognitive processes are distinguished from SUD therapies that predict and target SUD-related beliefs and behaviors. Third-wave therapies target meta-cognitive processes.

Patient: A patient is an individual who consents to receive health care services from a licensed provider. Patients are distinguished from participants of self-help SUD programs such as Alcoholics Anonymous or the general public.

Personality Traits: Personality traits are stable patterns of thought, emotion, and behaviors that affect how an individual perceives and engages in situations or with people (McCrae & John, 1992). The five-factor model, known as OCEAN or big five, is a five-dimensional trait theory of personality. The five-factor model identifies openness, conscientiousness, extraversion, agreeableness, and neuroticism as the primary personality dimensions. Research has extended the model that identifies ten sub-traits with two sub-traits, called aspects, per dimension. Additionally, the research identified a third-level order with six facets per trait dimension assessed using the Revised NEO Personality Inventory, or NEO-PI-R (Costa & McCrae). Thus, the five-factor model conceptualizes personality traits, and the big five aspect scales assess the five trait dimensions and two sub-traits per dimension.

Substance Use Disorder: Substance use disorders are psychological and physiological dependence on a substance that results in maladapted thoughts and behaviors compromising well-being. Volkow (2020) describes substance use disorders as an evolving disorder that arises from biological, psychological, and social factors. Substance use disorders fall under the broader addiction umbrella but are distinct from process addictions such as gambling or sex addiction.

Treatment dropout: Patients discontinuing care before completing SUD treatment program requirements or against medical advice. Treatment dropout may be described as premature discharge, abandonment, or dropout. Treatment programs define completion according to program or patient goals. They may include evidence of sobriety or discontinuation of use, completion of treatment tasks, specified duration, or when health

care services to treat a condition are no longer present (e.g., discharge from detoxification may occur when the risk of delirium tremens are minimal; Brorson et al., 2013). While treatment completion is consistently associated with positive outcomes, comparisons across treatment service providers present challenges due to the differing criteria for completion.

Values: Values are relatively stable cognitions of an individual's desires that influence attitudes, beliefs, and behaviors (Sagiv & Schwartz, 2022). Values represent motives that represent biological, interpersonal, and social needs (Pomeroy, 2005; Schwartz, 2021).

Assumptions

This study's design required patients to respond to well-validated, standardized instruments. Responses were assumed to be truthful. Since the instruments pertain to personality traits and values, stigma and other concerns related to substance abuse that could invoke feelings of shame that discourage truthful answers or elevate conformity bias are assumed to be minimal. Another assumption pertained to the administering of the instruments. Clinic staff conducted the surveys and are assumed to be neutral in reading and obtaining patient responses. Further, the clinic provided data in comma-separated file format. The data were assumed to be original and not manipulated or altered from the initial collection process. Therefore, the information was assumed to be truthful and accurate.

Another assumption was that the participants had sufficient cognitive functioning to interpret the surveys accurately. Substance abuse, intoxication, traumatic brain injury,

and other cognitive impairments could affect responses. However, in an outpatient SUD setting, a requirement for participation is the ability to function effectively without continuous assistance. Therefore, responses were assumed to be made by individuals who understood the directions and responded accurately.

Scope and Delimitations

This study evaluated substance use disorders and did not consider the effects of process addictions, co-occurring mental health, or physical co-morbidities that may affect adult individuals and their retention in treatment. Additionally, the scope of this study did not consider provider variability, credentials, experience, or staff variation administering instruments (i.e., interrater reliability). Further, the study did not differentiate populations by SUD diagnoses, prescribed medications, or engagements measured by frequency or missed appointments. While some studies have found differences among these variables, this study did not distinguish patient populations based on care variables.

Also, the scope was limited to a single adult outpatient telehealth clinic. Comparisons between clinics, in-person versus telehealth, or patients in more intensive SUD treatment settings are beyond the scope of this study. The American Society of Addiction Medicine (n.d.) defines outpatient care as less than nine hours of treatment services per week for stable individuals. Patients may enter outpatient treatment to initiate SUD treatment or as a step down from more intensive care, such as detox or inpatient. Additionally, disparities are identified in telemedicine utilization across race, rural, and socio-economic status (Nguyen et al., 2023). Therefore, the scope of this study

was a cross-sectional analysis of adult patients from a single telehealth behavioral health clinic admitted for SUD.

Limitations

This study investigated the relationship between personality traits, values, and treatment retention in SUD adults at an outpatient telehealth organization. The study's focus on adults in SUD treatment may not be generalizable to adolescents or emerging adults. Additionally, the population may have unique characteristics that are particular to outpatient and telemedicine care. Furthermore, unique patient recruiting practices or preferences for telehealth may distinguish the patient population from other SUD treatment services and reduce generalizability. The treatment setting may impact the data that are unique to the clinic. Therefore, any interpretation of the results should consider these limitations.

A second limitation is the high prevalence of low socio-economic participants and other factors unique to the United States. Approximately 65% are on Medicaid, indicating a high percentage from lower socio-economic strata. Thus, the results may be unique to a predominantly low socio-economic population. Therefore, when interpreting the results, readers must consider these factors before applying them to another SUD population.

Significance

This study evaluated the relationship between personality traits, values, and treatment retention for adult patients being treated for substance abuse. Many factors may impact care retention, including polysubstance use, age, gender, socioeconomic status, co-occurring mental health disorders, and motivation. However, little attention has been

given to the participants' personality traits or values. This study explored these mechanisms and may provide additional insight into general psychological factors affecting treatment retention.

Treatment retention is a primary goal in behavioral health care. Premature discontinuation of services impacts care success and the likelihood of relapse. Third-wave therapies have shown promise in treating SUD and target more general psychological factors influenced by personality traits and values (Byrne et al., 2019; Garey et al., 2020; Hayes & Hoffman, 2021). Therefore, personality traits and values may be additional factors for practitioners to consider in retention strategies. This study examined the relationship between personality traits, values, and treatment retention, potentially adding to the knowledge regarding treatment adherence.

Substance abuse and mental health remain significant societal issues globally. The cost of care increases 200-300% when untreated (Taylor et al., 2023; Tkacz et al., 2014). SAMHSA (2023) repeatedly notes that less than 20% of all individuals needing SUD services access them. Therefore, successfully treating the limited individuals who do access care is paramount. This study potentially revealed new factors to consider in treatment retention. While this study evaluated the association between personality traits, values, and treatment retention, additional investigations may reveal casual relationships that could lead to improved behavioral health care.

Summary

SUDs are devastating and fatal conditions, and low SUD treatment completion rates increase the likelihood of a fatal overdose and missed opportunity to address a

significant societal issue (Harton et al., 2023; Hercyzk et al., 2023). Research into factors affecting treatment dropout has focused on SUD-specific variables, concomitant health issues, and pre-existing conditions, but it has not yielded significant improvement in completion rates (Brorson et al., 2013). However, new behavioral therapies focus on more general psychological processes that affect attitudes and beliefs (Hayes & Hoffman, 2021). Personality traits and values influence thoughts and emotions (Bleidorn et al., 2021; Schwartz, 2012). This study evaluated personality traits and values on treatment retention in adult SUD patients in an outpatient behavioral health clinic.

This study evaluated the relationship between personality traits, values, and treatment retention—specifically, the combined effects of personality traits and values on treatment days and the relative effects. The five-factor model is well-validated and widely used for assessing personality traits (McCrae & John, 1992). Formal axiology measures value structures that guide decision-making (Pomeroy, 2005). The study used a cross-sectional correlation analysis to evaluate the association of personality traits and values days retained in treatment. Correlation and multiple linear regression analysis were used to assess the relationships.

Several assumptions, limitations, and scope limit the generalizability of findings. Patient responses were assumed to be truthful and representative of their perspective, and data were accurately captured and maintained without modification. The study does not evaluate substance-specific populations, patient engagement, or other care factors. Moreover, the study involved a single clinic and patients choosing a telehealth care model that may not represent the broader SUD treatment population. Additionally, the

study was limited to adults who can participate in an outpatient setting. Regardless, the results of this study may be valuable in terms of personality traits and values and treatment retention days.

Chapter 2 includes details on the field's current state, a detailed account of the literature search strategy, and the study's theoretical framework, which describes how the study is conceptualized to fulfill its purpose. Finally, a literature review is provided detailing past inquiries and research that grounds the study.

Chapter 2: Literature Review

Introduction

Substance use disorder (SUD) is a significant, unsolved societal issue globally (Brorson et al., 2013; O'Connor et al., 2020). About 9% of the population, or 22 million in the United States, have a substance use disorder (Jack et al., 2018; Lipari & Van Horn, 2017). Cheaper synthetic opioids (e.g., fentanyl) and methamphetamines produced in super labs have flooded the market, increasing polysubstance abuse and overdose deaths (DEA, 2019; DEA, 2020; DEA, n.d.; Mars et al., 2018). In 2021, fatal drug overdose deaths rose by 15% annually to 105,000, while another 178,000 died from alcohol abuse (Hercyzk et al., 2023; National Institute of Alcohol Abuse and Alcoholism, n.d.). Beyond mortality risks, SUD costs an estimated half a trillion dollars in medical, occupational, criminal justice, and societal costs (Ali et al., 2017; Fletcher et al., 2014).

Treatment failure rates are high, which is a lost opportunity for the few who do initiate treatment. Despite efforts to increase access, only about 10% of individuals needing care access it, placing increased importance on successful treatment for those who engage (Askari et al., 2020; Zemore et al., 2021). Unfortunately, treatment completion rates are low (Lee & O'Malley, 2018). Herczyk et al. (2023) noted that treatment abandonment rates ranged from 19%–90% across settings and substances, while Jalali et al. (2019) noted dropout rates as high as 70%. Efforts to understand and curb treatment abandonment have been under extensive investigation since the 1970s, with hundreds of studies yielding few generalizable findings and limited usefulness (Brorson et al., 2013). While advancements in SUD treatment, especially

pharmacotherapies, have improved substance-specific symptoms, including targeting withdrawal and cravings, treatment abandonment remains high (Anton et al., 2006; Ray et al., 2020).

Many factors are associated with dropout, but research has centered around symptom-focused substance use-related behaviors and physiological needs. Demographic characteristics, substance-related physiological needs, and medications have shown some promise, but personal and contextual factors better explain outcomes (Kern-Godal, 2016; Kuusisto et al., 2011). Poor motivation, low resiliency, shame, emotional dysregulation, stress, and low trust in treatment staff are frequent reasons for premature discharge. Thus, the patient's attitudes, beliefs, social support, and coping skills significantly affect treatment outcomes (Arun et al., 2004).

SUD treatment targets substance use-specific attitudes and beliefs using cognitive approaches, such as cognitive behavioral therapy (Gori et al., 2004; Jalali et al., 2019; Khalali et al., 2021). For example, a common strategy in cognitive behavioral therapy is to draw patient awareness to triggers that lead to substance usage (SAMHSA, n.d.). However, dropout factors may involve more central psychological constructs that are trans-situational beyond substance usage and affect broad attitudes, beliefs, and behaviors. Some evidence supports a relationship between personality traits and, secondarily, values and substance usage (Brown & Peterson, 1990; Çekici, 2019; Dash et al., 2019; Dollinger & Kobayashi, 2003; Fischer & Boer, 2014; Myers, 2019; Pomeroy, 2005; Rodriquez Puente et al., 2018; Toler, 1975). Thus, personality traits and values may be factors in dropout.

The purpose of this study is to evaluate personality traits and values and retention rates in substance use disorder treatment. Personality traits describe patterns for how an individual interacts with the world, including attitudes, emotions, and behaviors (McCrae & John, 1992; Sagiv & Schwartz, 2022). Values shape motivations by providing standards to evaluate, judge, and justify one's choices and actions (Sagiv & Schwartz, 2022). Various constructs are at play that interact and relate to substance use disorder (Fisher & Boer, 2014). As such, traits and values may be informative, with traits reflecting how individuals interact with their surroundings, while values guide their aspirations (Roccas et al., 2002). Thus, the decision to terminate treatment prematurely may be influenced by personality traits and values.

This study evaluates personality traits using the five-factor model and values using formal axiology. The Big Five Aspect Model is a popular personality trait framework that classifies individuals into five-dimensional continuums with two sub-continuums per dimension (DeYoung et al., 2007). Formal axiology is a theory of value structures that guide how individuals assign value to situations and themselves (Cone et al., 2012). Traits and values have been shown to affect motivation, emotional regulation, affect, and distress tolerance (Sagiv & Schwartz, 2022). Also, traits and values are trans-situational (Schwartz, 2012). Moreover, traits and values are slow to change, aligning with findings that more prolonged SUD treatment exposure improves outcomes (Daigre et al., 2021; Kern-Godal et al., 2016; Lyvers et al., 2018; Mark et al., 2021). Thus, traits and values may advance our understanding of treatment abandonment.

This section outlines the literature search process, theoretical foundation, and literature review underpinning this study. The literature search provides details on keywords, search engines, academic databases, and seminal studies that form the basis for the theoretical foundation and literature review. The theoretical foundation provides the structure and critical concepts that ground the study within existing scholarship. Meanwhile, the literature review includes an analysis of past studies that frame the current knowledge about SUD treatment dropout, personality traits, and values while bounding the lacuna this study intends to fill.

Literature Search Strategy

The literature search used a combination of Walden University Library and Google Scholar. Search terms were initially submitted to the Walden University Library. Depending on results and relevance, the exact keywords were then inputted to Google Scholar. In some cases, the same studies appeared similarly in the search results. In other instances, Google Scholar's text snippets differed from the article abstract in the Walden University Library results. Reviewing the varying results from both search engines enabled a back-and-forth that produced sufficient results. Thus, oscillating between both search engines was superior to either exclusively.

The initial keywords focused on *retention* and *substance use disorder treatment*. *Dropout* and *abandonment* are analogous to retention, as well as *treatment completion*, though treatment completion is broader, involving concepts unrelated to this inquiry. Additionally, *substance use disorder treatment* may be referred to as *substance abuse treatment*, *drug treatment*, or specific to a substance, such as *alcohol treatment*. Follow-

on searches appended personality traits and value phrases to the aforementioned keywords. *Personality traits substance use treatment*, *Personality traits* AND *treatment abandonment*, *big five traits* and *alcohol treatment*, *values substance use disorder treatment*, and similar concatenations were performed. Finally, theory-specific search terms were utilized, including *Schwartz value Substance abuse* and *Formal axiology substance use treatment*. The search strategy ensured saturation by using broad search terms and associated synonyms progressing towards more specific theory-focused terms.

Within the Walden University Library, Medline, APA PsychInfo, EbscoHost, ScienceDirect, APAPsychArticles, ERIC, PsychiatryOnline, Emerald Insight, Academic Search Complete, PubMed, and ProQuest databases were included in the search strategy. Initially, results were limited to peer-reviewed journals but removed upon subsequent searches. Date ranges were initially restricted to 2017–2024 but later expanded to include 2000–2016. These date ranges were also used in Google Scholar. The combination of keywords, databases, and Google Scholar's open academic search engine ensured that relevant articles were discovered and reviewed. Additional studies were identified through Perplexity.ai.

Two search strategy modifications are worth noting. First, *delay treatment, leave treatment, ama treatment, reasons to discontinue substance abuse treatment,* and *why leave treatment* were added to identify qualitative studies and adjacent studies to this inquiry that could provide rich detail and further insight. Second, additional studies were identified by analyzing the references related to vital information or repeated citations across studies, helping identify seminal works and original source material.

The literature regarding substance use treatment and retention is broad and deep. Nine literature reviews were consulted, including Dalton et al. (2021) on retention for emerging adults, O'Connor et al. (2020) regarding retention in opioid substitution treatment, Ray et al. (2020) investigating pharmacotherapy and cognitive behavioral therapy on treatment outcomes, Timko et al. (2015) on retention for medication-assisted treatment, and Brorson et al. (2013) on addiction treatment dropout. Similarly, the five-factor model literature is robust, but few peer-reviewed, quantitative studies on formal axiology are available. Additionally, several seminal works played an outsized role, including Brorson et al. (2013) on retention, McCrae and John (1992) on big five personality traits, and a monograph by Pomeroy (2005) on formal axiology and psychology.

Theoretical Foundation

The literature on SUD treatment retention is vast, with hundreds of studies over the last few decades. Several theories and conceptual frameworks appeared more frequently due to their comparative ability to explain and predict treatment abandonment. Primarily, the theories focused on psychological factors targeting substance-related attitudes, beliefs, and behaviors. The most relevant theories include the theory of planned behavior, transtheoretical model, self-determination theory, negative reinforcement model, attachment theory, and self-medication hypothesis (Ali et al., 2017; De Weert-Van Oene, 2001; Fletcher et al., 2014; Gidhagen et al., 2018; Lee & O'Malley, 2018; Zemore et al., 2021). While these theories targeted substance-specific psychological

constructs, none evaluates broader trans-situational constructs such as personality traits and values. Thus, traits and values present more primal psychological constructs.

Five-Factor Model or Big Five

Several models assess personality traits, with the five-factor model, developed by McCrae and Costa Jr., being popular among researchers (McCrae & John, 1992). The five-factor model has five personality dimensions: extraversion, agreeableness, conscientiousness, neuroticism, and openness (Dash et al., 2019). Costa Jr. (1991) notes the popularity of the five-factor model is partly due to its ability to capture the major personality scales within the five fundamental dimensions. Though not necessarily a theory, the five-factor model has been referred to as the big five and OCEAN, as well as extended models such as the Revised NEO Personality Inventory (McCrae & John, 1992). Research into the big five has revealed more detailed sub-structures containing two levels called aspects and facets (DeYoung et al., 2007). Hence, the big five is well-studied and comprehensive (Costa Jr., 1991).

The five personality dimensions are represented on continuums, with the “low” end encompassing a set of traits and the “high” end another set of traits (DeYoung et al., 2007). Individuals low in agreeableness are associated with calm, relaxed, and emotionally balanced personalities. (McCrae & John, 1992). High neuroticism reflects low emotional stability, negative affectivity, anxiety, easily frustrated, tense, and impulsive.

Individuals low in extraversion present as reserved, quiet, and withdrawn (McCrae & John, 1992). Meanwhile, dominance, sociability, assertiveness, enthusiasm,

optimism, friendliness, and positive affectivity describe high extraversion (DeYoung et al., 2007). Individuals low in openness are described as conventional and conservative and tend to repress anxiety (McCrae & John, 1992). The opposite is imaginative, curious, independent, and seeking variety, which is associated with high openness (Myers, 2019).

The last two dimensions, conscientiousness and agreeableness, are referred to as dimensions of character (McCrae & John, 1992). Low conscientiousness is best described as disorganized, unplanned, postponed, and unreliable, while high conscientiousness is marked with diligence, neat, organized, efficient, and self-disciplined (Çekici, 2019; DeYoung et al., 2007; Fischer & Boer, 2014). Argumentative, noncooperative, self-centered, spiteful, and jealous represent the low end of agreeableness, and individuals high in agreeableness exhibit amiableness, friendliness, and warmth and are socially accommodating (Çekici, 2019; McCrae & John, 1992).

Studies of the five-factor model indicate traits are partially hereditary and established early in childhood (Dash et al., 2023). As much as 15–25% of an individual's personality may be inherited (Power & Pluess, 2015). Additionally, the stronger the traits, the more stable they are over time and are significantly associated with values (Fisher & Boer, 2014). Thus, traits are slow to change. Moreover, traits have a broad psychological influence. For example, an individual's temperament and levels of hostility are associated with neuroticism and agreeableness, while shyness is related to high levels of neuroticism and low extraversion (McCrae & John, 1992). Low openness scores have been shown to align with rigid thinking, while high scores align with creativity and imagination.

Personality traits are also shown to relate to behaviors and psychological processes. Individuals higher in agreeableness demonstrated more risk-taking behaviors and increased rates of criminality (Gori et al., 2020). Additionally, trait scores align with adaptive, maladaptive, and neurotic defense mechanisms, that is, automatic psychological response processes invoked when exposed to adverse situations or information (Ribadier et al., 2016). Psychopathologies are also associated with personality traits. Different mental health disorders are associated with trait score constellations, including anxiety and depression (Niemeijer et al., 2023). The onset of depression was predictable using logistic regression in a sample of 144 adolescents (Pawlak et al., 2024). Thus, personality traits are broad and stable constructs that relate to multiple psychological processes.

The big five has been studied extensively with positive correlations to substance usage and abuse, behaviors to seek help, and behaviors to drop out. An analysis of same-sex twins in Australia comparing substance abusers to non-substance abusers showed illicit drug use was associated with high agreeableness and low agreeableness and conscientiousness with particular trait constellations related to the substance of choice (Dash et al., 2019; Dash et al., 2023). Analysis of 980 twins demonstrated opiates and sedatives aligned with agreeableness while stimulants aligned with extraversion. Trait patterns were non-existent in twins who did not abuse substances. Moreover, the authors concluded individuals with high scores in agreeableness and low scores in conscientiousness may signal an addictive personality.

Additionally, 48 adult women in outpatient treatment for alcoholism were aligned with higher agreeableness, lower agreeableness, and conscientiousness than 50 women

from the general population (Ribadier et al., 2016). The authors also found agreeableness negatively correlated with immature defense mechanisms, such as denial, projection, passive-aggressive, and somatization. The findings suggest personality traits and defense mechanisms may predict alcohol use disorder and explain the likelihood of dropout. Addiction requires changes in behaviors and attitudes as well as stigma. Poor coping skills may increase the likelihood of dropout when addictive behaviors and attitudes are challenged.

Çekici (2019) studied 148 university counseling students. Students with higher agreeableness, conscientiousness, extraversion, and lower agreeableness were associated with seeking professional psychological help compared to counseling students not seeking help. While cognitive flexibility mediated the relationship, all five dimensions were significant. Similarly, a study of 443 university students in the southern United States found higher scores on the big five aspect of orderliness (i.e., one of the sub-traits of conscientiousness) and lower scores on enthusiasm and assertiveness (i.e., the two sub-traits of extraversion) associated with higher social anxiety (Simpson & Bedwell, 2022). The researchers concluded students with higher social anxiety were more likely to withdraw in social situations when failure or social rejection was a risk. Thus, the big five traits are not only associated with substance abuse but also behaviors consistent with dropout. The two studies demonstrate how individuals with low openness scores are less curious and resistant to change, and the interaction of high agreeableness scores and low enthusiasm scores may support withdrawing from situations requiring change as a strategy for emotional regulation.

A few studies have investigated personality trait dimensions and the effectiveness of SUD treatment. Still, no studies have examined the personality traits and the sub-traits within aspects and the association with dropout in substance use disorder treatment. Studies involving dropouts have focused on mental health conditions, but the findings are mixed. For example, while Niemeijer et al. (2023) found high levels of agreeableness correlated with the dropout of 156 adults in anxiety and depression treatment, Schmidt et al. (2018) found no relationship across 117 adult participants in depression treatment. In the study by Niemeijer et al. (2023), individuals with high agreeableness also had low extraversion. Therefore, traits may amplify other trait behaviors. Thus, personality traits may have bidirectional influences that are better elucidated through sub-traits, and trait constellations may be as influential as single trait scores. These studies relate to SUD since mental health treatment utilizes many of the same therapeutic modalities used in SUD treatment and requires cognitive and behavioral changes.

Openness traits may inhibit an individual's receptivity to change. Taylor et al. (2017) studied 59 adults with panic disorder or generalized anxiety disorder. They found that individuals high in openness were more flexible and willing to explore new information and cognition patterns, which increased CBT's efficacy. However, the authors found high openness combined with low extraversion predicted an increased likelihood of treatment abandonment for depression. Likewise, low extraversion scores predicted an increased risk of dropout for depression treatment (Schmidt et al., 2018). Extraversion is a broad dimension encompassing interpersonal, affective, and temporal variables (McCrae & John, 1992). The dimension also captures energy, ambition, and

tolerance for risk. Additionally, extraversion is associated with motivation, a commonly cited factor in dropout (Fischer & Boer, 2014). Thus, extraversion appears to have a consistent relationship with dropout factors.

The final two traits are conscientiousness and agreeableness. Çekici (2019) found high agreeableness scores had the most prominent association with willingness to seek help. Agreeableness explained 21% of the variance in counselors seeking help compared to counselors who did not seek help. Conscientiousness explained 17% of the variance. The findings support the claim that agreeableness and conscientiousness foster treatment completion through characteristics associated with task completion, determination, higher distress tolerance, and compliance.

Further support for the impact of conscientiousness may be found in Lyvers et al. (2018) and Myers (2019). In Lyvers et al. (2018), the researchers found impulsivity, a trait adjective of low conscientiousness, predicted the dropout of 46 adults from a SUD residential treatment center. Still, the researchers did not directly examine the big five dimensions. Myers (2019) evaluated 65 community college students in SUD counseling against 38 students with no self-reported substance abuse. Myers found that conscientiousness was the only personality trait that differed between the two groups. Moreover, students in SUD counseling scored two standard deviations higher on conscientiousness than the non-abuse sample. Thus, low scores on conscientiousness and agreeableness may relate to SUD treatment abandonment by reducing determination, task focus, cooperation, and compliance while increasing impulsivity.

Values and Formal Axiology

Patient values may provide insights regarding treatment dropout. Values are trans-situational goals that guide evaluations and judgments (Schwartz, 2012). Values are criteria that affect attitudes, beliefs, and behaviors (Sagiv & Schwartz, 2022; Schwartz, 2012). Thus, an individual's values could influence the decision to terminate care. Several studies found a connection between values and SUD. Individuals in recovery possess different value scores than the general public or patients in treatment (Brown & Peterson, 1990; Toler, 1975). Using Rokeach's Value Survey, Toler (1975) found value ratings between 85 adult individuals in treatment for drug and alcohol abuse that differed from 455 adults from the general population. Individuals with SUD scored lower than the general population on values related to self-esteem, including inner harmony, self-respect, and happiness. Brown & Peterson (1990) found similar results in a sample of 57 adults with inner-harmony ranked higher among those in recovery versus individuals in treatment and the general population. Thus, individuals with SUD share value similarities that appear to impinge on their self-image, while those in recovery show more substantial self-image value ratings.

Similar results were found using Schwartz's Universal Values. Dollinger & Kobayashi (2003) found among 156 emerging adults that those with self-reported alcohol abuse had a positive though weak to moderate correlation with power, hedonism, and stimulation and a negative weak to moderate correlation with benevolence and universalism compared to those with no reported alcohol abuse. The authors note values

have a significant role in influencing behaviors related to excessive consumption of alcohol that differs from non-abusers.

Rodríquez Puente et al. (2018) concluded value changes were indispensable to changes in alcohol dependence. The authors studied 119 Alcoholics Anonymous (AA) members in Mexico and found power to be ranked lower in AA members with more extended periods of abstinence. Additionally, similar to the study by Dollinger & Kobayashi (2003), self-transcendence values were of minimal importance. Again, researchers have noted the importance of patient values in treatment even when using different value theories.

Formal axiology, another value theory, may offer unique insights above those found using Rokeach or Schwartz. Pomeroy (2005) analyzed 97 patients and demonstrated robust concurrent validity between formal axiology, McAndrews's Alcoholism Scale, and the Minnesota Multiphasic Personality Inventory (MMPI) Alcoholism scale. Further, formal axiology had a moderate correlation to the instruments to assess alcoholism and other mental health disorders evaluated by the MMPI. Thus, formal axiology appears to elucidate values central to SUD and mental health.

Formal axiology is a science of value structures (Hartman, 2006). Robert S. Hartman developed formal axiology to assess an individual's judgment ability across three value dimensions (Hartman, 2006; Nistral-Nuño, 2019). The three dimensions are intrinsic, extrinsic, and systemic. Intrinsic relates to the value of the object's uniqueness. Extrinsic relates to the value of the object's function or role. Systemic relates to the concept's meaning or purpose. Additionally, formal axiology assesses the strength and

valence of each value dimension. Therefore, formal axiology provides insight into factors that affect judgments or how values may influence the decision to leave treatment prematurely.

Values are psychological manifestations of desires and goals that influence biological and social needs (Schwartz, 2021). Similar to personality traits, values are partly established early in life through bi-directional influence of the parents and surroundings (Benish-Weisman et al., 2017). Additionally, socialization, peers, family, and experiences all influence values, which are stable over time (Howes & Gifford, 2008). Moreover, personality traits, like temperament, influence values (Sagiv & Schwartz, 2022). Fischer and Boer (2014) found strong correlations between values and personality traits, and while the constructs are related, they may reflect both conscious and unconscious behavioral responses.

Value differences have been shown to relate to behaviors and psychological processes. Hurst (2019) found that 74 entrepreneurs differed significantly on value scores from 103 senior managers from a large corporation, with the entrepreneurs demonstrating a stronger capacity for opportunity recognition, evaluation, and integrative thinking skills. Dunbar and North (2004) found a significant correlation between value scores and Leader's Ethical Orientation scores across 117 government leaders, indicating behavioral and belief differences that influence decision-making, trust, and resiliency.

Unlike other value theories focusing on specific personal values, such as power, inner-harmony, and happiness, formal axiology uniquely assesses value hierarchies that reveal attitudes and beliefs (2013). Hartman (2011) stated that the three value dimensions

apply to an individual's perception of the world and the self. Within the world-perspective, value descriptions associated with each dimension are as follows:

World Intrinsic Value Dimension: A continuum from strong to weak, with more substantial scores perceiving other individuals as trustworthy, unique, and valuable, while weak scores are associated with prejudice, the tendency to treat others in terms of stereotypes and caricatures.

World Extrinsic Value Dimension: A continuum from strong to weak, with more substantial scores reflecting the ability to perceive the usefulness and practicality of things and prioritize characteristics and properties for the best outcomes. Weaker scores indicate an inability to see practical and process-oriented solutions to problems, as well as timidness and inefficiency.

World Systemic Value Dimension: A continuum from strong to weak, with more substantial scores reflecting the ability to be analytical or structured in thinking, order, and planning. Weaker scores are associated with an inability to follow rules or plans, inconsistency in thought patterns, and long-term implications of decisions.

The self-perspective evaluates the value structures of the self-image. The three dimensions of the self are hierarchical as well, vital for organizing one's personality, and point to problems in living (Pomeroy, 2005). The following value descriptions apply:

Self Intrinsic Value Dimension: The intrinsic dimension of the self, or self-esteem, measures an individual's attitude about one's current self, including all the unique properties that make up an individual (Hartman, 2011). Self-esteem is the ability

to accept oneself as is, imperfections and all, and can be thought of as “who I am” (Pomeroy, 2005).

Self Extrinsic Value Dimension: The extrinsic dimension of the self, or self-worth, is the value one perceives through social feedback (Edwards, 2010). Self-worth derives extrinsically from the roles and actions we take as social creatures. This dimension captures how we fit in socially and answers the question of “what I am” (Pomeroy, 2005).

Self Systemic Value Dimension: The systemic dimension, or self-concept, is the value one perceives from a future self that one aspires to or ruminates about. Self-concept may be realistic or idealized and derives from a definition of the envisioned self. Self-concept answers “who I ought to be” (Pomeroy, 2005).

Formal axiology reveals specific value priorities related to SUD retention. Voluntary engagement in SUD treatment necessitates recognizing a problem and the expectation of recovery. Rokeach posited that values were cognitive evaluations of desires, and individuals are motivated and emotionally connected to their aspirations and beliefs (Liu & Xiao, 2023; Russo et al., 2021). However, if the cognitive evaluations of SUD treatment conflict with treatment, diminish motivation, or compromise desires, then treatment abandonment may be likely.

Formal axiology fits this study because it assesses how treatment is perceived. Individuals with poorly developed world intrinsic value scores may not view treatment staff as trustworthy, a significant contributor to treatment abandonment found in Yang et al. (2018). Across 60 adult SUD patients, the relationship with treatment staff was a

primary theme to emerge. Additionally, weak world extrinsic value scores may prioritize the usefulness of treatment and downgrade the benefits. Across 93 inpatient SUD adult patients, the practical use of therapy was noted as an essential reason for discontinuing care (De Weer-Van Oene et al., 2001).

Alternatively, individuals with weak world systemic value scores may perceive rules negatively and not recognize the long-term effects of their decision to terminate care. Studies by Zemore et al. (2021) and Laudet et al. (2009) noted these reasons as justifications for dropout. Zenmore and colleagues studied 156 adults entering treatment, while Laudet and colleagues studied a mix of 32 homeless adults participating in a drop-in SUD center and patients in a private-practice SUD outpatient clinic. Both studies noted the perception of rules as a factor in treatment abandonment.

On the self side, several value issues may impact SUD treatment. Poor self-esteem is associated with treatment dropout and is reflected in weak self intrinsic scores. Lee and O'Malley (2018) identified poor self-esteem as one of the top reasons for leaving treatment among homeless and private practice outpatient adults. Additionally, weak self extrinsic scores may increase sensitivity to self-worth, while weak self systemic scores may increase rumination and perfectionist tendencies. Self-worth emerged as a critical factor in a qualitative study of 12 adults in recovery from SUD, while semantic analysis of 206 adults and over 55,000 social media posts showed rumination combined with a focus on the past associated with dropout (Jalali et al., 2019; Liu et al., 2022). Thus, value hierarchies may illuminate poor self-image issues that link to dropout.

Values have been studied broadly since being introduced to psychology by Allport and Vernon (Sagiv & Schwartz, 2022). The first studies of values and addiction utilized the Rokeach Value Survey (Brown & Peterson, 1990). Significant value differences were shown between patients in SUD treatment and the general population (Brown & Peterson, 1990). More recently, Schwartz Universal Values have shown values differ between beer drinkers in three countries compared to nondrinkers, and values were similar for drug addicts in a Veterans Administration program and inpatient alcoholics (Dollinger & Kobayashi, 2003). Finally, Pomeroy (2005) demonstrated that formal axiology scores correlated highly with the Minnesota Multiphasic Personality Inventory (MMPI), the Cattell 16 Personality Factors, and the Cattell Clinical Analysis Questionnaire. Thus, values have been shown to relate to behavioral health and SUD.

Several aspects of values, specifically formal axiology, apply to SUD treatment dropout. Brown and Peterson (1990) noted that multiple authors have suspected values to play an essential role in SUD and "referred to the disorder as a symptom of value conflict" (Brown & Peterson, 1990). Rokeach and Regan (1980) argued that every counseling session attempts to reorganize a patient's value hierarchy or make them aware of their preferences. The authors suggest that counseling sessions are value therapy. Johnson (1990) noted people with an addiction suffered from an inconsistency between values and behaviors. Hamblin et al. (1993) suggested cognitive therapy is more akin to persuasion regarding values and much less about altering condition-specific beliefs or attitudes. Even outside SUD or behavioral health, values are linked to outcomes. Liu and Xiao (2023) conducted an experiment across 90 breast cancer patients and found breast

cancer treatment options aligned with a patient's value hierarchy improved treatment adherence. Therefore, values affecting treatment outcomes and approaches may also affect treatment dropout.

Personality traits and values represent different mechanisms of how individuals perceive themselves and the world around them. These two theories offer insights into how an individual experiences SUD treatment and the potential factors that explain their attitudes, beliefs, and behaviors that lead to dropout. Moreover, personality traits and values may offer predictive insights to improve treatment retention.

Literature Review

Substance abuse is a pressing issue. In the United States, 8.5% of the population struggles with Alcohol Use Disorder, another 2% from drug abuse, and 1.1% from both (Fletcher et al., 2014). The prevalence of SUD remains constant (Lipari & Van Horn, 2017). However, the pernicious effects of addiction have been in the spotlight. Overdose deaths rose to 105,000 in 2021, an increase of 15% from the past year (Hercyzk et al., 2023). Overdoses claimed the top spot for preventable mortality, surpassing deaths from car accidents and guns combined (Stobbe, 2021). In 2019, opioids accounted for 70% of 70,630 overdose deaths (Harton et al., 2023; Centers for Disease Control and Prevention, 2024b). While opioid headlines frequently make the press, 178,000 deaths occur from alcohol annually (National Institute of Alcohol Abuse and Alcoholism. (n.d.).

Non-fatal effects of SUD are serious. Hospital admissions for SUD or mental health conditions as primary diagnosis rose by 12% in the ten years leading up to 2014, and ED admissions rose by 44% (Peterson et al., 2021). Additionally, hospital admission

may occur for SUD-related issues, including cellulitis and liver disease (Simon et al., 2020). Unfortunately, patients with SUD are three times more likely to leave against medical advice than individuals without SUD (Simon et al., 2020). After discharge, individuals with SUD are readmitted to the hospital 1.5x more often than individuals discharged who do not have SUD (Jack et al., 2018). Thus, SUD gives rise to numerous other health-related complications that challenge the healthcare system.

Alcohol, nicotine, and cannabis are the most used substances in the US, while polysubstance abuse is becoming a more significant challenge (Centers for Disease Control and Prevention, 2022; Harton et al., 2023). Studies have shown individuals with SUD and concurrent OUD that OUD followed another substance usage, suggesting individuals progress to OUD and that increases mortality risk (Harton et al., 2023). Contributing to the rise of OUD is the low cost of producing synthetic opioids that have high addictive characteristics and are being mixed in with other illicit drugs (Centers for Disease Control and Prevention, 2024a; Mars et al., 2018). As a result, opioid-related deaths have quadrupled in the last two decades (Harton et al., 2023).

The social and financial impacts are broad and substantial. In the US, SUD costs more than half a trillion dollars annually in medical, occupational, criminal justice, and social costs (Ali et al., 2017; Fletcher et al., 2014). When untreated, SUD care costs increase by 200–300% (Taylor et al., 2023; Tkacz et al., 2014). People with SUD have higher rates of encounters with the criminal justice system and roadway accidents, as well as experiencing lost productivity and higher health care costs. Individuals with SUD are 2–4x more likely to commit a crime than individuals without a SUD, and over 30 people

die each day in SUD-related roadway accidents (Gori et al., 2020; National Highway Traffic Safety Administration, n.d.). Furthermore, over 40 million people go on disability related to SUD issues each year (Brorson et al., 2013). Thus, the deleterious effects of SUD impact the individual, their families, and the broader community.

SUD patients burden the most urgent and needed health care services, particularly inpatient hospitals and emergency departments. Emergency department visits for SUD increased by 39% between 2018 and 2021 (NCQA, n.d.). About one in five hospital patients have SUD (Simon et al., 2020). All in all, SUD is costly not only to the individual but to families, society, and the economy.

SUD prevalence is higher among men, but rates among women are increasing (Slabbert et al., 2020). SUD affects whites, blacks, and Latinos equally (Lee & O'Malley, 2018). Low socioeconomic status (SES), emerging adults, and individuals who experienced childhood trauma have higher rates of SUD (Dalton et al., 2021; Harton et al., 2023; Leza et al., 2021). Usage of nicotine increases the likelihood of SUD, as does a co-occurring mental health condition (Daigre et al., 2021; Harton et al., 2023; Herczyk et al., 2023). Thus, SUD patients present with a complex heterogeneous mixture of biological, psychological, and social factors (Fletcher et al., 2014).

Efforts and Approaches to Treating SUD

In the US, approximately 4 million people accessed SUD treatment services in 2014 (Lee & O'Malley, 2018). Over the past ten years, Medicaid expansion has increased access to SUD treatment services and has been shown to improve broader health outcomes while reducing mortality rates (Askari et al., 2020). However, SAMHSA data

shows about 10% of individuals needing SUD services access care each year, and the percentage has remained relatively constant despite access improvements (Lee & O'Malley, 2018; Zemore et al., 2021). Moreover, only about 40% of those who seek care are eventually admitted to a program, underscoring the public health challenge. Therefore, successful treatment of those who seek care is vital.

Once admitted to care, completion rates remain low despite a full continuum of care options to meet the conditions' severity and patient needs (Zemore et al., 2021). SUD treatment settings are designed to match the patient's biological, psychological, and social needs. More intensive care occurs in inpatient, detox, and residential settings, while outpatient and social support groups, such as Alcoholics Anonymous, provide less intensive care. The continuum of care aligns with the patient's severity of issues and needs but introduces complexity when seeking treatment that affects care outcomes.

In response, the American Society of Addiction Medicine developed an assessment that evaluates patients across six biopsychosocial dimensions to better match patients with the appropriate treatment settings (American Society of Addiction Medicine, n.d.). Yet, this improvement has had limited success (Mark et al., 2021). The reasons residential treatment may work for one person does not hold for another who had success in Alcoholics Anonymous (Atkins, 2019).

Treatment planning has evolved to match patient goals better. Historically, substance abuse treatment required abstinence, and patients who relapsed were discharged from treatment as unmotivated (Lee & O'Malley, 2018). More recent perspectives prioritize other outcomes, such as reduction in substance use frequency and

quantity, or drug replacement therapy, such as methadone maintenance (Volkow, 2020). However, these changes have not altered completion rates. SUD dropout rates range from 19% to 91% (Herczyk et al., 2023). Additionally, treatment abandonment occurs early in care, with the average length of stay for patients discontinuing residential treatment in just 8.9 days (Ware et al., 2023). Thus, dropout is the likely outcome, and dropout is likely early.

In addition to matching treatment settings to the patient's biological, psychological, and social needs, treatment therapies have also expanded. Psychotherapy and pharmacotherapy are health care professionals' gold standard of care (Anton et al., 2006; Ray et al., 2020). Psychotherapy was the core of SUD treatment. Cognitive Behavioral Therapy remains a popular first-line psychotherapy approach for SUD (Ray et al., 2020). Relapse prevention, coping skills, contingency management, and motivational interviewing are all evidence-based SUD treatments (Ball, 2008; Knuuttila et al., 2011). Still, no single cognitive or behavioral treatment approach is effective for all patients (SAMHSA, 1997).

SUD Therapies and Retention Efforts

Advancements in pharmacotherapy have elevated a medical model approach that prioritizes medications to address the physiological factors of SUD (Brorson et al., 2013). Medications for opioid use disorder and alcohol have been shown to be more effective than psychotherapy alone (Anton et al., 2006; Ray et al., 2020). Patients, especially polysubstance users, prefer a medical model using pharmacotherapy over psychotherapy-only treatments (Kuusisto et al., 2011). Despite the increased use of pharmacotherapy,

retention rates have not improved (Jalali et al., 2019). Studies by Lin et al. (2013) and Timko et al. (2015) underscore the limitations pharmacotherapy has on retention, with both studies finding high rates of dropout for methadone maintenance programs.

Hundreds of studies have examined SUD treatment and dropout. Multiple systematic reviews have explored factors on completion rates, retention, and dropout since the 1970s (Brorson et al., 2013; Dalton et al., 2021; Kelly et al., 2020; Leza et al., 2021; O'Connor et al., 2020; Ray et al., 2020; Timko et al., 2015). Unfortunately, these studies have identified limited successes, generalizable findings, or practical applications (Jalali et al., 2019). Brorson et al. (2013) reviewed 122 peer-reviewed studies between 1992 and 2013 using a box-score approach to identify common factors associated with dropout. Four higher-level themes emerged that impacted retention: age, cognitive deficits, co-occurring issues, and treatment alliance. Of the four, only cognitive deficits and treatment alliance consistently correlated to dropout. Age and co-occurring issues, as well as treatment setting, treatment method, demographics, and satisfaction, were found to be inconsistent in predicting treatment abandonment.

Dalton et al. (2021), O'Connor et al. (2020), Ray et al. (2020), and Timko et al. (2015) examined retention, but all primarily focused on treatment methods. Each concluded medications in SUD treatment appeared to improve retention, especially for opioid use disorder. In the systematic review by Dalton et al. (2021) of emerging adults in SUD treatment, the researchers explored why emerging adults have lower retention in treatment. Using Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA), the authors identified nine studies with three randomized control trials

(RCTs) from 2006 to 2017. Behavioral therapy for all substances and behavioral therapy combined with pharmacotherapy for opioid use disorder were most effective. Additionally, the authors suggest future studies should focus on population-specific programming and holistic approaches that address broad psychological and behavioral processes that promote well-being and reduce emotional or psychological stress.

Another systematic review by Ray et al. (2020) of 30 RCTs between 1990 and 2019 of adult SUD patients explored the efficacy of CBT in combination with pharmacotherapy. The authors found CBT plus pharmacotherapy was superior to pharmacotherapy alone. Also, CBT was as effective but not superior to other behavioral therapies used to treat SUD, such as contingency management or relapse prevention. The study focused on treatment methods and did not review demographic, substance, or treatment setting factors.

Timko et al. (2015) examined retention factors for adults receiving medication-assisted treatment for opioid use disorder. Retention rates across 55 studies between 2010 and 2014 ranged from 19% to 94% at three months. The authors found pharmacotherapy for opioid use disorder was superior to placebo or behavioral therapy alone. Additionally, the authors found contingency management effective as a behavioral therapy. The authors did not report on other patient factors related to retention.

O'Connor et al. (2020) found similar results after reviewing 67 studies between 2001 and 2019 using a PRISMA approach on medications for opioid use disorder for adults. The authors explored factors beyond pharmacotherapy, including demographics, substance use, attitude toward treatment, health risks, health symptoms, and legal and

social aspects. Age was found to relate to retention significantly in many studies, but not all, while other demographic characteristics were more mixed. Substance type, frequency, and amount were inconsistent with retention, except for cocaine and opioid polysubstance abuse. Health risks, symptoms, and legal factors were inconsistent with retention. Meanwhile, attitude toward treatment was significantly associated with retention in five of six studies examining this variable.

While Dalton et al. (2021) found medications were effective with emerging adults, Ray et al. (2020) and Timko et al. (2015) noted similar benefits across all adult ages. O'Connor et al. (2020) found similar results but also noted age, polysubstance use, and attitude likely affect retention. Thus, most systematic reviews have investigated a medical approach to treatment but with limited success in improving retention.

Other studies have focused on demographics and predisposing characteristics, but results are inconsistent across gender, SES, marital status, and criminal history. Women, low SES, and prior criminal activities are factors that are positively associated with higher dropout rates in some studies, but not all (Brorson et al., 2013; Daigre et al., 2021; Harton et al., 2023; Lee & O'Malley, 2018;). For example, Daigre et al. (2021) studied 404 adult SUD outpatient participants with co-occurring mental health disorders longitudinally with one, three, and six-month follow-ups. At six months, 32% of participants had dropped out. The researchers found treatment adherence, polysubstance use, and ADHD were associated with shorter duration but not other mental health conditions.

Retention rates were inconsistently associated with unemployment and the unsheltered, as was a history of incarceration and arrests (O'Connor et al., 2020; Orwin et al., 1999; Ware et al., 2023). Specifically, Ware et al. (2023) conducted a retrospective study of 271 treatment episodes at an 18-year-old and older residential treatment program. The authors did not find a relationship between employment or housing and retention but did find stress at the time of admission was related to dropout. Thus, demographics and predisposing conditions have not regularly shown association with dropout.

Many studies have found that psychological factors increase the probability of dropping out. Several studies connect mood disorders and psychiatric disorders with retention. Co-occurring issues such as anxiety, ADHD, and poor executive functioning predict poor retention (Daigre et al., 2021; Lyvers et al., 2018). Depression is commonly associated with SUD and linked to poor retention (Lyvers et al., 2018). In a correlation study of 46 adults, Lyvers et al. (2018) found a moderate correlation between depression and days in treatment. Depression was measured using the Depression, Anxiety, and Stress Scales. Evidence supports the connection between psychopathology and maladapted schemas (Thimm & Chang, 2022).

Non-clinical psychopathology, including distress tolerance, affectation, and emotional regulation, impact retention. Distress tolerance relates to one's ability to withstand aversive and stressful situations related to treatment (Ali et al., 2017). Eighty-one adults entering residential SUD treatment completed distress tolerance surveys entering treatment (Ali et al., 2017). The researchers found individuals who scored low

on distress tolerance may not have the proper skills to remain in treatment. Similarly, patients express loss of hope as a reason for discontinuing SUD treatment (Ball et al. 2006). Negative affect combined with poor emotional regulation also affected retention (Liu et al., 2022). Stress levels at treatment initiation and anger levels were associated with poor retention (Knuuttila et al., 2011; Ware et al., 2023). Each of these non-clinical psychopathologies have been linked to maladapted schemas.

Predisposing developmental factors, such as adverse childhood experiences and poor attachment associated with poor emotional regulation and impulsivity, likely underlie the relationship to SUD (Fletcher et al., 2014; Leza et al., 2021). Yet, poor attachment and emotional regulation, as well as impulsivity, are associated with premature discontinuation of treatment. Ali et al. (2017) studied 81 African Americans and found impulsivity and low distress tolerance predicted retention. However, positive affect was demonstrated as a protective factor that improved retention (Liu et al., 2022; Taylor et al., 2017). Daigre et al. (2021) note the complex, multidimensional manifestation and severity of both clinical and non-clinical mental health issues complicate the reasons for SUD treatment and retention.

Motivation has been a frequent target of inquiry. Internal desire to change harmful behaviors has been associated with retention (Ali et al., 2017). Insufficient motivation to change, lack of reasons for continuing treatment, lack of interest, and perceived need were all identified in studies related to retention (Ball et al., 2006; Yang et al., 2018; Zemore et al., 2021). Motivational issues have led researchers to evaluate retention through the theory of planned behavior, self-determination theory, and transtheoretical

model (De Weert-van Oene et al., 2001; Knuuttila et al., 2011; Lee & O'Malley, 2018; Zemore et al., 2021). Contingency management and motivational interviewing are targeted therapies to bolster motivation (Knuuttila et al., 2011; Volkow, 2020). However, these theories and therapies have limited effect (Jalali et al., 2019). Moreover, De Weert-Van Oene et al. (2001) note that motivation is more than a facile state and outlined motivational variation throughout treatment that masked treatment intention and retention. Incidentally, Ryan and Deci (2000) described the linkage between motivation and self-esteem that applies to this study, which will be discussed further.

Like motivation, social factors have garnered attention from researchers. Social support and interpersonal relationships have consistently affected treatment dropouts (Brorson et al., 2013). While the success of various treatment methods has provided limited success in improving retention and outcomes, relational factors have consistently shown to be crucial (Kern-Godal et al., 2016). A mixed-method study of eight young adults investigated the relationship between SUD patients and horses in an equine therapy program for SUD (Kern-Godal et al., 2016). The authors found that patients with a solid connection to the horse also had positive emotions that were linked with perceptions of control and competence. Thus, the relational factor was vital to SUD treatment. Similar results, such as conflicts with staff, low trust in counselors, and poor clinical connection, were cited as reasons for dropout in several studies (Ball et al., 2006; Laudet et al., 2009; Yang et al., 2018; Zemore et al., 2021). Conversely, improved social support led to more frequent session attendance and better outcomes (De Weert-Van Oene et al., 2001).

Despite the importance of social factors, the effect size is relatively small (Mark et al., 2021).

Broad Psychological Processes May Impact Retention

Thus, reasons for treatment failure suggest a complex interaction between psychological and social factors and less about demographics, substance, or physiological needs. At the root of SUD behaviors are maladapted schemas, and psychotherapy targets these malformed schemas (Ball, 2008; Volkow, 2020). Treatment requires changes in a patient's cognitive and behavioral processes (Brorson et al., 2013). However, schemas are central to an individual's emotions, perceptions, and relationships and are slow to change (Khalali et al., 2021). Thus, schemas are core to a patient's beliefs, attitudes, interpersonal skills, and treatment outcomes (Arun et al., 2004).

Addictive behaviors are attempts at reducing feelings of irritability, anxiety, stress, and depression that are reinforced by substance usage (Ali et al., 2017; Fletcher et al., 2014). Previous research shows maladaptive schemas are often established early in life and become stable over time (Riso et al., 2006). Additionally, these schemas undergird many psychopathologies, causing maladaptive reactions and behaviors (Young et al., 2003). Hence, substance use and maladapted schemas co-exist in a bidirectional reinforcing system.

The mutually reinforcing nature of substance usage and mental factors may explain the difference between general psychotherapy, where the initial dose-response to treatment is large with a significant trail off, and SUD treatment, which may not show any effect until three months into care (Brorson et al., 2013). Zemore et al. (2021) found

a quarter of the patients had three or more treatment episodes. Some researchers have described this phenomenon as the prototypical treatment trajectory (Daigre et al., 2021). Others have suggested measuring treatment length across treatment episodes since outcomes are associated with total exposure (Jalali et al., 2019). Multiple treatment episodes are expected, and 40–60% of patients will eventually recover (Fletcher et al., 2014). Nonetheless, repeated exposure suggests these semi-permanent cognitive structures gradually change. Thus, these deeper constructs may be underlying SUD, SUD treatment effectiveness, and SUD treatment abandonment.

Personality traits and values appear to hold similar properties. Personality traits and values guide an individual's thought patterns, emotions, and behaviors (McCrae & Costa, 1990; Sagiv & Schwartz, 2022). Even though traits and values are different constructs, both are positively correlated (Schwartz et al., 2012). Like maladaptive schemas, traits and values are highly stable, slow to change, and often develop early in life (Sagiv and Schwartz, 2022). Additionally, traits and values affect the perceptions that invoke attitudes, beliefs, and behaviors (Schwartz, 2012). Traits show how an individual will perceive and react to the world, while values show what one seeks in the world (Sagiv & Schwartz, 2022). The overlapping characteristics of maladapted schemas, traits, and values may elucidate dropout-related core constructs. Attitudes and beliefs associated with an individual's traits and values may reveal an interconnected and mutually influencing relationship. Thus, traits and values may elucidate a combinatorial system that affects retention.

Some researchers have suggested behavioral therapies that utilize ideographic approaches focused on core psychological processes may yield superior results to the current nomothetic medical model (Garey et al., 2020). Termed the "Third-wave," researchers target psychological processes and the function of these processes rather than a latent disease exposed through common symptomatology. The Third-wave therapies are transdiagnostic and personalized to the individual. For example, Hayes and Hoffman (2021) stated cognitive flexibility has been shown to be a significant moderator of treatment outcomes. Therefore, disorder-specific therapies make little sense without addressing cognitive flexibility.

Additionally, the Third-wave therapies focus less on ameliorating negative thoughts and instead on changing the value ascribed to the thoughts. Thus, it is not the thought that creates the problem but the importance it has on an individual's attitudes, beliefs, and behaviors. Hayes and Hoffman (2021) note that values are essential to these beliefs and distinguish Third-wave therapies from past approaches by targeting these value hierarchies. Hence, personality traits and values influence these broad psychological processes that are at the core of Third-Wave therapies.

Personality Traits and SUD

Personality traits are core psychological constructs that may affect SUD treatment retention. Personality traits are individual characteristics that form patterns of behaviors, attitudes, feelings, and beliefs (Niemeijer et al., 2023). The five-factor model measures five dimensions of personality: openness, conscientiousness, extraversion, agreeableness, and agreeableness. Constellations of scores on big five dimensions have been associated

with shyness, anxiety, depression, hostility, positive affect, negative affect, impulsivity, and resiliency (McCrae & John, 1992; DeYoung et al., 2007). Thus, the big five broadly overlaps with attitudes, beliefs, and behaviors.

Big five score constellations are unique in SUD patients. In a study of 48 women with Alcohol Use Disorder (AUD) compared to a control group of 50 women, the AUD women were higher on big five agreeableness and lower on extraversion and conscientiousness (Ribadier et al., 2016). Additionally, scores correlated with immature defense mechanisms. The authors noted patients exhibited behaviors of isolation, denial, acting out, dissociation, and passive-aggressiveness—characteristics categorized under the withdrawal aspect dimension of agreeableness (DeYoung et al., 2007). These findings are similar to a study of 980 same-sex twins in Australia that revealed high agreeableness, low agreeableness, and low conscientiousness associated with alcohol, cannabis, and nicotine addictions (Dash et al., 2019). Thus, traits related to dropout may uniquely describe SUD patients.

Other characteristics of agreeableness are also associated with SUD dropout. Traits of impulsivity and hostility predicted dropout in 48 SUD patients with criminal histories enrolled in a residential treatment community in Italy (Gori et al., 2020). Using survival analysis, individuals with high impulsivity considered the world more hostile toward them than individuals with lower impulsivity scores. Impulsivity and hostility are categorized under the volatility aspect dimension of agreeableness (DeYoung et al., 2007). Thus, agreeableness may significantly predict treatment dropout, with associations linked to different aspects and facets of the dimensions for various populations.

Lyvers et al. (2018) studied 46 residents of a treatment facility in Australia and found impulsivity predicted dropout. High impulsivity scores were noted to maintain SUD behaviors, promote relapse, and increase dropout. Conscientiousness is the dimmer switch on impulsivity, a factor in treatment dropout (McCrae & John, 1992). Myers (2019) studied 103 college students, of whom 63% were recovering from SUD. The findings support that high conscientiousness and agreeableness and lower scores on agreeableness were associated with more extended periods of sobriety. Thus, high scores on conscientiousness and agreeableness appear to be protective factors against SUD.

A study of retention using the theory of planned behavior showed a significant correlation to treatment completion (Zemore et al., 2021). Zemore et al. (2021) developed and validated a new instrument based on the theory of planned behavior to predict treatment retention of 156 adults at admission to outpatient SUD treatment. The authors' new instrument identified 19 items related to attitudinal and perceived control issues. Several studies have identified a connection between the theory of planned behavior and extraversion (Fort et al., 2015; Jamaludin et al., 2020; Ishfaq et al., 2020). The results of Zemore et al. (2021) suggest extraversion may influence treatment completion.

Traits have been shown to align with substance choices. A study of 980 same-sex twins in Australia using the big five personality traits revealed substance abusers had different trait constellations based on the chosen primary substance of choice versus other substance users and non-substance abusers (Dash et al., 2023). Neuroticism was associated with prescription drug abuse; high extraversion related to cocaine/crack and stimulant use; high openness was associated with cannabis use; low agreeableness related

to cocaine/crack use and illicit opioid use. Additionally, the authors' noted agreeableness was also associated with sedatives, stimulants, and mental health conditions.

Other studies outside addiction have signaled contradictory relationships between big five traits and dropout behaviors, beliefs, and attitudes. Neuroticism showed an association with dropout for patients in anxiety and depression treatment, with lower and higher scores associating with dropout (Niemeijer et al., 2023; Schmidt et al., 2018). Niemeijer et al. (2023) studied the personality traits of 156 individuals with depression and anxiety using the Personality Inventory for DSM-5. They found individuals with low agreeableness and high extraversion had better outcomes. The authors note the findings appear to support a dynamic relationship between anxiety symptoms and personality trait facets. However, the results of agreeableness and treatment outcomes are inconsistent.

A study of iCBT, or internet-based CBT, found no relationship between agreeableness and outcomes or dropout. Schmidt et al. (2018) studied 117 adults and measured baseline personality traits using the big five inventory. At baseline, agreeableness was negatively correlated with agreeableness and conscientiousness. However, agreeableness was found to be nonsignificant in treatment outcomes and dropout rates. Yet, extraversion was statistically significant. A one standard deviation increase in extraversion is associated with a risk ratio of .7. The findings may be partly explained by the modality and absence of therapists providing therapy. Alternatively, treatment retention may not reside within a single dimension, and the interaction between big five scores is critical.

Çekici (2019) investigated the willingness of mental health counselor candidates to seek professional psychological help. The study included 189 emerging adult students, mostly female, at a university in Istanbul. Counselors face intense client pressures and encounter their own personal psychiatric challenges that benefit from professional psychiatric help. In this study, Çekici used the big five inventory to assess personality traits. All five dimensions were associated with prospective counselors' willingness to receive help. Elevated scores for openness allowed individuals to consider or adopt beliefs or attitudes contrary to their held position and explained 15% of the variance. More substantial conscientiousness scores indicated higher levels of resiliency and perseverance and explained 17% of the variance. Higher traits of extraversion are aligned with sociability and perceptions that others are helpful and trustworthy, explaining 16% of the variance. More agreeableness signified avoidance of conflict and explained 21% of the variance. Higher traits of agreeableness are associated with a person who experiences more anxiety, depression, and negative mood, explaining 15% of the variance. Thus, each dimension contributes to perceptions of needing help and willingness to receive assistance that are informative to SUD treatment.

A recent study by Liu et al. (2022) evaluated the semantic differences of 55,415 social media posts from 206 adults for the two years prior to SUD treatment. Using topic modeling, Linguistic Inquiry and Word Count, and Latent Dirichlet Allocation, the authors found statistically significant semantic differences between individuals completing treatment and those who dropped out. Social media posts that expressed negative emotions and rumination, characteristics of the withdrawal aspect within

agreeableness, correlated with treatment dropout (DeYoung et al., 2007; Liu et al., 2022). Comparatively, positive emotions and interpersonal relationships, characteristics of extraversion, correlate with better outcomes. While Liu et al. (2022) did not specifically utilize a big five assessment, the language patterns correspond with big five trait characteristics. Moreover, the findings align with Çekici (2023) and Ribadier (2016). Specific trait characteristics elevate emotions and become obstacles while invoking poor coping mechanisms that impede treatment (Kazemi & Khosravi, 2016).

A qualitative study of SUD dropout perspectives suggests traits play an important role in treatment. Lee and O'Malley (2018) interviewed 32 patients regarding their reasons for dropping out of treatment. Patients who dropped out of treatment expressed stubbornness and an unwillingness to fit in with the group, difficulty accepting help, and desires to withdraw or act out (Lee & O'Malley, 2018). One patient described resistance to treatment because it required being open and willing to challenge SUD patterns of thought. Patient interviews support a low openness to new beliefs and attitudes that may challenge existing cognitions. Additionally, reactions mirror traits of high agreeableness through withdrawal and impulsivity.

Addiction therapies are intended to challenge existing cognitions (Taylor et al., 2017). An individual's response is partly informed by personality traits with specific characteristics resistant to care (Niemeijer et al., 2023). Kazemi & Khosravi (2016) describe the trait characteristics that associate with defense mechanisms that retard care efforts. The authors conducted a correlational-descriptive study involving 99 employees at Marvdasht Islamic Azad University using the NEO-Five Factor Inventory that assesses

the big five dimensions, as well as six traits within each dimension and the Defense Style Questionnaire. The study showed individuals high in agreeableness invoke immature defense mechanisms to escape elevated feelings of anger, hate, sadness, and impulsivity. Immature defense mechanisms are denial, rationalization, splitting, and acting out. Individuals low in openness use immature defense mechanisms that contest ideas that challenge existing beliefs and behaviors and are unwilling to see how new ways of thinking can be beneficial. Low conscientiousness scores are associated with an unwillingness to take responsibility, poor organization, and a lack of self-discipline. Individuals with low extraversion prefer to withdraw, be suspicious, and be unwilling to engage. Thus, trait characteristics align with defense mechanisms that challenge and resist efforts that counter existing beliefs and attitudes.

Values and SUD

Personality traits alone have been insufficient in explaining treatment dropout, but combined with values, potentially offer a more complete view of the factors relating to abandoning treatment. According to Ball (2008), maladapted schemas are long-standing negative beliefs influenced by personality factors and reinforced through repetition. Moreover, these schemas are central to self-identity, affect, interpersonal, and behavioral responses. Values may account for unknown beliefs and attitudes that mediate the effectiveness of cognitive therapy (Hamblin et al., 1993). Therefore, values may provide vital information about underlying attitudes and beliefs necessary for recovery (Jalali et al., 2019).

Values influence motivations related to biological, interpersonal, and group needs (Schwartz, 2021). Values are ordered hierarchically and transcend situations (Sagiv & Schwartz, 2022; Schwartz, 2012). More importantly, values alter perceptions based on valued goals that influence behavior (Sagiv & Roccas 2021). Since values relate to goals, they also establish expectations and thus are infused with feelings (Schwartz, 2012). Hence, values are core to an individual's identity (Russo et al., 2021).

The relationship between values and SUD has been examined using multiple value theories. Several studies using Rokeach Value Theory demonstrated both a relationship to SUD and potentially as a target of therapy (Rokeach & Regan, 1980). A study of recovering alcoholics found significant changes in values that were vital to effective SUD treatment (Brown & Peterson, 1990). Fifty-seven individuals were surveyed using the Rokeach Value Survey and compared to a secondary dataset of the general public. The researchers found reduced self-centeredness and increased inner harmony, forgiveness, loving, and helpfulness. The researchers concluded recovering from alcoholism requires value clarification that aligns with the type of treatment, such as 12-step program or SUD therapies.

Similar value differences were observed in a study of 43 alcoholics and 42 drug addicts compared to 455 adults in the general population (Toler, 1975). Using the Rokeach Value Survey, drug addicts and alcoholics scored similarly across values but differed collectively from the general population. Toler (1975) notes SUD individuals scored lower on societal goals and higher on personal values. The results indicate that SUD patients have high personal values, but Brown and Peterson (1990) showed that

patients in recovery had reduced personal values. Thus, addiction and values appear interlinked, and value changes are essential to SUD treatment.

Schwartz's Universal Values, another popular value theory, have been associated with substance abuse and retention. Heavy drinkers scored higher on Schwartz's openness-to-change and self-enhancement values and lower on self-transcendence (Dollinger & Kobayashi, 2003). Dalton et al. (2021) found emerging adults have the highest prevalence of substance abuse and poor treatment retention. Dollinger and Kobayashi (2003) studied 156 emerging adults at a Midwest university, and men and women had similar value scores that were associated with problematic drinking. Moreover, hedonism, stimulation, self-direction, and power were all positively correlated at .29, .27, and .31, while benevolence and universalism were negatively correlated at -.25 and -.22, respectively. Hence, value changes, specifically less self-focus, are linked to SUD treatment outcomes.

Rector & Sverdlik (2016) used the Schwartz Value Survey to study 262 adolescents. The researchers found adolescents who engaged in inappropriate activities, including underage drinking, smoking, gambling, and pornography, self-reported higher hedonism and self-enhancement values and lower self-transcendence values compared to adolescents who abstained from such activities. Thus, values are established early, and specific value orientations appear to promote well-being while others undermine it (Benish-Weisman et al., 2017; Besika, 2022).

Rodríquez Puente et al. (2018) described the importance of value changes to changes in alcohol dependence. The authors studied 119 individuals in Alcoholics

Anonymous in Mexico. Regression analysis linked values and personal factors such as healthy coping skills and behavioral responses that led to increased abstinence. Thus, values appear connected to coping and behavioral responses that affect how one perceives SUD treatment.

Therapist values affect patient outcomes, though not independent of patients but in connection with patient values. Patient value congruence with therapist values affects patient response to treatment (Hamblin et al., 1993). Twenty-nine adults over 65 years old in depression treatment were randomly assigned to different interventions. Across both interventions, patients aligned to therapist values predicted better treatment response. The findings support the view that psychotherapy is a form of value persuasion (Rokeach & Regan,1980). Additionally, the therapist's messages and choice of therapy may alter patient response based on value structures (Dollinger & Kobayashi, 2003; Hamblin et al., 1993). These findings underscore the importance and multifaceted effects of the treatment setting, with interpersonal value alignment and communications targeted to patient values as vital considerations.

Further support for influence of values in health care is found in a study by Liu and Xiao (2023). Multiple evidence-based treatments are available for breast cancer patients, including surgery, chemotherapy, immunotherapy, and radiotherapy, with choices between treatments often decided by the medical provider. However, Liu & Xiao (2023) showed that aligning treatments with patient values improved outcomes. The study divided 90 individuals with breast cancer into three treatment groups. The group with values as a core part of treatment planning had improved treatment adherence, better

outcomes, and higher satisfaction. Hence, values are subtle and unconscious but pervasive in treatment. Further, values are a core part of the self and are cognitive representations affecting motivation (Sagiv & Schwartz, 2022).

Formal axiology may uniquely elucidate treatment retention. It possesses the same properties as other value theories, as previously described. In addition, formal axiology evaluates value structures that may provide a broader influence over an individual's attitudes, beliefs, and behaviors and the associated psychological processes than may be found in other value theories. A value structure triad forms the foundation of an individual's perception and judgment of the world and the self (Hartman, 2011). The interconnected, bidirectionally influencing three value structures are the intrinsic, extrinsic, and systemic. The world perspective is an outward perception of the people, things, and surroundings. The self perspective is an inward perception and judgment of the self-image that consists of the inner self, one's place in the world, and who one desires to be.

Unlike Rokeach or Schwartz's value theories, formal axiology evaluates the structure and dynamics of an individual's value system that influence judgments versus the preferences of instrumental and terminal values or personal versus social values (Cone et al., 2012; Hurst, 2009). The Hartman value profile is an evidence-based assessment of axiology that measures what an individual values and how an individual assigns valuation (Edwards, 2008). Underdeveloped or disproportionately developed value structures result in either poor value judgments or value inversions that are considered value distortions that contribute to problems in living (Pomeroy, 2005).

Concurrent analysis established a strong relationship between formal axiology scores and anxiety, depression, psychiatric disorders, impulsivity, distress tolerance, affectation, and emotional regulation (Pomeroy, 2005). Using data from 97 patients, a concurrent validity analysis of 97 patients demonstrated a link between formal axiology and McAndrews's Alcoholism Scale and the Minnesota Multiphasic Personality Inventory (MMPI) Alcoholism scale (Pomeroy, 2005). The concurrent analysis indicates formal axiology correlates to mental constructs, mental pathology, and aspects of personality.

Self-concept (i.e., self systemic scores) is a critical dimension of the self within formal axiology (Edwards, 2010). Russo et al. (2021) evaluated self-concept, value consistency, and psychological needs satisfaction across 195 young adults. The authors found value consistency was linked to psychological satisfaction, and self-concept mediated the relationship. Thus, value consistency between goals and the present self is vital to a stable, healthy self-image but may be diminished by a poor self-concept (Russo et al., 2021). Accordingly, appropriately ordered values create resiliency, motivation, a sense of authenticity, and uniqueness (Pomeroy, 2005). Russo et al. (2021) describe this value congruency "as a compass in our lives guiding our attitudes, predispositions and behaviours" (pp. 10–11).

Cone et al. (2012) described the importance of formal axiological value structures in evaluating physician residents for a surgery program. When individuals are presented with a situation or issue, value structures inform their response and if the reaction improves the situation or problem. The three forms of value influence evaluative

judgments. The intrinsic dimension influences how an individual perceives others in a wise and prudent manner. The extrinsic dimension evaluates the situation as a task and the optimal method to achieve an end. The systemic dimension considers the situation conceptually against norms and rules related to implications and consequences. Thus, formal axiology may provide insights into the decision calculus and potential perceptions that lead to SUD dropout.

The self perspective of formal axiology elucidates self-esteem (intrinsic), self-worth (extrinsic), and self-concept (systemic; Pomeroy, 2005). Limited research implicates poor self-esteem and self-concept as SUD factors (Trucco et al., 2007; Crapanzano et al., 2018). Crapanzano et al. (2018) reviewed 18 studies, eight qualitative, nine quantitative, and one mixed to assess self-stigma and self-efficacy. The authors note all the studies found direct or indirect effects on outcomes, including engagement and retention. Similar results were found across 1,320 high school age students, where poor self-esteem and self-concept was identified as primary factors for dropping out of high school (Ntlhe, 1995). In equine therapy, horses bolstered self-construct (Kern-Godal et al., 2016). Additionally, Jalali et al. (2019) describe patient experiences that reflect improved self-esteem and self-worth with statements like “I felt worthy for myself” (p. 4). Arun et al. (2004) stated self-concept issues were more critical motivational factors to remain in treatment than physiological factors, such as withdrawal.

Pomeroy (2005) describes how compensatory defenses offset poor formal axiological scores as responses to anxiety, depression, stress, antisocial, and psychosomatic outcomes. The process described by Pomeroy helps illuminate formal

axiology's impact on the self. During childhood and adolescence, value structures form that foster a healthy self-image. Failure to fully develop the intrinsic self scores for rational-emotional autonomy results in compensatory defenses. The compensatory defenses require resolution through external sources and contingent-worth strategies that manifest as efforts to seek others' approval or perfectionism and "tyrannical self-definitions" (Pomeroy, 2005, p. 58). Ball (2008) describes addictive beliefs as conforming to irrational thoughts of perfectionism and dichotomous thinking, while Sagiv and Schwartz (2000) state unmet early childhood needs manifest as insecurities emphasizing extrinsic goals of self-worth.

Research on dropout factors aligns with Pomeroy's claims and may connect formal axiology and dropout. Fletcher et al. (2014) describe addiction as a brain disease resulting from compensatory processes. The high prevalence of substance abuse in emerging adults may confirm this process (Dalton et al., 2021). Additionally, Khalali et al. (2021) note many problematic behaviors surface from childhood maladaptive schemas created when a child's emotional needs are not met. Thus, formal axiology may help explain dropout that results from profoundly entrenched childhood compensatory patterns of thought and behaviors.

Dichotomous thinking is a feature of value inversion where systemic values are prioritized because intrinsic values are underdeveloped (Pomeroy, 2005). Dichotomous thinking is exhibited in the findings of Zemore et al. (2021) and Lee and O'Malley (2018). In Zemore et al. (2021), 156 adult outpatients completed surveys entering treatment. Patients who anticipated disliking staff, other clients, and program rules had

higher dropout rates. These perceptions conflict with SUD Treatment. SUD treatment is of extrinsic value due to its practical use in helping patients recover. However, positively valenced systemic values create value distortion by negating the extrinsic values in favor of the systemic values. Expectations of the treatment process collide with the outcome. The benefits are negated or subordinated to the dichotomous attitudes and beliefs of the process.

De Weer-Van Oene et al. (2001) found similar results. The authors conducted a repeated measures analysis of the readiness, behavioral intention, and perceptions of ninety-three SUD patients at an inpatient unit. Practical use of therapy was the most common reason patients left treatment. Thus, a value distortion between the goal and the process may account for treatment dropout. The issue is similar to a child who refuses cough medicine because it tastes terrible.

Similar distortions are seen through fear of stigma, criticism, and attacks on the self-concept. Rural women abandoned care for fear of judgment by other patients (Godlaski et al., 2009). Stigma and staff judgments caused patients to leave treatment (Lee & O'Malley, 2018). Çekici (2019) states rigid and absolute thinking creates intense stress and may cause neurosis and other disorders that lead to low resiliency. Thus, value distortions appear to increase sensitivity that results in low distress tolerance. Heightened sensitivity was noted in a study by Lyvers et al. (2018).

Dropout studies have narrowly focused on substance-related factors, including substance-related attitudes, beliefs, and behaviors, but less on general personality and broader value structures that may affect treatment retention. Addiction treatment is

characterized by short-term symptom-focused treatments that maximize clinical productivity and cost-effectiveness (Fletcher et al., 2014). The current medical model addresses physical dependence on a substance but has been less effective in eliminating the psychological factors that need time to shift (Jalali et al., 2019). The emphasis on a medical model approach may have limited investigation into personality factors. Few studies have examined the big five within the current medical model approach, and no studies have examined the big five aspect model. Additionally, no studies have evaluated treatment retention and formal axiology. Thus, this study was designed to assess the association of personality traits and values on treatment dropout.

Summary and Conclusions

Substance use disorders are a significant social issue, costing hundreds of billions of dollars (Ali et al., 2017). Fatal drug overdoses have surpassed deaths from car accidents and guns. Additionally, substance abuse negatively impacts the health care and criminal justice system as well as the economy (Fletcher et al., 2014). Thus, substance abuse harms the individual, their loved ones, and the community.

SUD treatment utilization remains low, and treatment dropout remains high (Herczyk et al., 2023). The primary treatment approach has shifted toward a medical model that optimizes clinical productivity and minimizes costs (Fletcher et al., 2014). Conversely, research suggests successful treatment requires elongated exposure to improve success rates (Jalali et al., 2019). Furthermore, the factors that contribute to treatment dropout remain elusive.

Hundreds of studies have investigated dropout since the 1970s (Brorson et al., 2013). Yet, limited successes have been identified. Personal and social factors have the most consistent relationship to dropout (Daigre et al., 2021; Lyvers et al., 2018). However, investigations have primarily focused on substance use-related influences, therapies, and treatment settings (Brorson et al., 2013). Therefore, underlying core constructs such as personality traits and values are lesser known.

Personality traits have been shown to overlap with patient factors that contribute to dropout. Several studies have examined the five-factor model and behavioral health conditions, including SUD, anxiety, depression, and ADHD (Dash et al., 2023; Daigre et al., 2021; Niemeijer et al., 2023). Personality traits are linked to an individual's behaviors, attitudes, feelings, and beliefs (Niemeijer et al., 2023). Hence, personality traits may illuminate underlying individual characteristics associated with dropout.

Values offer another lens into an individual's attitudes, beliefs, behaviors, and choices (Jalali et al., 2019). Values are significant influencers of a person's goals and associated behaviors (Russo et al., 2021). Formal axiology presents a theoretical framework to evaluate values that can elucidate decision criteria related to dropout (Pomeroy, 2005). Thus, personality traits and values may provide insights into core personal constructs contributing to dropout.

This study examined personality traits using the five-factor model and formal axiology for values to explore the relationship to dropout. Since personality traits and values influence how individuals perceive the world and themselves, these two theories may expose new insights into a complex and persistent problem. Additionally, the study

may offer generalizable findings that can be practically implemented to reduce treatment dropout.

Chapter 3 provides details regarding the study design and approach. It reviews sample size, inclusion criteria, analysis procedures, and instruments. Additionally, it examines internal and external threats to validity. Finally, ethical procedures, including Institutional Review Board approval, are identified and outlined.

Chapter 3: Research Method

Introduction

SUD remains a persistent problem that affects individuals, loved ones, and communities. About ten percent of adults with SUD in the United States will seek out care in any given year (Lee & O'Malley, 2018; Zenmore et al., 2021). Unfortunately, research indicates SUD patients are more likely to drop out of care than complete treatment (Herczyk et al., 2023). Across five systematic reviews, few generalizable findings have led to practical improvements in treatment retention (Anton et al., 2006; Brorson et al., 2013; Dalton et al., 2021; Ray et al., 2020; Timko et al., 2015). Additionally, new third-wave therapies that focus on general psychological processes targeting thoughts, emotions, and beliefs may be more influential in SUD treatment (Hayes & Hoffman, 2021). Personality traits and values affect attitudes, beliefs, and behaviors and may influence treatment retention (Bleidorn et al., 2021; Schwartz, 2012). This study examined the relationship between personality traits, values, and SUD treatment retention.

This chapter reviews the research design, rationale, methodology, data analysis plan, validity, and ethical procedures. This quantitative study used a cross-sectional correlation design to examine the association between personality traits, values, and SUD treatment retention from a secondary data source. The methodology section includes the population and data, including the instruments and variables. The data analysis plan describes the statistical analysis to identify an association between the variables. Validity

and ethical procedures conclude the chapter by examining factors that would compromise the integrity of the study.

Research Design and Rationale

This study examined the relationship between personality traits, values, and treatment retention. This quantitative cross-sectional correlational study design used correlation and regression analysis to assess the association between the independent and dependent variables. The independent variables were 15 continuous variables measured by the big five aspect scales and six continuous variables from the Hartman value profile (DeYoung et al., 2007; Hartman, 2006). The dependent variable was a continuous measure of days in treatment. The data were obtained from a tele-behavioral health clinic in the United States. The clinic serves over 2000 patients, with approximately 50% admitted for SUD as the primary diagnosis in Arkansas, California, New Mexico, North Carolina, and Washington. The clinic treats individuals with substance use disorder, mental health, psychiatric, eating disorders, and chronic pain conditions. Patients receive medication management, including medication-assisted treatment, behavioral therapy, and case management services. Data were gathered from January 1, 2024, and September 30, 2024. Admissions staff sent patients a link to an online survey and requested that patients complete the instruments after admitting to the program. Respondents entered their responses into Alchemer, a HIPAA-compliant online survey system (Alchemer, n.d.). Data from the survey system were imported into a database that calculates the scales.

A multiple linear regression analysis was chosen to assess the relationship between the variables. Multiple linear regression is appropriate for a study using two or more continuous independent variables and one continuous dependent variable (Burkholder et al., 2017). The findings from this study may indicate that personality traits and values are associated with SUD treatment abandonment, which would advance our understanding of these constructs and their importance to SUD retention. Moreover, the information may lead to additional studies that could advance therapeutic efforts to improve retention and reduce dropout.

Methodology

This section describes the population under study, the sample size, and details about the secondary dataset. Since the study is a secondary dataset, this section outlines the data collection procedures, the purpose of the data, and the quality of the data. Additionally, each instrument, operational definitions, reliability, and validity are reviewed.

Population

The target population for this study was adults aged 18 to 76 receiving SUD treatment at a tele-behavioral health clinic located in California, serving patients in Arkansas, California, New Mexico, North Carolina, and Washington. Participant SUD diagnoses included alcohol (ICD-10 diagnosis code F10), opiates (ICD-10 diagnosis code F11), cannabis (ICD-10 diagnosis code F12), sedatives (ICD-10 diagnosis code F13), cocaine (ICD-10 diagnosis code F14), stimulants (ICD-10 diagnosis F15), multiple substances and other psychoactive substances (ICD-10 diagnosis F19). Participants may

have co-occurring mental health, psychiatric, eating, or pain issues, including psychosis or traumatic brain injury. Though these conditions may impact cognitive functioning, the participants were retained in the study since their cognitive functioning was assessed at admission and sufficient to participate in an outpatient program, and there is no justification for excluding individuals from this study.

All participants completed the surveys after January 01, 2024, and on or before September 30, 2024. Additionally, telehealth enables broad access across rural, peri-urban, and urban communities. Therefore, the population may include participants across a diverse geographic footprint, though the clinic mainly attracts patients from California, Washington, and New Mexico. Between January 1, 2024, and September 30, 2024, a total of 970 patients were admitted to the program for a behavioral health condition, with 250 having a SUD diagnosis. A total of 250 participants completed the surveys and were eligible for the study.

Sampling and Sampling Procedures

The clinic provided data for this study in a comma-separated value (CSV) format. The clinic collected patient data in a health informatics database for the intake and care process. Data for the instruments were self-reported by the respondent via a link received from clinic staff requesting the patient complete the surveys. Patients consented to surveys as part of the overall informed consent. The clinic incorporates multiple psychometric and health-related surveys into its metrics-based care model. The data collected through the surveys facilitates provider care decision-making and patient communication strategies to improve retention.

The sample data were collected from January 1, 2024, through September 30, 2024. After patients are admitted to the program, clinic staff provide them with a link to complete the instruments described below. Patients are estimated to spend about 30 minutes completing the BFAS and HVP. Responses were captured in an online survey tool, Alchemer (Alchemer, n.d.). Data were imported from the online survey tool to a proprietary health informatics database, where scale calculations were completed programmatically. Additionally, the survey results were linked to the patient's medical record, which contains a patient's diagnoses, start date, end date, discharge reason, and demographic data. The clinic generated a CSV export of the data with filter criteria for respondents created between January 1, 2024, and September 30, 2024, for adults aged 18-76 with an SUD. The file was shared via an encrypted file in Dropbox.

The data file contained no missing values since each question requires an answer before submission. Patients completed the BFAS and HVP as part of their admission process with other enrollment forms, such as consent for treatment and health history. While patients may decline to complete the BFAS and HVP, this did not occur during the sample timeframe. Therefore, each response represents a complete case. The file only contained respondents with an SUD diagnosis, aged 18+, who had completed the instruments. These inclusion criteria led to a total sample size of 250. For this study, the alpha level was set at α = 05. Power analysis with effect size set at .15, 13 predictor variables, and statistical power of .8 calculates the minimum required sample size of 149 (Soper, n.d.). A parsimonious set of predictor variables was identified from the literature,

with additional correlation analysis to confirm the selected predictors during the pre-analysis phase of the study.

Archival Data Use

Data for this study was obtained with approval from an outpatient tele-behavioral health clinic treating SUD. Self-reported data were collected between January 1, 2024, and September 30, 2024. Admission staff provided patients a link to the instruments via email. If a patient did not complete the surveys, staff followed up with the patient via email and phone to complete the instruments. The data were used by clinic staff and healthcare providers for treatment planning, engagement, and care management. The clinic deidentified the data, used filter criteria to select SUD adult patients, and provided the data as a CSV file.

Instrumentation and Operationalization of Constructs

This study uses the big five aspect scales and Hartman value profile (DeYoung et al., 2007; Hartman, 2006). A review of each instrument and operationalization of the constructs is provided below.

Big Five Aspect Scales

The five-factor model, or big five, was developed by McCrae and Costa in 1983 (McCrae & John, 1992). The instrument identifies and measures five personality traits dimensions: openness, conscientiousness, extraversion, agreeableness, and neuroticism. DeYoung et al. (2007) found that each personality dimension could be separated into two subdomains called aspects. The big five aspect scales were published in 2007 and have been used to assess the association of personality traits and social anxiety in

undergraduate students, honesty and humility in a secondary data set of adults, and reaction time and cognitive ability in adults (Simpson & Bedwell, 2022; Lee & Ashton, 2019; Willoughby et al., 2023). The instrument is available without permission or fees for research purposes. The instrument is available in Appendix A.

This study used the five higher-order traits, and two aspects related to neuroticism for a total of seven variables. The big five aspect scales contain five higher-order personality trait variables and ten low-order variables called aspects. Each higher-order variable has two associated lower-order aspect variables. Higher-order personality traits and lower-order aspects may be conceptualized as a set of facets. Table 1 displays higher-order traits and sub-traits with the associated adjectives or facets for each.

Table 1

Five-Factor Traits and Aspects with Corresponding Adjectives

Trait & aspect scales	Adjectives (facets)
Openness	
intellect	Quickness, creativity, ideas, ingenuity, competence, depth, introspection
Openness	Aesthetics, imagination, reflection, fantasy, feelings, actions, values
Conscientiousness	
industriousness	Purposefulness, efficiency, self-discipline, competence, organization, achievement, dutifulness
Orderliness	Orderliness, conscientiousness, order, perfectionism, rationality, cautiousness
Extraversion	
enthusiasm	Friendliness, warmth, gregariousness, poise, positive emotion
Assertiveness	Leadership, assertiveness, activity, talkativeness, excitement seeking
Agreeableness	
compassion	Warmth, sympathy, empathy, altruism, tenderness
Politeness	Nurturance, cooperation, pleasantness, compliance, morality
Neuroticism	
withdrawal	Nervous, worrying, high strung, insecure, self-pitying
Volatility	Impulsive, jealous, emotional, impatient, temperamental

Each sub-trait has 10 items associated that the respondent's rate on a 5-point Likert Scale. Respondents rate the statement as strongly disagree, disagree, neither disagree or agree, agree, or strongly agree. Scores are one to five, with strongly disagree associated with one and strongly agree with five. Reverse scored items have inversed scoring with strongly disagree as five and strongly agree as one. For each sub-trait, the mean was calculated to obtain the score for the sub-trait scale.

The 20 items associated with the two sub-trait scales are averaged for the higher-order scale to obtain the score. Scores range from one to five, with higher scores indicating stronger trait association and lower scores indicating less trait association. Thus, the instrument provides five scores for the higher-order traits and 10 scores for the sub-traits that make up an individual personality.

The five higher-order traits and the two aspects of neuroticism—withdrawal and volatility—have been shown to be associated with treatment outcomes (Gori et al., 2020; Lyvers et al., 2018). Antisocial personality disorder and sensitivity to punishment or stigma have been shown to negatively affect treatment (Daigre et al., 2021; Lyvers et al., 2018). These characteristics align with personality facets found under the withdrawal aspect scale. Additionally, the volatility scale includes personality facets such as poor distress tolerance, impulsiveness, and irritability that impact SUD treatment (Ali et al., 2017; Leza et al., 2021; Zemore et al., 2021). Therefore, both withdrawal and volatility are potential explanatory variables associated with treatment dropout and were assessed with the five higher-order traits. Thus, the total personality traits used for this study were the five personality traits of the five-factor model, openness, conscientiousness,

extraversion, agreeableness, and agreeableness, and the two aspects of agreeableness—withdrawal and volatility.

The big five aspect scales demonstrate sufficient reliability and validity. Cronbach's alpha ranges from .81 to .83 for a random sample of 481 community members in the Eugene area of Oregon, and the test-retest showed no significant variation (DeYoung et al., 2007). Additionally, construct, discriminant, and concurrent validity were demonstrated by assessing item correlation to the construct and to other construct variables, as well as comparing the big five aspect scale measures to the Revised NEO Personality Inventory and big five inventory (DeYoung et al., 2007).

Hartman Value Profile

The Hartman value profile (HVP) measures value structures, that is, hierarchical structures that serve as standards for decision-making (Edwards, 2010). The HVP was developed by Robert S. Hartman in 1973 (Hartman, 2006). The instrument has respondents rank order two sets of 18 value combinations. The first set of 18 statements represents value combinations experienced in the world (i.e., world scores or Part 1 scores) that relate to social and professional perspectives. Individuals rank statements such as "a baby," "a uniform," and "a fine" according to personal meaning and significance. The second set of 18 statements represents value combinations of one's self (i.e., self scores or Part 2 scores) that relate to an individual's identity and existential self. The instrument is available without permission or fees for research purposes. The instrument is available in Appendix B.

Each 18-statement set produces three core dimensional scores: intrinsic, extrinsic, and systemic. While additional composite measures are calculated, this study only used the three-dimensional scores from the world view and the self view (See Table 2). Therefore, six variables from the HVP were evaluated in this study, that is, the three-dimensional scores from the world and self views.

The world view dimensional scores are DIM-I 1 (intrinsic or I), DIM-E 1 (extrinsic or E), and DIM-S 1 (systemic or S). The self view dimensional scores are DIM-I 2 (intrinsic or I), DIM-E 2 (extrinsic or E), and DIM-S 2 (systemic or S). The scoring of the HVP for the world view's 18 statements and self view's 18 statements are the same. Respondents are asked to rank the 18 statements from best to worst according to their perspective. The order is compared to an ideal ranking that follows the theory of formal axiology (Ward, 2008). Unlike normalized tests that establish a mean based on population responses, the HVP uses ipsative measures with a pre-determined rank order. The expected order is based on Hartman's theory, which uses transfinite math to calculate and rank the statements based on value and valuation (Hartman, 2006).

According to Hartman's theory (Hartman, 2011), each statement represents a value structure. A "new baby" (I^I) represents an intrinsic object valued intrinsically, while "a fine" (E_S) represents a systemic object valued extrinsically. A superscript denotes a positive valuation of a value object, and a subscript denotes the devaluation of a value object. The ideal order of statements is I^I, E^I, S^I, I^E, I^S, E^E, S^E, E^S, S^S, S_S, E_S, S_E, E_E, I_S, I_E, S_I, E_I, I_I. Scoring is derived based on Hartman's calculus, which includes 24 statistical calculations to compute all the measures of the HVP (Hartman, 2006).

Scores are calculated by calculating the difference between the respondent's rank order of an item and the ideal order. The differences are summed for each dimension. For example, "a new baby" (I^I) should be ranked first. If a respondent ranks the item seventh, then the difference is 6. "A uniform" (S^E) should be ranked 7th, while "A fine" (E_S) should be ranked 11^{th}. The difference between the respondent's rank and the correct position is calculated for each of the 18 items. The DIM-I 1 score is calculated by summing the differences for items I^I, I^E, I^S, I_I, I_E, and I_S. The DIM-E 1 is the sum of differences for E^I, E^E, E^S, E_I, E_E, and E_S. The DIM-S 1 is the sum of the differences for S^I, S^E, S^S, S_I, S_E, and S_S. The total potential score for each DIM-I 1 is 82, DIM-E 1 is 70, and DIM-S 1 is 64. The self view dimensional scores are calculated using the same procedure for the second set of 18 statements.

The HVP contains a validity test using Spearman's Rho (r_s)_is calculated per set of 18 statements to ensure the validity of the responses. Hartman (2006) recommended a cutoff of .07. However, Hartman did not justify his rationale for this cutoff, and Pomeroy (2005) established a relationship between SUD and mental health issues and poorer HVP scores. Additionally, patients enrolled in behavioral health care are more prone to distorted self-images and a higher risk for suicide, which may result in poorer Rho scores on the self view (Akkas & Corr, 2022). Moreover, the strength of a correlation is interpreted as strong at .60 (Akoglu, 2018; Swinscow, 1997) Therefore, Rho scores equal to or greater than .60 on the first set of 18 statements (world view) are considered acceptable, and Rho scores on the second set of 18 statements are ignored. In the sample, there were 34 responses below .60.

Table 2

Dimensional Scores for World View and Self View of HVP

World view measures (Part 1)	Self-view measures (Part 2)
DIM-I 1	DIM-I 2
DIM-E 1	DIM-E 2
DIM-S 1	DIM-S 2

The HVP has been used to compare differences in entrepreneurial value structures versus corporate executives (Hurst, 2019). Additional studies focused on leadership assessing the association of dark triad leadership traits and value structures, trait authenticity, authentic leadership, and value structures, and ethical leadership and value structures (Clowney-Johnson, 2021; North & Dunbar, 2024; North et al., 2019). Additionally, the HVP was used in behavioral health to determine concurrent validity with MMPI, Cattell Personality Factors, and biomedical validity (Pomeroy, 2005).

Reliability and validity studies indicate the HVP is appropriate for this study. Multiple studies have demonstrated the reliability of the instrument. Test–retest analysis showed non-significant differences between pre-test and post-test among 80 college sophomores (Pomeroy, 2005). Another re-test reliability study with 86 college students taken two weeks apart found non-significant differences between tests (Smith, 2006). North et al. (2019) performed reliability tests across 19 completed samples and demonstrated Spearman Rho scores between .743 and .989 for the Part 1 (world view) and .710 and .982 for Part 2 (self view; North et al., 2019). Burns and colleagues tested a random sample of 200 tests from 6000 respondents from Dollar General employees using a test–retest approach (Smith, 2006). The researchers found the Spearman Rank Order

Coefficient >.549. Dunbar and North (2024) stated reliability was robust with Part 1 α = .820 and Part 2 α = .904 in their study of 117 public leaders in the southern Mid-west. Elliot (1969) assessed the reliability and validity of the Hartman Value Inventory using cluster and factor analysis and determined the instrument did measure the intended constructs with consistency across three samples, including 371 college administrators, 626 college students, and 525 college teachers. Thus, the HVP has demonstrated reliability across different populations.

Validity measures the accuracy of an instrument for the corresponding construct, behavior, or characteristic. Construct, concurrent, criterion, discriminate, and cross-national validation analysis are efforts to assess the variation of an instrument to an external standard and particular to a population (Groves et al., 2011). The HVP has been assessed using each of these approaches, providing consistent findings that the instrument is accurate in assessing value structures.

Construct and concurrent validity studies demonstrated a strong association to well-established instruments. A study of 65 university students found strong connection between the HVP and the Rokeach Value Survey, the Allport-Lindzey Study of Values, and Kohlberg's Theory of Moral Development quiz (Smith, 2006). Additionally, concurrent validity with the MMPI shows a range of correlations from .24 to .54 for the MMPI scales, with the MMPI anxiety, depression, alienation, repression, manifest hostility, and authority problems correlating significantly with the HVP DIM-I, DIM-E, DIM-S, INT% and AI% self scores (Pomeroy, 2005). Another concurrent validity study compared two samples, 68 adults and 72 adults, at different time points to the MMPI, the

Cattell 16PF, CAQ, and Cornell Medical Index (Smith, 2006). The results indicated the HVP correlated significantly to 36 measures in the MMPI and Cornell Medical Index for Part 1 and thirty-two in the Cattell 16PF in Part 2. These construct, and concurrent validation studies indicate the HVP measures the purported constructs accurately.

Studies of criterion and discriminate validity also support the HVP's accuracy. A criterion study of 44 incarcerated individuals for murder and rape compared to 500 non-criminal respondents showed statistically significant differences across all six higher-order dimensions (Smith, 2006). Additionally, a multivariate discriminant analysis of 97 patients, 119 students, and 156 doctors indicated the HVP correctly identified the populations with 64%, 92%, and 67% discriminatory accuracy (Pomeroy, 2005). Additionally, multi-national responses from Indonesia, Japan, Mexico, and Russia showed no significant deviation in scores, suggesting the instrument is not culturally dependent (Pomeroy, 2005; Smith, 2006). The ability of the HVP to differentiate populations and be insensitive to cultural influences further supports the validity of this instrument.

Data Analysis Plan

This study set out to answer the following question: What are the combined (R^2) and relative effects (sr^2) of personality traits and values in explaining the variance in treatment retention in adults at a telehealth SUD outpatient clinic in the US?

H_0: Personality traits and values do not explain the variance in treatment retention in adult SUD patients at a tele-behavioral health outpatient clinic in the US.

H_1: Personality traits and values do explain the variance in treatment retention in adult SUD patients at a tele-behavioral health outpatient clinic in the US.

The analysis was conducted using SPSS version 29. Preliminary analysis included univariate analysis to provide descriptive data about the dataset. Age, race, housing status, education, and income were evaluated. Additionally, a bivariate analysis was conducted to determine the correlation between the traits and sub-traits to the treatment retention (i.e., the dependent variable) to identify a parsimonious set of variables. For the HVP, the literature identified INT% world, INT% self, AI% world, AI% self, and DIM-S 1 Valence as potential variables. However, the decision was to keep only the main HVP dimensional variables as a parsimonious set of predictors.

Three multiple linear regression analyses will be conducted to evaluate the combined (R^2) and relative effects (sr^2). The first regression will evaluate the selected big five aspect variables and days in treatment. The second regression will evaluate the selected HVP variables and days in treatment. A third regression will occur using the statistically significant predictors from the first two regression analyses. Finally, the full regression model will be assessed for statistical significance, and the impact of the predictor variables. Results and interpretation will be determined based on the significance and practical effect size.

Threats to Validity

Validity is a vital assessment of the accuracy of the findings. Internal, external, and statistical validity are essential to evaluating a study's reliability, accuracy, and importance. For this study, a cross-sectional correlation design may have multiple factors

influencing the data that make generalization difficult. The results may be informative without a control group or repeated measurement, but numerous factors may confound results (Campbell & Stanley, 1963).

Internal Validity

Cross-sectional correlation studies limit the ability to control many internal validity issues since they do not have a comparison group, randomization, or intervention. However, risks to internal validity relate to sample selection and researcher bias (Campbell & Stanley, 1963). The sample selection may be unique and differ significantly from the general SUD population. Additionally, researcher bias may be a factor in the analysis. The data collection processes were not observed, nor were interrater correlations examined. Therefore, these threats could have influenced findings.

External Validity

External validity threats relate to the limitations of the sample. Data were obtained from a single clinic. The clinic may appeal to a specific patient population that may be influenced by recruiting practices or telemedicine modality. Research has shown disparities in telemedicine utilization across race, rural, and socio-economic status (Nguyen et al., 2023). Therefore, the generalization of results may limit the findings to other populations.

Ethical Procedures

This study used retrospective operational data from a tele-behavioral health clinic. Approval to use the data was obtained from the clinic. Additionally, this study ensured privacy by obtaining de-identified data. All the data was securely managed and will be

destroyed after 5 years. Institution Review Board approval at Walden University was obtained on September 25, 2024 with approval number 09-25-24-1158462. Institutional Review Board approval indicates that the ethical treatment of participants has been considered and risk-benefits support conducting the study (UCLA, n.d.). Additionally, Institutional Review Board approval requires appropriate action, protocols, and reporting to be incorporated into the study to maintain data privacy, confidentiality, and ethical treatment of participants.

I work for the organization providing the data for this study but rarely interact with patients or administration staff. The organization's leadership approved the study, the data sharing arrangement, confidentiality, and the data destruction plan. Additionally, data were captured as part of normal business processes, and staff were not aware of the study, minimizing staff influence on data capture. Moreover, the instruments and data collection methods have been in place since 2016.

Summary

This study used a quantitative cross-sectional correlation design to assess the relationship between personality traits, values, and SUD treatment retention days. Analysis was performed using multiple linear regression to assess the combined (R^2) effects and the partial (sr^2) effects of personality traits and values on SUD treatment retention days. A secondary sample from a tele-behavioral health clinic from 250 individuals capturing responses to the big five aspect scale and HVP will be evaluated against days in treatment. Additionally, univariate analysis of demographic data was performed to describe the sample data. This analysis will determine if personality traits

and values explain the variance in treatment retention in adult SUD patients at a tele-behavioral health outpatient clinic in the US.

This study was performed under approval from Walden University's Institutional Review Board. Institutional Review Board approval ensures that participants' ethical and judicial treatment was considered and proper data privacy and confidentiality procedures were integrated into the study. Additionally, efforts to enhance validity were identified. Cross-sectional correlation studies are pre-experimental studies that are vulnerable to confounding variables. In addition, external validity is limited due to the homogenous data set from a single clinic. Nonetheless, this section outlined the efforts to ensure validity, ethical practice, and accurate analysis.

In the next section, the results from the analysis are reviewed. The results from the calculations, significant, effect size, and post hoc analysis are described. Additionally, any potential data issues and significant results are examined.

Chapter 4: Results

Introduction

This quantitative study explored the relationship between personality traits, values, and treatment retention. The combined relationship of personality traits and values (R^2) and the individual variable relationship was examined (sr^2). The independent variables included the BFAS: openness, conscientiousness, extroversion, agreeableness, and neuroticism, as well as the two sub-traits of neuroticism—withdrawal and volatility. Six independent variables from the HVP were selected—DIM-I 1, DIM-E 1, DIM-S 1, DIM-I 2, DIM-E 2, and DIM-S 2. The dependent variable was days in treatment. Three multiple linear regression models were executed to answer the hypothesis: What are the combined (R^2) and relative effects (sr^2) of personality traits and values in explaining the variance in treatment retention in adults at a telehealth SUD outpatient clinic in the US?

Few studies have investigated the five-factor model and SUD treatment retention, while no studies have investigated the formal axiology and treatment retention. Additionally, multiple meta-studies have found few consistent factors related to treatment retention (Brorson et al., 2013; Dalton et al., 2021; Kelly et al., 2020; Leza et al., 2021; O'Connor et al., 2020; Ray et al., 2020; Timko et al., 2015). Thus, this study could identify new factors influencing treatment retention.

This chapter reviews the findings of both univariate and multivariate analysis. This chapter consists of three sections: data collection, results, and exploratory analysis. The data collection section outlines the procedure for collecting, obtaining, and preparing the data for analysis. The results section contains descriptives from univariate analysis,

bivariate analysis, and the findings from the regression analysis. The descriptives section contains participant demographic details, including age, gender, race, ethnicity, socioeconomic factors, and primary SUD diagnosis. The bivariate analysis assessed if other BFAS variables should be considered. The regression analysis reviews three multiple linear regression analyses that begin with a review of the preliminary requirements and assumptions for conducting each multilinear regression. Then, the findings are reviewed for each primary analysis. The exploratory analysis section further examines the relationship between personality traits, values, and treatment retention.

Data Collection

Data for this study were collected from January 1, 2024, through September 30, 2024 from a tele-behavioral health clinic serving individuals located in California, Washington, and New Mexico. The secondary dataset was collected from patients upon admission to the clinic using an online survey form containing the BFAS and HVP. The survey data were merged with the patient's medical record. Data were de-identified and provided in a CSV format for this study.

A total of 250 records were provided in the dataset. All records and values appeared accurate, without typos or missing, invalid, or duplicate information. Further, all data were standardized, with dates, decimal numbers, and formatting consistently applied. Additionally, records conformed to the sample period, with records originating between January 1, 2024, and September 30, 2024. Additionally, no outliers were identified in the dataset. Therefore, minimal cleansing and preparation were applied.

Of the 250 records, only 216 met the .60 Rho cutoff score for Part 1 of the HVP. Responses intended to satisfy survey completion rather than accurately reflect the respondent's choice are known as stochastic response errors (Cernat & Oberski, 2021). Stochastic response error identifies randomness in the participant responses that arise from guessing, social desirability, and acquiescence (i.e., selecting answers to complete the survey quickly and with minimal effort without consideration for accuracy). The Rho score is a Spearman Correlation that evaluates the consistency of an individual's response to the ideal ranking. Low Rho scores indicate that the respondents' answers are inconsistent and exhibit high variability, which may indicate stochastic response error (Pomeroy). Rho is strong at .60 or above (Akoglu, 2018; Swinscow, 1997). Thus, Rho scores greater than or equal to .60 were retained for the final analysis, resulting in 216 responses.

Results

Descriptive Statistics

Participant demographics were captured for the following items: age, gender, race, ethnicity, education, income, primary SUD diagnosis, and days in treatment. The minimum age was 18, and the maximum was 76, with a mean of 38 (M = 38.84; SD = 11.00). Participants reported 118 females, 95 males, and three non-binary (See Table 3). Comparatively, the sex assigned at birth was 123 females and 93 males. Sexual orientation was 177 as straight, 16 bi-sexual, six gay, five queer, four lesbian, and eight as other or declined to answer. Race and ethnic makeup was 131 non-Hispanic whites, 29

Hispanics with other race, 19 Hispanic whites, 13 non-Hispanic blacks, and five non-Hispanic Asians (See Table 4).

Table 3

Gender and Sexual Orientation of Participants

Variable	*N*	%
Gender		
Female	118	54.6%
Male	95	44.0%
Non-binary	3	1.4%
Sex assigned at birth		
Female	123	56.9%
Male	93	43.1%
Sexual orientation		
Straight	177	81.9%
Bi-Sexual	16	7.4%
Gay	6	2.8%
Queer	5	2.3%
Lesbian	4	1.9%
Other	4	1.9%
Declined	4	1.9%

Table 4

Race and Ethnicity Demographics

Race	Hispanic		Non-Hispanic	
	N	%	*N*	%
White	19	8.8%	131	60.6%
Other	29	13.4%	8	3.7%
Black	2	0.9%	13	6.0%
Asian	2	0.9%	5	2.3%
American Indian or Alaskan Native	2	0.9%	3	1.4%
Unknown	1	0.5%		
Declined	1	0.5%		

Fifty-eight percent of participants had some college or more, 34.3% had a high school diploma or less, and seven percent did not answer. Meanwhile, 69.4% reported $50,000 or less in annual income, 12.0% between $50,000 and $80,000, 11.5% making more than $80,000, and 6.9% choosing not to answer. One hundred and fifty-four

participants reported a stable living environment with family or roommates; 31 reported stable and alone; 11 reported unstable; 18 were in a temporary living environment, and two declined to answer. Table 5 contains a summary of the socio-economic data.

Table 5

Socioeconomic Descriptives

	N	%
Education		
Some college or more	126	58.3%
High school diploma or less	74	34.3%
Declined	16	7.4%
Income		
<=$50,000	150	69.4%
$50,001–$80,000	26	12.0%
$80,001–$100,000	10	4.6%
$100,001–$150,000	8	3.7%
$150,001+	7	3.2%
Declined	15	6.9%
Housing		
Stable – living with others	154	71.3%
Stable – living alone	31	14.4%
Temporary (shelter or sober living environment)	18	8.3%
Unstable (couch surfing or homeless)	11	5.1%
Declined	2	.9%

Patients may have presented with multiple diagnoses, yet for descriptive purposes, only the primary SUD ICD-10 code was reported (Centers for Medicare and Medicaid Services, n.d.). Opiates were the most common diagnosis at 126. Alcohol was the primary SUD issue for 43, cannabis for 21, polysubstance for 19, and seven for stimulants. Table 6 contains a summary of the diagnoses.

Table 6

Primary ICD-10 SUD Diagnosis

ICD-10 diagnosis code	*N*	%
F10 Alcohol disorders	43	19.9%
F11 Opiate disorders	126	58.3%
F12 Cannabis disorders	21	9.7%
F15 Stimulant disorders	7	3.2%
F19 Polysubstance disorders	19	8.8%

The BFAS variables have a range from a minimum of one to a maximum of five. Conscientiousness had the highest mean at 3.73, and agreeableness was lowest at 3.27. Meanwhile, the HVP has six variables, with the highest mean associated with the DIM-E 2 at 25.75 and the lowest mean associated with DIM-I 1 at 8.92. Table 7 contains a summary of the independent variable descriptives.

Table 7

Independent Variable Descriptives

Independent variable	Min	Max	*M*	*SD*
BFAS				
Openness	2.15	4.70	3.39	.47
Conscientiousness	2.70	4.80	3.73	.42
Extraversion	1.75	4.60	3.29	.47
Agreeableness	1.60	4.65	3.27	.58
Neuroticism	2.45	4.40	3.47	.38
Withdrawal	2.40	5.00	3.57	.49
Volatility	2.00	4.80	3.41	.50
HVP				
DIM-I 1	2.00	29.00	8.92	4.60
DIM-E 1	1.00	31.00	11.09	5.65
DIM-S 1	1.00	31.00	11.51	5.09
DIM-I 2	2.00	70.00	25.91	15.98
DIM-E 2	8.00	62.00	24.75	13.04
DIM-S 2	6.00	54.00	24.55	12.31

Note: $N = 216$.

The dependent variable was treatment retention, measured as a continuous variable. The minimum was two days, and the maximum was 269 days, with a mean of 116 (M = 115.90, SD = 74.83).

Bivariate Analysis

A bivariate analysis was performed using the additional BFAS Measures and Retention in Days. A Pearson correlation did not find a statistically significant association between assertiveness, compassion, enthusiasm, industriousness, intellect, openness, orderliness, politeness, and retention in days. Therefore, no additional variables were added to the trait analysis.

Findings

Preliminary data analysis was conducted to ensure the dataset met the requirements for multiple linear regression. Multiple linear regression has eight assumptions that should be met or considered: 1) a single continuous dependent variable, 2) two or more continuous or nominal variables, 3) independent observations, 4) a linear relationship between the dependent and independent variables, 5) homoscedasticity of residuals, 6) absence of multicollinearity, 7) no outliers or influential points, and 8) residuals are normally distributed (Laerd, 2015). Each of these assumptions was evaluated before executing each of the three multiple linear regressions.

The first multiple linear regression focused on the seven BFAS variables and treatment retention days. The independent variables were openness, conscientiousness, extraversion, agreeableness, neuroticism, withdrawal, and volatility. Each variable was continuous. The dependent variable was treatment retention, measured in treatment days.

Preliminary analysis found multicollinearity between neuroticism and withdrawal, and neuroticism and volatility. Correlations between the variables exceeded the .7 threshold, and collinearity tolerances were below .1. Since neuroticism comprises withdrawal and volatility, neuroticism was dropped from the analysis.

Preliminary analysis of openness, conscientiousness, extraversion, agreeableness, withdrawal, volatility, and treatment retention days confirmed the data were appropriate for multiple linear regression. A Durbin-Watson test confirmed the independence of observations with a value of 1.966. A linear relationship was observed by examining scatter plots between each independent and dependent variable, the studentized residuals, and the unstandardized predicted value. Additionally, the scatter plot of studentized residuals and the unstandardized predicted value confirmed homoscedasticity. A review of the correlations between all variables showed no correlations above .7, and collinearity tolerances were acceptable at greater than .10. There were no outliers identified in a casewise diagnostic. No influential points were detected with all Cook's Distance values below .08. A histogram of the standardized residual and a P-P Plot confirmed a normal distribution of residuals. Thus, the parsimonious variable set met the requirements for a linear regression model.

The model fit, or strength of the linear relationship between the independent variables and dependent variable, was $R^2 = .045$, and is of minimal effect size. The model explained 5% of the variance in treatment retention (Table 8; Cohen, 1988). The model did not achieve significance, $F(_{6,209}) = 1.623$, $p = .142$ (Table 9). However, withdrawal was a significant predictor of treatment retention with a $\beta = -.235$, $p = .007$ (Table 10).

For each unit increase in withdrawal score, treatment retention decreases by 36 days. Therefore, withdrawal was retained for the final regression model.

Table 8

Model Summary for BFAS and Treatment Retention

R	*R* square	Adjusted *R s*quare	Standard error of the estimate	Durbin-Watson
.211	.045	.017	74.19	1.966

Table 9

ANOVA for BFAS and Treatment Retention

	Sum of squares	*df*	Mean square	*F*	Sig.
Regression	53588.233	6	8931.372	1.623	.142
Residual	1150205.527	29	5503.376		
Total	1203793.759	215			

Table 10

Coefficients for BFAS and Treatment Retention

Variable	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std error	Beta		
(Constant)	152.044	75.869		2.004	.046
Openness	5.310	15.301	.033	.347	.729
Conscientiousness	25.760	14.382	.145	1.791	.075
Extraversion	-13.704	14.170	-.087	-.967	.335
Agreeableness	1.470	11.007	.011	.134	.894
Withdrawal	-35.496	13.033	-.235	-2.723	.007*
Volatility	4.945	12.621	.033	.392	.696

* $p < .05$.

A second multiple linear regression was conducted using the six HVP variables and treatment retention days. The independent variables were DIM-I 1, DIM-E 1, DIM-S

1, DIM-I 2, DIM-E 2, and DIM-S 2. Each of the variables was continuous. The dependent variable was treatment retention, measured as days in treatment. Preliminary analysis indicated multicollinearity between DIM-I 2 and DIM-E 2, DIM-I 2 and DIM-S 2, and DIM-E 2 and DIM-S 2. Herczyk et al. (2023) stated resiliency is a key factor in treatment retention, and Pomeroy (2005) states that DIM-I 2 relates to resiliency. Therefore, the DIM-I 2 measure was retained, and the DIM-E 2 and DIM-S 2 measures were dropped from the analysis.

After removing the multicollinearity, the data met the assumptions for multiple linear regression. A Durbin-Watson test confirmed the independence of observations with a value of 2.032. A linear relationship existed between each of the independent variables, the collective independent variable residuals, and the dependent variable by examining scatterplots of each. Homoscedasticity was observed in a scatterplot of studentized residuals and predicted unstandardized values. Collinearity tolerance scores were above .708, and no outliers or influential points were detected. Thus, the data was ready for the primary analysis.

The multiple linear regression analysis statistically significantly predicted treatment retention: $F(_{4, 211}) = 2.653$, $p = .034$, $R^2 = .048$ (Table 11; Table 12). Only the DIM-I 2 was significant from the predictor variables: $\beta = -.192$, $p = .005$ (Table 13). Thus, the model explained less than 5% of the variance in treatment retention days, which is minimal, but the DIM-I 2 variable did contribute significantly to the model. Moreover, for each unit decrease of the DIM-I 2 score predicts an increase in .9 days of treatment retention (Cohen, 1988). Therefore, the DIM-I 2 score was retained for the final analysis.

Table 11

Model Summary for HVP and Treatment Retention

R	*R* square	Adjusted *R* square	Standard error of the estimate	Durbin-Watson
.219	.048	.030	73.702	2.032

Table 12

ANOVA for HVP and Treatment Retention

	Sum of squares	*df*	Mean square	*F*	Sig.
Regression	57639.469	4	14409.867	2.653	.034*
Residual	1146154.290	211	5432.011		
Total	1203793.759	215			

* $p < .05$.

Table 13

Coefficients for HVP and Treatment Retention

	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std error	Beta		
(Constant)	149.656	16.586		9.023	<.001
DIM-I 1	-.181	1.202	-.011	-.151	.880
DIM-E 1	1.035	1.058	.078	.978	.329
DIM-S 1	-1.765	1.102	-.120	-1.601	.111
DIM-I 2	-.899	.316	-.192	-2.850	.005*

* $p < .05$.

A final multiple regression analysis was conducted with the significant predictor variables from the first and second regression models. The third regression model assesses the relationship between withdrawal from the BFAS, DIM-I 2 from the HVP, and treatment retention days. A preliminary analysis showed the data was appropriate for

regression. The Durbin-Watson score was 1.974, indicating independence of observation. Scatter plots of the two independent and dependent variables showed a linear relationship.

Examining a scatter plot of the studentized residuals and the unstandardized predicted value showed a linear relationship and homoscedasticity. Both collinearity tolerances were .890, indicating a low probability of multicollinearity. No outliers were identified in a casewise diagnostic, and no influential points with all Cooks Distance values less than .036. Finally, a histogram indicated the residuals were normally distributed.

The primary multiple regression analysis using withdrawal and DIM-I 2 significantly predicted treatment retention days with an $F(_{2, 213}) = 5.224$, $p = .006$, and $R^2 = .047$ (Table 14; Table 15). The model explains 4.7% of the variance in treatment retention. Of the two predictors, only DIM-I 2 was significant, $\beta = -.151$, $p = .034$ (Table 16). Therefore, each unit increase in DIM-I 2 scores predicts a decrease of .7 days in treatment retention.

The semi-partial correlation for DIM-I 2 was $sr^2 = .020$. The semi-partial correlation represents the unique contribution of DIM-I 2 on treatment retention by removing the shared variance with withdrawal. Despite not being statistically significant, the semi-partial correlation for withdrawal was $sr^2 = .011$. Therefore, DIM-I 2 explained 2% of the variance in treatment retention, which is minimal, and for each unit increase in DIM-I 2 scores results in a decline by .7 days in treatment. Of the 4.8% variance in treatment retention explained by the model, 2% was uniquely contributed by DIM-I 2.

Table 14

Model Summary for Withdrawal, DIM-I 1, and Treatment Retention

R	*R* square	Adjusted *R* square	Standard error of the estimate	Durbin-Watson
.216	.047	.038	73.399	1.974

Table 15

ANOVA for Withdrawal, DIM-I 1, and Treatment Retention

	Sum of squares	*df*	Mean square	*F*	Sig.
Regression	56282.231	2	28141.116	5.224	.006*
Residual	1147511.528	213	5387.378		
Total	1203793.759	215			

* $p < .05$.

Table 16

Coefficients for Withdrawal, DIM-I 1, and Treatment Retention

	Unstandardized coefficients		Standardized coefficients	*t*	Sig.	Part
	B	Std error	Beta			
(Constant)	192.735	36.664		5.311	<.001	
Withdrawal	-16.961	10.732	-.112	-1.581	.115	-.106
DIM-I 2	-.708	.332	-.151	-2.129	.034*	-.142

* $p < .05$.

The final regression analysis confirmed personality traits and values do explain the variance in treatment retention in adults at a telehealth SUD outpatient clinic in the US. While the effect size was small at $R^2 = .047$, the model was significant at $p = .006$. Moreover, the DIM-I 2 significantly predicted treatment retention ($p = .034$). Therefore, the alternative hypothesis is accepted.

Exploratory Analysis

O'Connor et al. (2020) noted age as a relatively consistent factor related to treatment retention. The results in the preceding regressions may be influenced by age. Therefore, a regression was run using BFAS withdrawal, HVP DIM-I 2, and treatment retention while controlling for age. The results showed minimal change. The model was statistically significant ($p = .015$) with a $R^2 = .048$ (Table 17). The ANOVA results were $F(_{3,212}) = 3.588$ (Table 18). Age was not a statistically significant predictor ($p = .555$), but DIM-I 2 was significant ($p = .038$; Table 19). Thus, age did not contribute significantly to the model.

Table 17

Model Summary Controlling for Age

R	*R* square	Adjusted *R* square	Standard error of the estimate	Durbin-Watson
.220	.048	.035	73.511	1.724

Table 18

ANOVA Controlling for Age

	Sum of squares	*df*	Mean square	*F*	Sig.
Regression	58172.597	3	19390.866	3.588	.015*
Residual	1145621.162	211	5403.873		
Total	1203793.759	215			

* $p < .05$.

Table 19

Coefficients Withdrawal, DIM-I 1, and Age

	Unstandardized coefficients		Standardized coefficients	*t*	Sig.
	B	Std error	Beta		
(Constant)	182.772	41.922		4.360	<.001
Age	.270	.457	.040	.591	.555
Withdrawal	-16.634	10.762	-.110	-1.546	.124
DIM-I 2	-.696	.333	-.149	-2.089	.038*

* $p < .05$.

Another potential factor worth exploring is matriculation. The sample contains responses of patients entering care up to the end of the sample window. Newly admitted patients may influence the data. Therefore, a subset was selected by filtering out records after June 6, 2024, or admissions within the average treatment retention to the sample end date. total of 113 records were eligible.

The model fit was slightly superior to previous models and significant ($F_{(2,110)} = 3.697$, $p = .028$, $R^2 = .063$). Additionally, withdrawal contributed significantly to the model with a $B = -.254$, $p = .009$. DIM-I 2 was not significant.

The semi-partial correlation for withdrawal is $sr^2 = -.061$, which is the unique contribution of the variable to treatment retention, excluding the shared variance with DIM-I 2. Despite not being statistically significant, the semi-partial correlation for DIM-I 2 is $sr^2 = -.000$. Therefore, withdrawal explains 6.1% of the variance in treatment retention, which is minimal but higher than the DIM-I 2 noted in the primary analysis model. Furthermore, for each unit increase in withdrawal score corresponds to a decrease by 27 days in treatment. Additionally, of the 6.3% of treatment retention the model

explains, 6.1% is due to the unique effects of withdrawal, leaving .2% to the combined effects of withdrawal and DIM-I 2.

Table 20

Model Summary with Potential for 116 Days in Care

R	*R* square	Adjusted *R* square	Standard error of the estimate	Durbin-Watson
.251	.063	.046	48.735	.409

Table 21

ANOVA Patients with Potential for 116 Days in Care

	Sum of squares	*df*	Mean square	*F*	Sig.
Regression	1562.733	2	8781.367	3.697	.028*
Residual	261259.231	110	2375.084		
Total	278821.965	112			

* $p < .05$.

Table 22

Coefficients Withdrawal, DIM-I 1 for Patients with Potential for 116 Days in Care

	Unstandardized coefficients		Standardized coefficients	*t*	Sig.	Part
	B	Std error	Beta			
(Constant)	269.877	35. 207		7.665	<.001	
Withdrawal	-27.312	10.225	-.254	-2.671	.009*	-.247
DIM-I 2	-.059	.356	-.016	-.166	.868	.015

* $p < .05$.

Type of substance may affect retention. O'Connor et al. (2020) noted studies examining the relationship between type of substance and retention were inconsistent, yet opioid with polysubstance abuse did show a relationship. Therefore, an additional exploratory analysis examined the responses with opioid use disorder as the primary SUD

diagnosis. A total of 126 records were eligible. The model was not significant, and the fit was poor ($F(_{2,123}) = .074$, $p = .929$, $R^2 = .001$). Neither withdrawal nor DIM-I 2 contributed significantly to the model.

Summary

A tele-behavioral health clinic provided data for 250 participants. The data contained complete records and needed little cleansing or preparation. Upon examination of the responses, 34 records were dropped from the analysis due to concerns of accuracy. Univariate and multiple linear regressions were utilized to examine the remaining 216 records to evaluate the variables' primary (R^2) and relative (sr^2) effects.

The data were primarily from females (54.6%), straight (81.9%), and non-Hispanic whites (87.3%) with a mean age of 39. Males made up 44.0% of the sample. Bi-sexuality was the second most selected sexual orientation at 7.4%. Other (17.1%) was the second most frequently selected race.

Socioeconomically, most participants had some college or more (58.3%) and made $50,000 or less per year (69.4%). Most were in stable housing (85.2%), yet 17% reported living alone. 74 participants reported having a high school diploma or less. Less than 7% of the participants reported earning more than $100,000, while 5.1% reported unstable housing.

Opiates (58.3%) were the primary addiction issue, with alcohol following at 19.9%. Cannabis (9.7%), polysubstance (8.8%), and stimulant (3.2%) were the other addiction diagnoses.

The first regression evaluated the BFAS variables to treatment retention. The original seven variables were reduced to six to address multicollinearity issues by eliminating agreeableness. The remaining six variables were analyzed, and the combined effects were not statistically significant, with $p = .142$. However, withdrawal was a significant predictor ($p = .007$) and retained for the final model.

The second multilinear regression examined the HVP variables and treatment retention. Multicollinearity issues were addressed by removing the DIM-E 2 and the DIM-IS 2, reducing the total HVP variables to four. The model was statistically significant ($p = .034$) and $R^2 = .048$. Only the DIM-I 2 variable was statistically significant from the predictor variables at $p = .005$. Therefore, only the DIM-I 2 variable was carried forward to the final regression analysis.

The final regression examined BFAS withdrawal, HVP DIM-I 2, and treatment retention. The model was statistically significant ($p = .006$) with an $R^2 = .047$. Of the two predictor variables, only the DIM-I 2 was statistically significant ($p = .034$). Therefore, the final model predicted treatment retention; DIM-I 2 was significant in predicting retention, albeit the effect size was small.

Exploratory analysis was conducted to uncover other factors that might strengthen the models. The first exploratory analysis controlled for age, but the results did not materially change. A second exploratory analysis selected patients prior to June 6, 2024, and could have stayed in care for the average treatment duration. This model was materially better and statistically significant. A third model focused on opioid use disorder responses, but failed to reach statistical significance.

In the next chapter, the results will be interpreted. The findings will be evaluated in the context of other studies and factors. Additionally, practical applications for practitioners and future considerations are reviewed. Multiple limitations are identified and discussed. Finally, the social impact of the study is examined.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

SUD treatment plays an essential role in combatting addiction. However, premature discontinuation continues to challenge treatment providers. Multiple meta-studies have not identified factors that consistently relate to treatment retention or provide effective practical applications to treatment providers. Thus, despite hundreds of studies across the last 50 years, the factors that lead to treatment abandonment remain unclear and necessitate additional inquiry.

This study examined the relationship between personality traits, values, and treatment retention. Between January 1, 2024, and September 30, 2024, 250 adults with SUD entered a tele-behavioral health clinic and completed the BFAS and HVP. The clinic provided patient responses to the instruments, retention, and other patient details. A total of 216 records met the criteria for analysis. Withdrawal was the only significant predictor of the BFAS traits and the two sub-traits. Also, the DIM-I 2 from the HVP was the only significant predictor from the HVP. A multiple linear regression assessing the relationship between withdrawal, DIM-I 2, and treatment retention was significant and accounted for 4.7% of the variance in retention. Additionally, the findings showed that only the DIM-I 2 was significant and uniquely explained about 40% of the variance.

Several exploratory analyses were conducted to assess age, matriculation, and only individuals with opioid use disorder. Both age and focusing on responses with opioid use disorder did not improve model fit. However, the model accounting for matriculation was significant. The model performed better than other models with an R^2 =

6.3%. Also, withdrawal, not DIM-I 2, was a significant contributor and uniquely explained 6.1% of the variance.

This chapter includes an interpretation of the results from the analyses within the context of previous studies. Additionally, several limitations and implications are identified. Then, recommendations and concluding thoughts are shared.

Interpretation of the Findings

This study explored the relationship between personality traits, values, and SUD treatment retention in a sample of adults with SUD. The first multiple linear regression evaluated four high-order personality traits and two aspects from the BFAS: openness, conscientiousness, extraversion, agreeableness, withdrawal, and volatility. The model was not significant, and the effect size was minimal at 4.5%. However, withdrawal was the only significant contributor to the model with a negative relationship to days in treatment. The findings are similar to those of Ribadier et al. (2016), who studied personality traits in women with AUD compared to women without AUD. The women with AUD scored higher in agreeableness and displayed behaviors consistent with withdrawal, including isolation, denial, dissociation, and passive-aggressiveness. The effect size was moderate, with neuroticism, extraversion, and conscientiousness explaining 38% of the variance between the two groups. While this study had a small effect size, both Ribadier et al. and this study indicate the importance of neuroticism and associated behaviors in SUD patients.

Similarly, Dash et al. (2019) found high agreeableness in same-sex twins who had alcohol, cannabis, and nicotine addictions compared to their siblings. The authors found a

moderate association between alcohol use disorder and neuroticism and cannabis use disorder and neuroticism. The authors suggest that neuroticism and addiction overlap and could evolve together. Further, they postulate high neuroticism increases negative affect that psychoactive substances counter. Thus, substance usage may be an attempt to attenuate thoughts and feelings related to neuroticism. In this study, withdrawal related to premature discharge extends our knowledge of the shared relationship between addiction and personality traits, with neuroticism playing a role in retention. Moreover, patients may choose to abandon care due to immiserate feelings and return to substance use, a familiar and conditioned strategy. While this study did not attempt to identify the rationale for discharge, it does indicate that withdrawal traits are engaged and influence an individual's behavior while in care.

Inference-based cognitive-behavioral therapy (iCBT) is a self-guided intervention that patients can do alone. A study of adult patients taking an iCBT module for depression conducted by Schmidt and colleagues (2018) found that higher scores in extraversion were associated with lower dropout, while higher scores in openness had higher dropout rates for patients with depression. However, neuroticism did not predict dropout. To put these findings in context with this study, perhaps behaviors associated with neuroticism become activated during interpersonal relationships. Thus, neuroticism, specifically withdrawal traits, may become an issue when others—providers or other participants—are a core component of the care model but not when care is delivered online and individuals can be alone.

Ribadier et al. (2016) and Dash et al. (2019) also found low conscientiousness and extraversion scores to be significant. While both were not significant in this study, conscientiousness was approaching significance at $p = .075$. This was an unexpected finding since the researchers identified high neuroticism and low extraversion and conscientiousness as trait constellations that impact SUD (Dash et al., 2019; Ribadier et al. 2016). The authors describe an interaction where low conscientiousness reduces inhibition, low extraversion limits social interaction, and high neuroticism increases stress and negative affect. However, this study did not find these other traits significant in the relationship to retention.

Additionally, Gori et al. (2020) found impulsiveness to be a significant predictor of dropout among SUD adults in a residential treatment community. The authors measured impulsiveness using the Barratt Impulsiveness Scale-11. Impulsivity is a facet of volatility, along with irritability and moodiness (DeYoung et al. 2012). Additionally, Gori et al. (2020) noted that impulsivity is associated with irresponsibility and weak behavioral control. Therefore, it would seem consequential in SUD retention. Even so, this study did not find a significant relationship between volatility and retention.

Still, the personality trait withdrawal presents a barrier to effective SUD care. Niemeijer et al. (2023) found adults high in neuroticism benefited less from anxiety and depression treatment compared to individuals low in neuroticism. Niemeijer and colleagues noted that high scores in withdrawal suggest a maladapted personality trait associated with attitudes, beliefs, and behaviors that disrupt engagement in SUD care. Negative affect, depression, anxiety, isolation, and sensitivity may resist behavioral

therapies that focus on ameliorating negative thoughts and awareness of one's addiction issues. This study linked elevated withdrawal scores to lower retention, further supporting the five-factor model's conceptualization of personality traits.

The second analysis probed the relationship between values using the HVP and retention. The model was statistically significant at $p = .034$, with these variables accounting for 4.8% of the variance in retention. Additionally, the effect size was slightly higher than that of the model assessing personality traits and retention.

Only the DIM-I 2 was a significant predictor with a negative relationship to retention. Elevated DIM-I 2 scores are associated with decreased self-esteem, resilience, and identity and increased anxiety and alienation (Pomeroy, 2005). Also, concurrent validity showed the DIM-I 2 was positively associated with Cattell Scales for depression, ennui, and isolation (Pomeroy, 2005). Since this is the first study to examine the HVP and SUD, the findings were compared to studies that examined stress, resilience, self-esteem, and anxiety.

Multiple studies have indicated that stress, anxiety, resilience, and self-esteem play an essential role in SUD treatment (Ali et al., 2017; Godlaski et al., 2009; Jalali et al., 2019; Liu et al., 2022; Ware et al., 2023). While each may be conceptualized differently, they all share characteristics that indicate how a person perceives their environment. For example, Ware et al. (2023) found that adult individuals who completed treatment reported lower stress levels than those who dropped out. Stress was described as perceiving a situation or environment as hostile or threatening well-being. In addition, Godlaski et al. (2009) found similar perspectives in a qualitative study regarding

the experiences of 12 rural females entering SUD treatment. A major theme almost universally held was anxiety and stress of entering SUD treatment. Hence, stress and anxiety are common experiences among SUD patients and related to retention.

While stress represents the perception of the experience, resilience and self-esteem are healthy responses to managing anxiety. Studies of resilience and self-esteem have shown to be beneficial to SUD treatment (Ali et al., 2017; Gori et al., 2020; Jalali et al., 2019; Liu et al., 2022). Ali et al. (2017) found in a study of SUD retention that distress tolerance moderated adult African Americans' motivation and readiness. The authors noted that motivation and readiness alone do not improve retention if the individual lacks the skills to manage negative affect. Meanwhile, Lyvers et al. (2018) found that individuals with a higher sensitivity to punishment predicted a higher likelihood of dropout. Shrivastav and Desousa (2016) found a negative relationship between sensitivity to punishment and resilience, further supporting the relationship between resilience and retention. Thus, these studies support the connection between resilience and retention.

Related, Liu et al. (2022) found that the frequency of resilience-focused language predicted retention. Facebook posts expressing positive emotion, sense of self, and emotional stability predicted longer SUD treatment durations in adults. Similarly, Jalali et al. (2019) noted that self-confidence was positively associated with duration in Narcotics Anonymous. Gori et al. (2020) also found self-esteem as a key factor in SUD treatment. Self-confidence is necessary for patients to believe in the benefits of treatment and remain in care (Jalali et al., 2019). Gori et al. (2020) described self-esteem as the

psychological resource to remain committed to treatment. Thus, healthy stress management mechanisms have been vital to treatment retention.

In this study, DIM-I 2, as defined by Pomeroy (2005), aligns with the findings from studies exploring SUD and stress, anxiety, resilience, and self-esteem. The results suggest that DIM-I 2 measures the individual's susceptibility to stress and coping ability. This study affirms Pomeroy's conceptualization of DIM-I 2 and elevated scores' influence on judgments.

When withdrawal and DIM-I 2 were analyzed together to predict treatment retention, the model was significant ($p = .006$), with 4.7% of the treatment retention variation explained by the model with a small global effect size ($f^2 = .049$; Selya et al., 2012). This model improved minimally on the value-only model. Additionally, only the DIM-I 2 was significant ($p = .036$) and uniquely accounted for 2% of the variance explained by the model with a small local effect size $f^2 = .037$ (Selya et al., 2012). Therefore, when combining traits and values, the results show only DIM-I 2 significantly predicted retention, and DIM-I 2 ($f^2 = .037$) had a greater impact on retention than withdrawal ($f^2 = .028$), though both have small effect sizes (Selya et al., 2012).

The primary analysis confirmed the alternative hypothesis that personality traits and values explain the variance in treatment retention in adults at a tele-behavioral health outpatient clinic. Still, the findings are not unequivocal. When tested individually, withdrawal predicted retention, and the DIM-I 2 predicted retention. The combined effects are less clear. In the analysis of withdrawal and DIM-I 2, the shared variance was 1.6%, indicating an interaction between the variables. Post-hoc power analysis revealed

that the study had 95% power to detect the observed R-squared of 0.047 with a sample size of 216 and 2 predictors (danielsoper.com, n.d.). Thus, the results and combined effects suggest traits and values explain retention, though the effect size is small.

Three exploratory analyses were conducted to evaluate additional factors. First, age was controlled to remove the effects on the other variables. The model was significant but did not vary substantially from the other without age. Moreover, while age was noted to have a relatively consistent relationship to retention for methadone maintenance therapy, the effects did not emerge in this data, despite statistical power of 79.6%, sufficient to detect an effect (danielsoper.com, n.d.; O'Connor et al., 2020). Therefore, age was not significant in predicting retention.

An additional exploratory analysis evaluated the relationship between withdrawal, DIM-I 2, and retention for patients with a primary SUD diagnosis of opioid use disorder. The analysis focused on 126 respondents. The model did not meet statistical significance. Therefore, age and a primary SUD diagnosis of opioid use disorder did not contribute meaningfully to the models.

Matriculation was another area of exploration. The sample period ranged from January 1 to September 30, 2024. The average treatment duration was 116 days. However, individuals sampled between June 7, 2024, and the end of the sample period (i.e., September 30, 2024) would not have had enough time to reach 116 days in care. Therefore, an exploratory analysis of 113 patients entering between January 1 and June 6, 2024, may produce different findings.

The analysis of the patients between January 1 and June 6, 2024, was significant (p = .028) and accounted for 6.3% of the variance in treatment retention with a global effect size of f^2 = .067 (Selya et al., 2012). Withdrawal was significant in this model and uniquely accounted for sr^2 = 6.1% of the variance with a small local effect size of f^2 = .065 (Selya et al., 2012). Post-hoc power analysis revealed this model had 67% power to detect the observed R-squared of 0.063 with a sample size of 113 and 2 predictors (danielsoper.com, n.d.). Therefore, when focusing on patients who could matriculate through care, the results show only withdrawal significantly predicted retention, and withdrawal (f^2 = .065) had a greater impact on retention than DIM-I 2 (f^2 = .002; Selya et al., 2012). Hence, this model suggests withdrawal explained treatment retention more than the DIM-I 2 when matriculation was considered and differed from our primary model findings.

The primary and exploratory analyses found competing findings. Nonetheless, both confirmed traits and values partially explain treatment retention. However, a more nuanced process and conceptualization of the variables may explain the findings. The DIM-I 2 appears to assess both stress and the ability to manage stress effectively. At the same time, withdrawal indicates a tendency toward a maladaptive response to stress that includes depression, ennui, anxiety, and self-consciousness.

One potential explanation for the difference in findings between the primary model that found the DIM-I 2 significant and the exploratory model accounting for matriculation that found withdrawal significant may relate to the time each variable took to impact retention. Elevated DIM-I 2 scores may more quickly impact behaviors that

lead to discharge, whereas withdrawal responses may take more time to manifest. Thus, the model that included responses that did not have time to matriculate could represent individuals who quickly abandoned care because of elevated DIM-I 2. Meanwhile, the model that accounted for matriculation may indicate withdrawal behaviors were slower to arise, which led to premature discharge.

Additionally, confounding factors such as social support and therapeutic alliance may moderate the results of elevated DIM-I 2. For example, Dee Weert-Van Oene et al. (2001) found 11% of the treatment retention variance was due to the perceived help of the therapist. Therefore, the therapeutic relationship may blunt or ameliorate elevated DIM-I 2 scores.

Regardless, elevated withdrawal and DIM-I 2 scores have been related to maladaptive personalities (Niemeijer et al., 2023; Pomeroy, 2005). Additionally, maladaptive personalities have been shown to be associated with treatment dropout (Ball et al., 2006). Studies have shown that social support, self-esteem, and improved psychological well-being increased retention (Arun et al., 2004; Kern-Godall et al., 2016). While this study did not assess these factors or the stress levels at admission, these factors may elucidate the underlying mechanisms and relationships. Therefore, this study supports evidence that positive affect, resilience, and self-esteem are vital to SUD treatment retention, but more analysis is warranted.

Limitations of the Study

The present study was cross-sectional and included a sample from a single telehealth organization. As a result, directional or causal conclusions may not be drawn.

Also, the sample contained more females than males and more individuals with at least some college education. This differs from the general SUD population that is more male and from lower socioeconomic backgrounds (Brorson et al., 2013; Dalton et al., 2021; Harton et al., 2023; Lee & O'Malley, 2018). It is unclear whether this discrepancy is due to the nature of the telehealth clinic or other factors. Consequently, the sample may not adequately represent populations in in-person outpatient programs or other SUD care settings, such as methadone clinics or residential treatment centers. Future research should consider broader sampling strategies to represent the SUD population better and consider longitudinal analysis or an experimental design.

Furthermore, time in care was only partially factored into the analysis. The current sample selected patients based on admission. Future studies should consider matriculation, which allows patients to complete their course of care or remain in care for an extended period. In this study, 26 respondents initiated care in the final month of the study and may not have represented retention rates appropriately. As shown in the exploratory analysis, selecting patients who had sufficient time to remain in care until the average retention meaningfully altered the results.

The use of Cox regression may have been more appropriate for this analysis. Bohnert et al. (2017), Daigre et al. (2021), Lin et al. (2013), Orwin et al. (1999), Wakeman et al. (2020), Ware et al. (2023) used Cox regression to examine SUD retention. Discharge serves as the event for the analysis. Cox regression is appropriate for time-based variables, especially when not all records have achieved the endpoint or event (Patil & Simha, 2018). In this study, outpatient treatment for SUD is considered a chronic

disease with retention rates lasting six months or longer. Discharges could be analyzed to determine a patient's survival and how traits and values affect survival. Additionally, Cox regression provides a hazard ratio that makes the application of the findings useful. Therefore, future studies should consider a Cox regression or other survival analysis to assess the relationship between the independent and dependent variables.

This study found mixed results with the DIM-I 2 and withdrawal both significant in different models. Thus, the findings are limited and suggest more complex interactions may explain the findings. This study implied the two variables operate differently over time and confounding factors such as social support or therapeutic alliance may blunt the effects of an elevated DIM-I 2. However, the mixed results between the DIM-I 2 and withdrawal require further exploration. Experimental studies should isolate these variables and assess whether targeted interventions moderate the effects.

Recommendations

This study evaluated the relationship between personality traits, values, and SUD treatment retention. Personality traits and values did significantly predict retention. However, the results are equivocal. Isolating the relationship between traits and retention, or values and retention, produced significant findings. Moreover, the trait withdrawal and value DIM-I 2 were the significant predictors. Yet, only the DIM-I 2 was significant when both variables were used. Alternatively, when matriculation was considered, only withdrawal was significant. Thus, additional study of these areas is warranted.

Personality traits and values influence an individual's perception of a situation by invoking specific attitudes, beliefs, and behaviors. Elevated withdrawal or DIM-I 2 scores

evoke compensatory behaviors that are barriers to care. Therefore, analyzing these mechanisms could elucidate influencing factors and strategies to ameliorate these barriers.

Additionally, other studies have found constellations of traits or values that were unique to SUD patients or care outcomes. However, this study only found single variables to interact with retention significantly. Given the limited sample selection, additional studies should examine similar variables to determine the consistency of the relationship. Also, only two of the 10 personality aspects and six of the HVP measures were tested. Additional research may reveal a consistent relationship with retention or uncover new relationships from variables not included in this study.

Several studies examined constructs that appeared to overlap with personality traits or values and were significant factors in SUD or SUD care (Ali et al., 2017; Ball et al., 2006; Fletcher et al., 2014; Leza et al., 2021; Liu et al., 2022; Knuuttila et al., 2011; Lyvers et al., 2018; Taylor et al., 2017; Ware et al., 2023). Yet, few studies have investigated the big five or formal axiology. Thus, additional studies should evaluate the relationship between the big five or formal axiology on seeking SUD care, SUD care admissions, and care outcomes. While this study showed a small but meaningful relationship to retention, other studies may find similar or more robust relationships.

Assessing patient personality traits and values may only provide part of the equation influencing retention. Assessing the provider's traits and values may indicate trait or value conflict or harmony. Hamblin et al. (1993) found that aligning values between patients and providers improved outcomes. The therapeutic relationship, that is,

the relationship between provider and patient, is crucial for building esteem, support, and promoting healthy change (Lee & O'Malley, 2018). Therefore, this study serves as a basis for continued investigation into the relationship of traits and values related to SUD treatment, including the fit of patient traits and values to providers.

Implications

SUD treatment involves goal-directed cognitive, behavioral, and physiological changes (Brorson et al., 2013). Treatment providers initially evaluate patients by diagnosis or symptom, with diagnosis-based approaches checking if a patient meets the criteria, while symptom-based assesses types and severity of problems associated with the use of a substance (Jalali et al., 2019). Additionally, new standards of care assess the patient's motivation and social support for treatment (Mark et al., 2021). Patient-centered and personalized care has become the focus. Volkow (2020) argues that SUD treatment is dimensional and requires a personalized approach across the various processes involved in SUD. However, the standard of care does not consider a patient's personality or values. Therefore, an opportunity exists to personalize treatments to the individual's perception and goals.

Incorporating traits and values into care decisions and treatment planning remains an opportunity for SUD providers. Liu & Xiao (2023) developed a value-based treatment model that was added to the standard course of care for breast cancer patients. The authors found that aligning values between the intervention and patient values boosted treatment adherence and outcomes. Additionally, while physicians noted the additional

complexity in care decisions, the approach improved satisfaction and collaboration. Similar approaches may exist with SUD patients.

Despite the small effect sizes, predicting retention is vital to quality care and appropriate treatment planning. Patients predicted to be prematurely discharged early in care may not benefit from treatments focused on trauma or other conditions that may be destabilizing and lead to iatrogenic outcomes. Thus, predicting retention can assist providers in sequencing care based on expected treatment duration.

Furthermore, this study provides specific psychological aspects and processes to target that could increase retention. While the malleability of traits and values is low, Brown and Peterson (1990) found differences in values between SUD patients and adults in recovery from SUD. Therefore, the five-factor model and formal axiology have meaningful implications for SUD treatment. Additional studies and best practices should examine behavioral therapies, Third-wave therapies, and social support to counter elevated withdrawal or DIM-I 2 scores. These efforts may meaningfully alter the duration of care and improve outcomes.

Conclusion

SUD continues to be a pernicious global issue, with the highest accidental death rate from overdoses. Unfortunately, entering SUD care may not lead to positive outcomes, with high rates of premature discharge. This study evaluated personality traits, values, and retention in SUD treatment. Personality traits describe enduring thought patterns, emotions, and behaviors (McCrae & Costa, 1990). Meanwhile, values influence attitudes, beliefs, and behaviors that align with an individual's motivations and goals

(Sagiv & Schwartz, 2022). Additionally, personality traits and values are systematically and consistently related (Fisher & Boer, 2014). Therefore, personality traits and values likely influence SUD retention. However, at the time of this writing, no studies had investigated the combined influence of traits and values on SUD retention.

This study measured traits and values using the BFAS and HVP. Both instruments demonstrated solid reliability and validity. A secondary sample of 250 adult SUD patients from a tele-behavioral health clinic was analyzed. Several multiple linear regressions revealed that the combined effect of traits and values did explain a small variance in treatment retention. Withdrawal and DIM-I 2 were significant predictors, though not in a single regression model. The model was significant in the final primary analysis that used both withdrawal and DIM-I 2 ($p = .006$) with an $R^2 = .047$. The DIM-I 2 was significant ($p = .036$) and uniquely predicted 2% of the variance ($sr^2 = .021$).

An exploratory analysis was conducted to account for matriculation. The analysis focused on responses between January 1 and June 6, 2024. A multiple linear regression using withdrawal and DIM-I 2 was significant ($p = .028$) with an $R^2 = .063$. Only withdrawal was significant in this analysis, uniquely accounting for 6.1% of the variance ($sr^2 = .061$). Other exploratory analyses that controlled for age or focused on opioid use disorder were not significant.

Nonetheless, withdrawal and DIM-I 2 appear to relate to treatment retention. both variables measured predicted treatment retention. Moreover, this study showed that individuals high in either variable are more likely to be prematurely discharged from SUD treatment. According to the five-factor model, withdrawal is a maladapted

personality trait that increases the likelihood a person will experience negative affect, depression, anxiety, isolation, and increased sensitivity (DeYoung et al., 2007). Multiple studies have indicated agreeableness, the higher-order trait of withdrawal or attributes of withdrawal, is significantly associated with patients with SUD and treatment outcomes and retention (Dash et al., 2019; Niemeijer et al., 2023; Ribadier et al., 2016).

The findings in this study were congruent with the theory of formal axiology and the DIM-I 2. The DIM-I 2 measures an individual's self-esteem. Lower scores indicate acceptance of one's self-construct (i.e., robust self-esteem and resilience; Edwards, 2010; Pomeroy, 2005). Alternatively, elevated scores indicate fragility, self-doubt, and anxiousness. This study demonstrated a significant link between the DIM-I 2 and retention. The findings may suggest SUD treatment impinges on self-esteem. Several studies suggest similar mechanisms are at play (Ali et al., 2017; Godlaski et al., 2009; Jalali et al., 2019; Liu et al., 2022; Ware et al., 2023). Thus, this study indicates that DIM-I 2 may measure susceptibility and inability to cope with the stress and challenges experienced in SUD treatment.

Despite these findings, the study has several limitations. A single sample from a tele-behavioral health clinic, insufficient time for some respondents to matriculate, and choice of regression model limit generalization. Moreover, the primary analysis predicted retention from the DIM-I 2, while the exploratory findings predicted retention from withdrawal. Thus, additional analysis is warranted to confirm the consistency of the relationships.

The equivocal results call for additional studies into the relationship between traits and values in SUD treatment. Research should confirm the consistency of the relationship between traits, values, and retention and elucidate the underlying psychological processes. Additionally, traits and values may influence other aspects of SUD care, including admissions, outcomes, therapeutic alliance, and interventions. Furthermore, experiments should explore the malleability of traits and values to determine the potential impact on retention. Thus, additional studies exploring the relationship between traits, values, and SUD care are beneficial to improving care broadly and beyond retention.

The findings support a broader theme of making care more personalized and patient-centered. Personality traits and values are interlinked to thoughts, beliefs, and behaviors. Personalizing treatment plans, presenting value-aligned interventions, and choosing clinicians with similar traits and values may improve retention and care outcomes. Additionally, predicting retention may alter the sequence of interventions or dissuade providers from elongated interventions when care duration is not sufficient. Thus, this study offers novel approaches to altering care that align with the patient and potentially improve retention and care outcomes.

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Appendix A: BFAS

Big Five Aspect Scale (DeYoung et al., 2007)

Instructions: Select the response that best aligns to the statement.

1 Seldom feel blue.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

2 Am not interested in other people's problems.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

3 Carry out my plans.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

4 Make friends easily.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

5 Am quick to understand things

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

6 Get angry easily.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

7 Respect authority.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

8 Leave my belongings around

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

8 Take charge.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

9 Enjoy the beauty of nature.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

10 Am filled with doubts about things.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

11 Feel others' emotions.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

13 Waste my time.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

14 Am hard to get to know.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

15 Have difficulty understanding abstract ideas.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

16 Rarely get irritated.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

17 Believe that I am better than others.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

18 Have a strong personality.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

19 Believe in the importance of art.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

20 Feel comfortable with myself.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

21 Inquire about others' well-being.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

22 Find it difficult to get down to work.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

23 Keep others at a distance.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

24 Can handle a lot of information.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

25 Get upset easily.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

26 Hate to seem pushy.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

27 Keep things tidy.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

28 Lack the talent for influencing people.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

29 Love to reflect on things.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

30 Feel threatened easily.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

31 Can't be bothered with other's needs.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

32 Mess things up.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

33 Reveal little about myself.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

34 Like to solve complex problems.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

35 Keep my emotions under control.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

36 Take advantage of others.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

37 Follow a schedule.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

38 Know how to captivate people.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

39 Get deeply immersed in music.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

40 Rarely feel depressed.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

41 Sympathize with others' feelings.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

42 Finish what I start.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

43 Warm up quickly to others.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

44 Avoid philosophical discussions.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

45 Change my mood a lot.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

46 Avoid imposing my will on others.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

47 Am not bothered by messy people.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

48 Wait for others to lead the way.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

49 Do not like poetry.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

50 Worry about things.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

51 Am indifferent to the feelings of others.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

52 Don’t put my mind on the task at hand.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

53 Rarely get caught up in the excitement.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

54 Avoid difficult reading material.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

55 Rarely lose my composure.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

56 Rarely put people under pressure.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

57 Want everything to be "just right."

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

58 See myself as a good leader.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

59 Seldom notice the emotional aspects of paintings and pictures.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

60 Am easily discouraged.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

61 Take no time for others.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

62 Get things done quickly.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

63 Am not a very enthusiastic person.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

64 Have a rich vocabulary.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

65 Am a person whose moods go up and down easily

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

66 Insult people.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

67 Am not bothered by disorder.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

68 Can talk others into doing things.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

69 Need a creative outlet.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

70 Am not embarrassed easily.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

71 Take an interest in other people's lives.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

72 Always know what I am doing.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

73 Show my feelings when I'm happy.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

74 Think quickly.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

75 Am not easily annoyed.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

76 Seek conflict.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

77 Dislike routine.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

78 Hold back my opinions.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

79 Seldom get lost in thought.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

80 Become overwhelmed by events.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

81 Don’t have a soft side.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

82 Postpone decisions.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

83 Have a lot of fun.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

84 Learn things slowly.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

85 Get easily agitated.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

86 Love a good fight.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

87 See that rules are observed.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

88 Am the first to act.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

89 Seldom daydream.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

90 Am afraid of many things.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

91 Like to do things for others.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

92 Am easily distracted.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

93 Laugh a lot.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

94 Formulate ideas clearly.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

95 Can be stirred up easily.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

96 Am out for my own personal gain.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

97 Want every detail taken care of.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

98 Do not have an assertive personality.

Strongly disagree (5), Disagree (4), Neither disagree or agree (3), Agree (2), Strongly agree (1)

99 See beauty in things that others might not notice.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

100 Like order.

Strongly disagree (1), Disagree (2), Neither disagree or agree (3), Agree (4), Strongly agree (5)

Appendix B: HVP

Hartman Value Profile (Hartman, 2006)

The next two questions will present 18 words or phrases. Each of these words or phrases contains something on which you place different value depending on how "GOOD" or "BAD" it is.

Rank each of these two sets of 18 words or phrases according to your feelings about whether they represent GOOD or BAD to you personally.

Guidelines:
There is no time limit, but expect at least 20 minutes to complete.
Do not have anyone else help you.
Consider how you feel about the items, not how society may think or should feel, not how anyone else expects you to respond.
Do not over-analyze; this is about how you feel about these items
Complete both lists of 18 at one time, without interruption and without stopping.

In order to rank the items, drag and drop them in your preferred order..

Part 1
Directions:
Rank the statements from 1-18. Select the phrase you agree with most to disagree most. Rank the most agreeable statement as 1, second most as 2, third most as 3, etc. The statements should be ranked with regards to your own life right now.

A good meal
A technical improvement
Nonsense
A fine
A rubbish heap
A devoted scientist
Blow up an airliner in flight
Burn a heretic at the stake
A short-circuit
"By this ring I thee wed"
A baby
Torture a person in a concentration camp
Love of nature
A madman
An assembly line
Slavery

A mathematical genius
A uniform

Part 2
Directions:
Rank the statements from 1-18. Select the phrase you agree with most to disagree most. Rank the most agreeable statement as 1, second most as 2, third most as 3, etc. The statements should be ranked with regards to your own life right now.

“I like work – it does me good”
“The universe is a remarkably harmonious system”
“The world makes little sense to me”
“No matter how hard I work, I shall always feel frustrated”
“My working conditions are poor, and ruin my work”
“I feel at home in the world”
“I hate my work”
“My life is messing up the world”
“My work contributes nothing to the world”
“My work brings out the best in me”
“I enjoy being myself”
“I curse the day I was born”
“I love my work”
“The lack of meaning in the Universe disturbs me”
“The more I understand my place in the world, the better I get in my work”
“My work makes me unhappy”
“I love the beauty of the world”
“My work adds to the beauty and harmony of the world”