A MIXED-METHODS STUDY OF TREATMENT ADHERENCE AND PROGRESS FOR OFFENDERS REFERRED TO COMMUNITY-BASED DRUG ADDICTION TREATMENT

by

YANG YANG

Bachelor of Science, 2007
East China Normal University
Shanghai, China

Master of Education, 2010
East China Normal University
Shanghai, China

Master of Science, 2012
Texas Christian University
Fort Worth, Texas

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Yang Yang

Dissertation approved:

Major Professor

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Yang Yang

Background

In 2012, about 7 million adults were involved in the criminal justice system (Bureau of Justice Statistics, 2012), and between half to two-thirds of those involved in the BJS meet standard diagnostic criteria for alcohol or drug abuse (Bureau of Justice Statistics, 2002). Nearly all of these drug-involved prisoners end up being released from prison, with approximately 650,000 inmates released back to the community each year. In contrast to the high prevalence of drug-involved offenders, the availability of treatment services is limited in both prison and community correctional settings (Taxman & Kitsantas, 2009). Moreover, the high occurrence of drug-related deaths in the first few weeks after discharge highlights the high rate of drug relapse and the critical need for a continuum of care (e.g., drug-related causes accounting for 59% of deaths within 2 months of release and 76% of deaths within 2 weeks of release; Merrall, Kariminia, Binswanger, Hobbs, Farrell, Marsden, Hutchinson, & Bird, 2010).

With the involvement of community corrections and treatment providers, aftercare service is designed to address risk for relapsing to drug abuse and provide support for a drug-free living environment in the community for offenders discharged from prison (Brown, O'Grady, Battjes, Farrell, Smith, & Nurco, 2001). There is mounting evidence that participation in community-based drug addiction treatment following a prison-based therapeutic community can reduce the risk of recidivism as well as drug relapse (Knight, Simpson & Hiller, 1999; Substance Abuse and Mental Health Services

Administration, 2005). Community-based treatment refers to an integrated model of treatment in the community to address the problems of drug use, including services such as detoxification, pharmacological and therapeutic treatment (United Nations Office on Drugs and Crime, 2008).

As an alternative to offenders being placed in residential aftercare directly after discharge, offenders under community correctional supervision may be referred to outpatient community-based drug treatment. In many cases, participation in treatment is a requirement for those involved in community correctional supervision, drug courts, diversion programs, and pretrial release programs, resulting in a strong extrinsic motivator for drug-involved offenders to participate in community-based drug treatment in an effort to avoid prosecution and/or incarceration (National Institute on Drug Abuse, 2012). Indeed, mandated or coerced clients represent a substantial proportion of individuals involved in community-based drug treatment (Wallace, 2005); in 2002, for example, 36% of substance abuse admissions were referred by the criminal justice systems (Substance Abuse and Mental Health Services Administration, 2004). Studies on the effectiveness of community-based drug treatment suggest that successful treatment completion can lead to less drug use, improvements in psychological functioning, less criminal activity, increased employment, and better interpersonal relationships (Bell, Richard, & Feltz, 1996; Prendergast & Anglin, 1995; Hiller, Knight & Simpson, 2006; Simpson, Joe, Rowan-Szal, & Greener, 1997). One review also supports the effectiveness of mandated treatment in terms of greater retention and a variety of positive outcomes (Anglin, Prendergast, & Farabee, 1998).

Clearly, community-based treatment can be effective for sustaining behavioral changes and learned skills and provide continued support to offenders engaged in the long-term recovery process. This study was intended to further our understanding of the factors associated with improved outcomes, with a focus on the quality of community-based drug addiction treatment with respect to treatment satisfaction, adherence, and therapeutic progress.

Research Questions

This study has two phases. The first phase investigates the impact of client-level factors on treatment satisfaction, adherence, and progress. The second phase includes a preliminary exploration of counselor-level characteristics and counselor-rated factors associated with client treatment progress and recovery.

Client-level Characteristics

Measuring client pretreatment characteristics and matching treatment needs to the intervention plan are important prerequisites to treatment success. The literature has illustrated several client-level characteristics, including victimization and violence history, psychiatric disorders and social functioning, drug severity, and treatment motivation that may impact treatment outcomes.

Victimization and Violence History. Victimization and violence often are concurrent risk factors that impact offender recovery. According to Lifestyle Exposure Theory and Routine Activities Theory (Hindelang, Gottfredson, & Garofalo, 1978; Cohen & Felson, 1979), victimization risk depends on the routine activities and exposure to offender populations. Offenders are more likely to become victims because of their proximity to other offenders. The Intergenerational Transmission of Violence hypothesis

states that children with abuse history are more likely to become an abuser or criminal offender. This hypothesis is consistent with social learning theory in that children learn aggressive responses from observing others; their aggression is reinforced by tension reduction, gaining rewards, and building self-esteem (Bandura, 1976, p. 204; Siegel, 1992, p. 171). Moreover, for drug-involved offenders, taking drugs may lower their abilities to protect themselves from perpetration and increase their risk of victimization (Sampson & Lauritsen, 1994). The link between victimization and high risk behaviors speaks to the significance of investigating its association with treatment-seeking behaviors, although little research has been done in this area. A study using a large sample of adolescents from outpatient and residential treatment programs reported that higher victimization was associated with higher substance use at treatment intake and posttreatment phases; however, adolescents with higher victimization also reported fewer days of marijuana use posttreatment than those with lower victimization (Shane, Diamond, Mensinger, Shera, & Wintersteen, 2006). A longitudinal study using a national sample of adolescents found that high victimization was positively associated with high-risk behaviors, including alcohol and drug use, and delinquency (Belge, Hanson, Danielson, McCart, Ruggiero, Amstadter, Resnick, Saunder, & Kilpatrick, 2011). A study using a sample of female offenders revealed that experiencing more types of abuse was correlated with a higher willingness of help-seeking (e.g., from counselors, law enforcement, healthcare professionals; Reichert, Adams, & Bostwick, 2010). Using both male and female offenders referred to mandated mental health treatment, another study found that participating in outpatient treatment was associated with less violent behaviors

and victimization during the course of treatment (Swartz, Swanson, Hiday, Wagner, Burns, & Borum, 2001).

In contrast with the limited studies on victimization, several studies have demonstrated that a history of violence is negatively associated with drug treatment performance and treatment outcome. A longer criminal history predicts lower counseling session attendance (Fiorentine, Nakashima, & Anglin, 1999). Similarly, clients with a greater number of criminal charges before treatment and a longer history of violence were more likely to drop out of treatment and being re-arrested (Broome, Flynn, & Simpson, 1999; Magura, Nwakeze, & Demsky, 1998; Yang, Knight, Joe, Rowan-Szal, Lehman, & Flynn, 2013b).

Psychiatric Disorders and Social Functioning. Comorbid psychiatric disorders (i.e., the co-occurring disorders with substance use), while among the most frequently cited problems by individuals using substances (Robertson & Donnermeyer, 1997), have been found to be associated with favorable treatment outcomes. For example, some studies have found that a higher level of depression is associated with a greater likelihood of retention and longer stay in treatment; study participants included both a small sample of cocaine misusers from an outpatient treatment facility (Agosti, Nunes, Stewart, & Quitkin, 1991) and a large sample of clients seeking drug treatment across long-term residential, outpatient drug-free, and outpatient methadone maintenance programs (Broome, Flynn, & Simpson, 1999). Patients in outpatient clinics with a current anxiety disorder also have been found to be less likely to drop out treatment in comparison to those without an identified anxiety disorder (Siqueland, Crits-Christoph, Fran, Daley, Weiss, Chittams, Blaine, & Luborsky, 1998). Likewise, patients with concurrent

psychiatric symptoms (especially anxiety and depression) in pharmacotherapy and psychotherapy treatment have lower dropout rates than those without such symptoms (Carroll, Power, Bryant, & Rousaville, 1993; Carroll, Rousaville, Gorddon, Nich, Jatlow, Bisigini, & Gawin, 1994). Using a sample of clients in community-based methadone maintenance treatment, Joe, Brown, and Simpson (1995) found that patients with depression, anxiety, suicidal ideation, and other psychopathological symptoms (e.g., hallucination) at intake were twice as likely to attend individual counseling sessions and significantly more likely to discuss psychological problems than those reporting none of these symptoms.

However, contradictory findings also have been reported. A study using a sample of alcoholics and drug addicts from six rehabilitation programs found that patients with low psychiatric severity had treatment improvements in all six programs, whereas patients with high psychiatric severity did not improve in any of the six programs; the study also found that the patients with midrange psychiatric severity had different treatment outcomes across treatment programs and patients receiving specific-patient program matches performed better (McLellan, Luborsky, Woody, O'Brien, & Druley, 1983). Similarly, another study using 114 patients from a Buprenorphine treatment program reported that patients with fewer psychiatric symptoms tended to complete the treatment program (Petry & Bickel, 1999).

Studies with patients from therapeutic communities have found that a higher level of depression leads to premature dropout (Ravndal & Vaglum, 1994; Williams & Roberts, 1991). A study using 89 participants from two private substance abuse treatment programs found that a high level of depression predicted treatment attrition and alcohol

relapse; more depressive symptoms during treatment were associated with a greater level of posttreatment urge to use cocaine, alcohol, and other drugs in high-risk situations (Brown, Monti, Myers, Martin, Rivinus, Dubreuil, & Rohsenow, 1998). A prospective study using 101 participants hospitalized for alcohol dependence discovered that those who were diagnosed with major depression experienced shorter times to first drink and relapse (Greenfield, Weiss, Muenz, Vagge, Kelly, Bello, & Michael, 1998). Another study using clients from a 30-day residential substance abuse treatment program demonstrated that individuals with a higher level of pretreatment anxiety and depression were more likely to drop out than those with a lower level of pretreatment psychiatric problems (Bell, Atkinson Williams, Nelson, & Spence, 1996). Likewise, a longitudinal study of participants attending mental health treatment programs reported that recent trauma experience and anxiety/depression symptoms were associated with substance use at 12-month follow up (Gil-Rivas, Prause, & Grella, 2009). A European multicentre study using 521 detoxified patients with alcohol dependence found that high anxiety, sensation-seeking personality, and other behavioral problems predicted alcohol relapse (Willinger, Lenzinger, Hornik, Fischer, Schönbeck, Aschauer, & Meszaros, 2002). Also, some studies have found no significant relationship between anxiety, depression, and treatment outcome (Roberts & Nishimoto, 1996; Sterling, Gottheil, Weinstein, & Shannon, 1994).

With regard to social functioning, social support has been consistently shown to be associated with favorable outcomes. A meta-analysis review consisting of 100 studies on the efficacy of social support interventions on a variety of health problems including substance abuse has revealed that enhancing social support helps achieve health outcomes (Hogan, Linde, & Najarian, 2002). Individuals who receive support from

family and friends and have high self-esteem are less likely to use drugs to address stress (Furnham & Lowick 1984; Holahan, Moos, Holahan, Cronkite, & Randall, 2004). The belief is that these factors protect people from using maladaptive behaviors to cope with stress. Given the importance of social networks, Landau and the colleagues designed an intervention model which successfully employed the natural influences of family, friends, coworkers, and other social network members to impact individuals' treatment decisions toward getting people with drug use problems into treatment (Landau, Garrett, Shea, Stanton, Brinkman-Sull, & Baciewicz, 2000). Moreover, a study utilized a social network intervention in engaging substance abusers in treatment found that client-perceived social support significantly predicted treatment retention (Soyez, De Leon, Broekaer, & Rosseel, 2006). In addition to recruiting and engaging clients, social support also influences treatment outcome. Using a sample of outpatient adult substance abusers, a study by Dobkin and colleagues found that high levels of social support significantly predicted reductions in alcohol abuse at 6-month follow-up (Dobkin, De Civita, Paraherakis, & Gill, 2002). Another study using a large sample with participants across residential, outpatient, and inpatient programs found that social support was a significant protective factor for drug abstinence (Hser, Grella, Hsieh, Anglin, & Brown, 1999). Williams and Chang (2000) conducted a comprehensive review of adolescent substance abuse treatment outcome and found treatment completion, low pretreatment substance use, and peer/parental social support/nonuse of substances were consistently correlated with successful treatment outcome in terms of a reduction in substance use, less illegal behaviors, mental health improvements, fewer family problems, and better school functioning. Likewise, Richter, Brown, and Mott (1991) showed that high quality of

social resources (i.e., supports for non-using behaviors) was associated with posttreatment drug abstinence.

In contrast with studies on social support, research investigating the relationship between the construct of self-esteem and treatment outcome has been inconclusive. Some studies indicate that self-esteem is not related to treatment retention, drug relapse, and one-year posttreatment drinking outcomes (Roberts & Nishimoto, 1996; Trucco, Connery, Griffin, & Greenfield, 2007). However, using an in-prison drug treatment sample, another study found that self-esteem was significantly associated with posttreatment delinquency; high self-esteem in male offenders was significantly correlated with posttreatment re-arrest, and low self-esteem in female offenders was associated with re-arrest (Yang, Knight, Joe, Rowan-Szal, Lehman, & Flynn, 2013a). An early study on alcohol abuse found that alcoholics who sought help had lower self-esteem than those who rejected assistance (Matefy, Kalish, & Cantor, 1971). This could be explained by the "hitting rock bottom" hypothesis (Kiecolt, 1994). That is, when an individual's drug use no longer suppresses anxiety or supports self-identity and self-esteem, opportunities to make a change begin to be pursued. Moreover, concepts related to self-esteem have been found to be associated with ratings of treatment experience. For example, clients with internal locus of control reported a greater level of treatment pressure than those with external locus of control and they were less inclined to justify the coercive experiences during the treatment (Sallmen, Berglund, & Bokander, 1998), which may lead to low treatment satisfaction.

Drug Severity. Drug use severity at treatment entry, another predictive factor of treatment outcome, has been associated with a lower likelihood of treatment completion

and a shorter stay in treatment (Lang & Belenko, 2000; Marrero, Robles, Colón, Reyes, Matos, Sahai, Calderón, & Shepard, 2005). One review of treatment outcomes among a variety of community-based adolescent substance abuse programs indicated that a low level of pretreatment drug severity was significantly associated with sustained abstinence and the reduction of posttreatment drug use (Williams & Chang, 2000). Likewise, multiple studies have shown that clients with a greater severity of drug and alcohol problems tended to drop out of residential and outpatient treatment programs (Agosti, Nunes, &Ocepeck-Welikson, 1996; Magura, Nwakez, &Demsky, 1998; McKella, Kelly, Harris, & Moos, 2006; Rowan-Szal, Joe, & Simpson, 2000). One study, however, showed that clients with greater drug severity received more service intensity and greater treatment satisfaction, which led to longer treatment retention (Hser, Evans, Huang, & Anglin, 2004). This suggests that counselors may tend to pay additional attention to clients with more severe drug problems and prioritize their services needs, which in turn may increase client motivation and attendance.

Treatment Motivation. Treatment motivation has been found as a precursor to positive treatment performance and treatment retention. In the Texas Christian University's treatment model (Hiller, Knight, Leukefeld, & Simpson, 2002; Simpson, 2004), treatment motivation encapsulates problem recognition (i.e., recognizing substance use as problematic), desire for help (i.e., cognitive steps that are formalized by individuals to enact changes), and treatment readiness (i.e., mental stage in which individuals have switched from wanting to change to being committed to actively participate in treatment). A study conducted by Simpson and Joe (1993) found that high motivation was one of the significant predictors of treatment retention beyond 60 days.

Similarly, with a sample from 37 community-based treatment programs, Joe, Simpson, and Broome (1999) found that pretreatment motivation significantly predicted treatment engagement and retention across all treatment modalities; treatment readiness was more robust than demographic, drug use, criminality and other pretreatment variables in terms of predicting treatment engagement and retention. Likewise, Ryan, Plant, and O'Malley (1995) reported that both internal and external motivation predicted high treatment involvement. Moreover, treatment motivation among offenders in prison-based therapeutic communities serves as a facilitator to post-release outcomes including a higher likelihood of aftercare participation and a lower rate of recidivism and drug relapse (Melnick, De Leon, Thomas, Kressel, & Wexler, 2001; Messina, Burdon, Hagopian, Prendergast, 2006)

Treatment Process: Treatment Satisfaction. In addition to pretreatment characteristics, clients' treatment experiences, such as treatment satisfaction, also impact treatment outcome. Treatment satisfaction has been found to predict treatment retention and favorable treatment outcomes. Higher levels of satisfaction with services, program convenience, better counseling relationship, a higher methadone dose, and a higher level of self-reported treatment effectiveness lead to a higher likelihood of treatment retention, completion, and drug abstinence, and less criminal activities at 1-year follow-up (Carlson & Gabriel, 2001; Kelly, O'Grady, Mitchell, Brown, & Schwartz, 2011; Hser, Evans, Huang, & Anglin, 2004). In contrast, clients who perceive the program to be less accessible and structured are more likely to drop out from methadone maintenance clinics (Joe, Simpson, & Hubbard, 1991). Likewise, a study recruiting clients from 33 drug misuse treatment agencies in Scotland indicated that positive treatment perception toward

staff and program predicts physical health, mental health, and abstinence (Morris & Gannon, 2008).

Counselor-level Characteristics

Beyond client influences, the success of service delivery is also impacted by counselors who are working closely with clients on their drug problems. In contrast with a substantial amount of studies on client-level factors and their associations with a variety of treatment outcomes, little research has been conducted to corroborate the importance of counselors' influence on clients' treatment outcomes.

Counselor treatment philosophy and counseling orientation (e.g., cognitive behavioral therapy, self-help groups, and education models) are crucial factors that have been found to be associated with treatment effectiveness. McLeod and McLeod (1993) reported that the extent to which the counselors classified themselves as "person-centered" was associated with the overall counseling effectiveness rated by other trained counselors. Also, studies comparing the effectiveness of different counseling techniques indicated that cognitive behavioral therapy and the combination of individual and group drug counseling led to more reduced illicit substance abuse and fewer criminal behaviors, compared to psychodynamic, self-help groups, reality therapy, or educational models (Carroll, 1998; National Institute on Drug Abuse, 1999).

Counselor psychological characteristics may impact their work performance and the quality of service delivery as well. Working with offenders with drug use problems may elicit counselors' feelings of helplessness and dissatisfaction that result from client denial of problems, lack of motivation to change, the failure of helping clients stay clean, and ending up back to prison again. Job satisfaction has been founded to be associated

with work performance across multiple occupational settings (e.g., service organizations, manufacturing organizations; Riketta, 2008). In the substance abuse treatment field, a higher level of job satisfaction is significantly associated with less job stress, more occupational commitment, and a lower likelihood of turnover (Bride & Kintzle, 2011; Duraisingam, Pidd, Roche, & O'Conner, 2006). Moreover, a study with mental health professionals found that job satisfaction was associated with the continuity of client care and high client engagement (Killaspy, Johnson, Pierce, Bebbington, Pilling, Nolan, & King, 2009).

Another important counselor characteristic that may impact the service quality is therapeutic optimism. According to Carver, Scheier, and Segerstrom (2010), optimistic individuals are more likely to engage in pursuit and coping efforts to attain the desired outcomes, whereas pessimistic individuals tend not to make such efforts. Likewise, Seligman's model of optimism (1998) states that, the optimist tends to attribute setbacks to external factors but take personal credits for positive events. Using 82 experienced intensive case managers (eight years' average work experience) who worked with mentally ill clients, a study found that case managers with more optimism and higher treatment expectations were more likely to report better work outcomes, lower levels of emotional exhaustion and depersonalization, more personal accomplishment, and higher job satisfaction (Kirk & Koeske, 1995). Similarly, a recent study utilizing a sample of 101 correctional mental health professionals found that dispositional optimism predicted positive work experience (Gallavan & Newman, 2013). However, there is limited research investigating how therapeutic optimism (i.e., optimism towards client treatment) of substance abuse treatment counselors impacts treatment outcome. It is proposed that,

under the stressful and frustrated working environment, substance abuse counselors with high therapeutic optimism may still display confidence in treatment and forge ahead in their regular counseling work, which could lead to a positive influence on client outcome.

Self-efficacy, defined as the individual's beliefs in their capabilities to organize and carry out a specific course of action to attain some goal or situation-specific task (Bandura, 1977), is a crucial factor that facilitates treatment effectiveness. A study with participants from the mental health setting found that counselors with higher levels of self-efficacy were less likely to experience burnout and more likely to continue their chosen profession, as well as report higher job satisfaction and better job performance (Judge & Bono, 2001). In addition, organizational climates including cohesion and job autonomy influence job performance. Cohesion, defined as the level of collegial harmony and teamwork spirit, has been found to predict staff burnout and counselor rapport (Garner, Knight, & Simpson, 2007; Greener, Joe, Simpson, Rowan-Szal, & Lehman, 2007). Job autonomy is another protective factor that is positively associated with counselors' organizational commitment and negatively correlated with their intention to quit (Knudsen, Johnson, & Roman, 2003). With a large sample of participants across a variety of drug treatment modalities, studies have found that job autonomy is associated with client-rated counselor rapport and treatment satisfaction (Greener, Joe, Simpson, Rowan-Szal, & Lehman, 2007; Lehman, Greener, & Simpson, 2002).

Therapeutic alliance captures the essence of treatment involvement and reflects the extent to which counselors and clients are "on the same wavelength and caring for one another's well-being" (Joe, Simpson, Dansereau, & Rowan-Szal, 2001, p. 1224). One review of the risk factors associated with addiction treatment dropout pinpointed a lack of

research on the dynamics between the patient and the context of the treatment situation (Brorson, Arnevik, Rand-Hendriksen, & Duckert, 2013). The authors also indicated that alliance was one of the most promising predictors of treatment outcome. Counselor rapport in early treatment has been found to be associated with concurrent session attendance as well as treatment involvement and participation in a later treatment stage (Connors, Carroll, DiClemente, Longabaugh, & Donovan, 1997; Simpson, Joe, Rowan-Szal, & Greener, 1997). Positive counselor rapport is associated with less drug use and criminality, and also leads to a lower likelihood of premature dropout (Joe, Simpson, Dansereau, & Rowan-Szal, 2001; Meier, Donmall, Barrowclough, McElduff, & Heller, 2006). Also, the positive relationship between therapeutic alliance and psychotherapy outcome is independent of treatment types and research instruments (Martin, Garske, & Davis, 2000). Moreover, one study comparing the growth of both client-rated and therapist-rated therapeutic alliance during treatment found that client-rated alliance was not associated with drug use severity and treatment outcome, whereas lower therapist-rated alliance predicted poorer treatment adherence and higher levels of drug use in later sessions (Bethea, Acosta, & Haller, 2008).

In summary, counselor characteristics (e.g., counseling orientation, satisfaction, self-efficacy, therapeutic optimism, cohesion, autonomy) and therapeutic alliance are important aspects of treatment and potentially influence a client's progress in treatment. However, these results are limited by the lack of attention to the influences on treatment outcome, as well as the self-report therapeutic alliance measures by clients. Continued research is needed to investigate the influence of counselor-level factors on client treatment outcomes.

Counselor's Perception of Client Recovery

A dearth of studies has examined the utility of counselor perceptions in predicting and determining recovery success. Long and colleagues (Long, Midgley, & Hollin, 1997) examined whether treatment staff and peer perceptions of problem drinkers could predict one-year posttreatment outcomes. They found that staff perceptions predicted drinking status and psychological distress, whereas peer perceptions did not. A study comparing the discrepancies between patient and counselor perceptions found that counselor ratings of coping skills predicted alcohol relapse but not drug relapse (Walton, Blow, & Booth, 2000); the authors also found that patient ratings of coping skills, leisure activities, and social support predicted alcohol and drug use relapses.

Current Study

Mixed-Methods Design

The current study is a mixed-methods research design that incorporates quantitative and qualitative research methods. Generally speaking, quantitative research assesses the magnitude and frequency of constructs; qualitative research explores the meaning and understanding of constructs. The advantages of the mixed-methods design include exploring research questions within the real-life context, and integrating the strengths of quantitative and qualitative research allows for a robust analysis (Creswell, Klassen, Plano Clark, & Smith, 2011). Following Plano Clark's (2010) suggestions, there are two reasons why the current study uses a mixed-methods design: (1) to better understand the factors that impact client treatment progress and outcome from both client and counselor perspectives, and (2) to develop a complementary picture to compare, validate, and triangulate results from different sources. In the current study, treatment

outcome is defined as during-treatment achievement including treatment adherence and progress. Greene (2007) states that there are two dimensions that characterize mixed-methods design: (1) the quantitative and qualitative methods are conducted independently vs. integrated at all levels of study design; and (2) methods are treated equally (versus one taking precedence over the other). This study conducted quantitative and qualitative methods independently and then used the findings from qualitative methods to (1) facilitate the illustrations of quantitative results, (2) assist in interpretation of unexpected findings of the quantitative research, and (3) provide an in-depth examination of the factors that impede or facilitate client recovery.

Current Study Goals

This study has four goals. First, using multilevel modeling techniques to control for counselor-level variance, the current study focuses on the influences of a client's violence and victimization history, psychiatric symptoms, social functioning, drug severity, and motivation on treatment satisfaction, adherence, and progress. Second, the current study investigates if treatment satisfaction moderates and/or mediates the influences of clients' characteristics on treatment progress. Third, the current study assesses counselor self-efficacy, satisfaction, therapeutic optimism, cohesion, autonomy, and therapeutic alliance, and explores the association of these self-reported measures with client treatment adherence, satisfaction, and progress. Fourth, this study utilizes qualitative research methods to investigate counselors' perceptions of barriers and facilitators to client recovery, which is operationalized by three indicators: clients' treatment satisfaction, adherence, and progress. Qualitative analysis is used to help provide a more in-depth understanding of the factors associated with client recovery.

Conceptual Models and Hypotheses

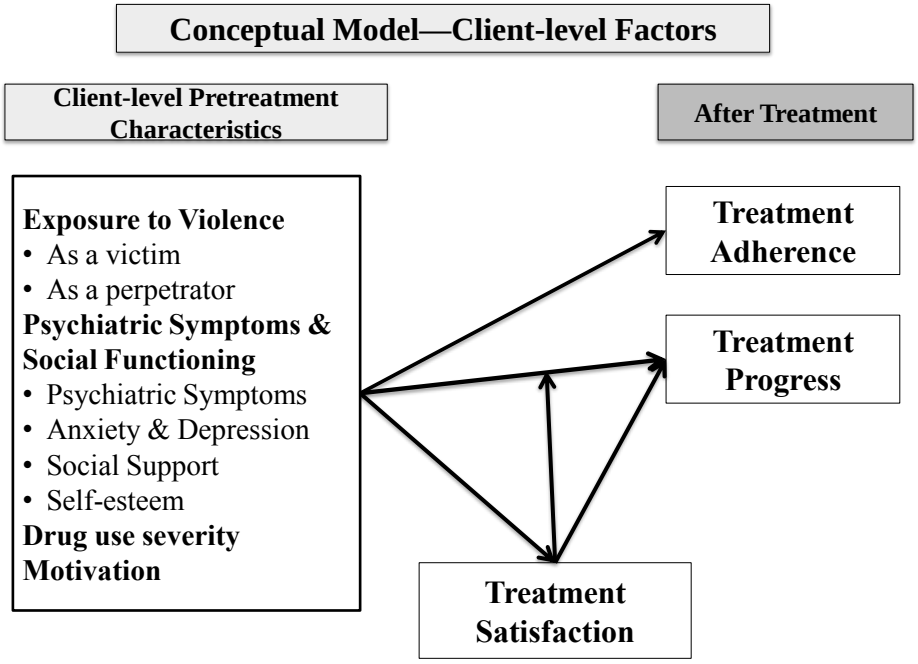

Figure 1. The Conceptual Model 1— The Impact of Client-level Factors

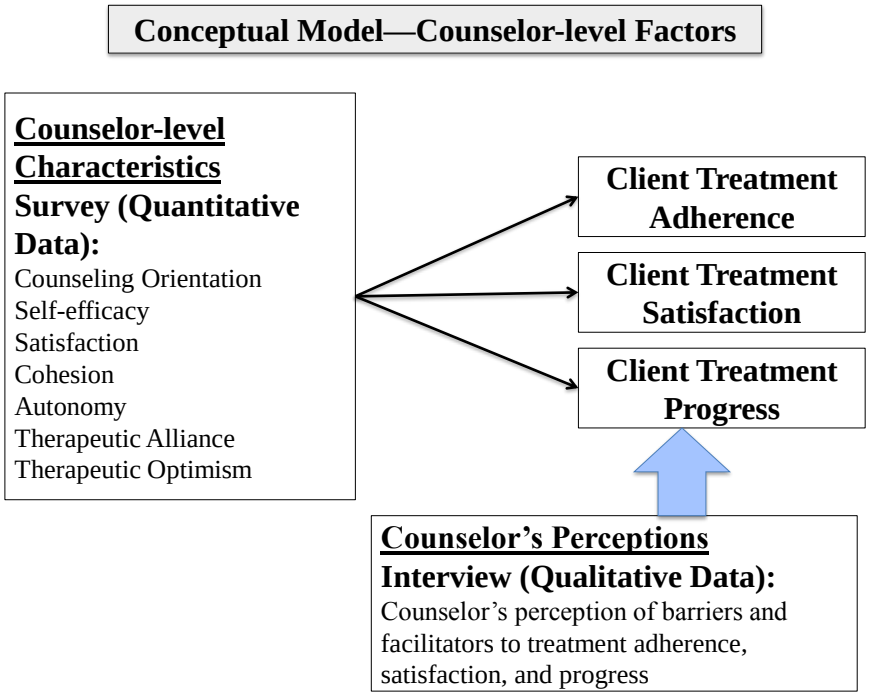

Figure 2. The Conceptual Model 2—The Impact of Counselor-level Factors

The conceptual models are presented in Figures 1 and 2. Model 1 depicts the impact of victimization and violence history, psychiatric symptoms, anxiety, depression, drug severity, and motivation on treatment adherence and progress, as well as the moderation and/or mediation of treatment satisfaction on the relationship between client-level factors and treatment progress. Model 2 describes the relationship between counselor-level factors and clients' treatment adherence, treatment satisfaction, and treatment progress. This study has ten research questions.

Research Question 1: Does victimization and violence history impact treatment satisfaction, adherence, and treatment progress? Hypothesis 1: When compared with their counterparts, clients who self-report a history of victimization and violence will (a) be less likely to adhere to treatment, (b) have a lower level of treatment satisfaction, and (c) report less treatment progress.

Research Question 2: Does treatment satisfaction influence the association between victimization and violence history and treatment progress? Hypothesis 2: Treatment satisfaction will mediate and moderate the relationship between victimization and violence history and treatment progress. Stated another way, clients with a history of victimization and violence will have a lower level of treatment satisfaction which in turn impairs treatment progress. Moreover, the negative association between victimization and violence history and treatment progress will be attenuated by high levels of treatment satisfaction.

Research Question 3: Does psychosocial functioning impact treatment adherence, satisfaction, and progress? Hypothesis 3: When compared with their counterparts, clients with fewer psychiatric symptoms, lower ratings of anxiety and depression, higher levels

of social support, and higher ratings of self-esteem will (a) be more likely to adhere to treatment, (b) have greater treatment satisfaction, and (c) report better treatment progress.

Research Question 4: Does treatment satisfaction influence the association between psychosocial functioning and treatment progress? Hypothesis 4: Treatment satisfaction will mediate and moderate the influence of psychiatric symptoms, anxiety, depression, social support, and self-esteem on treatment progress. Clients with fewer psychiatric symptoms, lower anxiety, lower depression, a higher level of social support, and higher self-esteem will report higher ratings of treatment satisfaction which in turn would be related to better rating of treatment progress. The negative association of psychiatric symptoms, anxiety, and depression with treatment progress will be attenuated by treatment satisfaction; the positive association of social support and self-esteem and treatment progress would be enhanced by treatment satisfaction.

Research Question 5: Does drug use severity impact treatment adherence, satisfaction, and progress? Hypothesis 5: When compared with their counterparts, clients with less drug use severity will (a) be more likely to adhere to treatment, (b) have greater treatment satisfaction, and (c) report better treatment progress.

Research Question 6: Does treatment satisfaction impact the relationship between drug use severity and progress? Hypothesis 6: Treatment satisfaction will mediate and moderate the association between drug use severity and progress. Clients with a higher level of drug use severity will have a lower level of treatment satisfaction which in turn would be related to less treatment progress. The negative relationship between drug use severity and progress will be attenuated by treatment satisfaction.

Research Question 7: Does treatment motivation impact treatment adherence, satisfaction, and progress? Hypothesis 7: When compared with their counterparts, clients with higher levels of treatment motivation will (a) be more likely to adhere to treatment, (b) have greater treatment satisfaction, and (c) report better treatment progress.

Research Question 8: Does treatment satisfaction impact the relationship between treatment motivation and progress? Hypothesis 8: Treatment satisfaction will mediate and moderate the association between motivation and progress. Clients with a higher level of treatment motivation will have a higher level of treatment satisfaction which in turn would increase treatment progress. The positive relationship between treatment motivation and progress will be augmented by treatment satisfaction.

Research Question 9: Are counselor-level factors associated with client treatment satisfaction, adherence, and progress? Hypothesis 9: Higher levels of counselor self-reported self-efficacy, satisfaction, therapeutic optimism, cohesion, autonomy, and therapeutic alliance will be associated with higher levels of client treatment satisfaction, a higher likelihood of treatment adherence, and better client ratings of treatment progress. Different counseling orientations will be correlated with different client outcomes.

Research Question 10: What are factors perceived by counselors that impact the client recovery process? The current study seeks to understand counselor-rated factors that are associated with treatment satisfaction, treatment adherence, and treatment progress.

Methods

Participants

The sample included both client and counselor participants from a community-based drug treatment program in a large Midwest metropolitan area. This study used secondary client data collected as part of the Criminal Justice Drug Abuse Treatment Studies Phase II –Medication-Assisted Treatment (CJDATS II-MAT) Supplemental Project, which ended on March 2014. The sample of client participants at baseline was comprised of 90 male offenders attending a community-based drug treatment program. The length of treatment was 90 days. The demographic information is included in Table 1. The majority of participants were African American (77%), followed by white (20%) and other ethnicity (3%). Participant ages ranged from 20 to 66 years (M = 36, SD = 10). Out of 90 participants, 64 individuals completed 90-days of treatment and follow-up assessment.

Table 1.

Clients Demographics and Characteristics

	Baseline (*N* = 90)		Follow Up (*N* = 64)	
	Frequency (%) or Mean	Range (SD)	Frequency (%) or Mean	Range (SD)
Demographics				
Race				
African American	77%		77%	
White	20%		20%	
Others	3%		3%	
Age	36	20-66 (10.38)	36	20-60 (10.51)
Never Being Married	82.25%		79.70%	
Number of children				
No children	70.10%		67.20%	
Having at least one child	29.90%		29.80%	
Living with a partner or spouse	35.55%		37.50%	
GED or High School Diploma	63.33%		60.90%	
Current Treatment Service Type				
Intensive Outpatient	39.80%		48.40%	
Outpatient	53.80%		48.40%	
Outpatient with other services	6.60%		3.20%	

Table 1 (Continued).

	Baseline (*N* = 90)		Follow Up (*N* = 64)	
	Frequency (%) or Mean	Range (SD)	Frequency (%) or Mean	Range (SD)
Criminal History				
Total number of arrests	18	1-150 (20.25)	15	1-70 (12.99)
Total number of arrests due to drugs	14	0-150 (19.74)	10	0-50 (10.21)
Age of the first time arrest	17	9-32 (3.68)	17	9-32 (4.03)
Number of arrests before age 18 (N =79)	3	0-20 (4.24)	3	0-19 (4.06)
Number of times being incarcerated	12	1-60 (12.11)	11	1-60 (10.92)
Age of the first time being incarcerated (N = 92)	17	9-44 (4.83)	18	9-44 (5.98)
Current legal status				
On probation with no jail/prison sentence	18.88%		23.40%	
On probation with jail/prison sentence	56.66%		50%	
On parole	23.33%		23.40%	
Other	1.13%		3.10%	
Referral Source				
Judge	39.80%		37.50%	
Court Officer	4.30%		6.30%	
Substance Abuse Referral Unit	2.20%		0	
Other criminal justice officer	31.20%		31.30%	
Other	22.60%		24.90%	

Counselor participants were substance abuse treatment counselors for these 90 clients who participated in the CJ-DATS II MAT Supplemental Project. Twelve counselors were originally targeted for inclusion in the study but 4 counselors had left the facility at the time of recruitment. The final counselor participants sample contained eight counselors: Seven counselors completed the study surveys and conducted the interviews, and one counselor declined to participate in the study. The demographic information is presented in Table 2. Four counselors were African American and three counselors were white. The average age was 47. All counselors had substance abuse counseling credentials with an average of 13 years working experience. Cognitive-behavioral therapy was the most frequently cited counseling approach being used by the six counselor participants (out of seven), followed by 12-step therapy (cited by 5 counselors), medication-assisted treatment and other pharmacotherapy (cited by 4 counselors), and behavioral modification (cited by 3 counselors). Counselors also mentioned using motivational counseling techniques.

Participant information, informed consent, surveys, and an interview guide were approved by the Texas Christian University Institutional Review Board. To ensure confidentiality, the interview transcripts were de-identified by using pseudonyms in place of real names of participants; potentially identifying cities and locations were replaced by generic terms as well. The digital audio records of interviews and the de-identified interview transcripts were kept on a password protected computer. Printed hardcopies of transcripts and informed consents were secured in a locked file cabinet.

Table 2.

Counselor Demographics and Characteristics (N = 7)

Characteristics	N/Mean
Race	
African American	4
White	3
Male	4
Age	47
Caseload	40
Working Experience (years)	
Total	12
Current Position	3
Education	
Some college	3
Bachelor's Degree	2
Master's Degree	2
Credential	7
Counseling Approaches (frequency cited by counselors)	
Medication-assisted Treatment and other pharmacotherapy	4
Behavior modification	3
12-step therapy	5
Cognitive-behavioral therapy	6
Motivational Enhancement Therapy	1
Motivational Interviewing	1

Procedures

Creswell and Plano Clark (2011) introduced six major mixed-methods design options including the convergent parallel design, the explanatory sequential design, the exploratory sequential design, the embedded design, the transformative design, and the multiphase design.

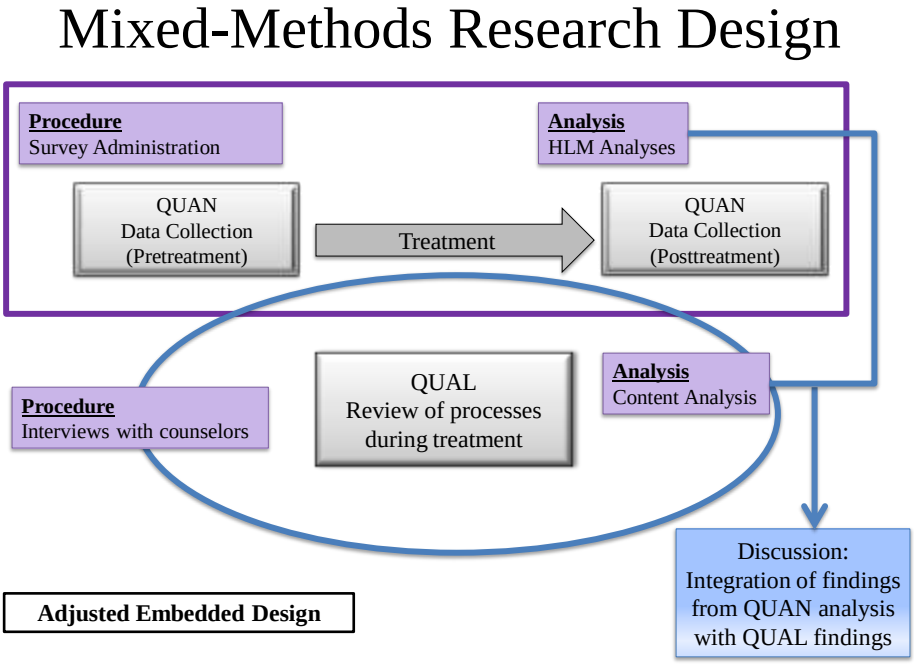

Figure 3. A model of the current research design.

This study used an embedded design to guide the research (see Figure 3). A typical embedded design involves collecting the supplemental data within the collection and analysis of the dominant data. An embedded design represents a common approach in some fields, such as health science (Creswell, Fetters, Plano Clark, & Morales, 2009). Health services researchers often adopt embedded strategies to collect concurrent qualitative data during an implementation study in order to identify the implementation barriers and facilitators, and examine whether the intervention is delivered as intended. The current study used an embedded design approach in which qualitative data were embedded within a major design of treatment evaluation which investigated treatment process and outcome. More specifically, the two methods were utilized to address different research questions within the overarching experimental design. The quantitative component (QUAN) was focusing on client-level factors impacting treatment adherence,

satisfaction, and progress for offenders referred to community-based drug treatment. The qualitative component (QUAL) was embedded in this large design during the treatment process for the purpose of understanding counselors' perceptions of barriers and facilitators that contributed to successful treatment.

The client data were collected from January 2012 to December 2013. Counselor-level data were collected using a short survey and a semi-structured interview. The surveys were administered during December 2013 and January 2014. Six interviews were conducted on site on February 5 and 6, 2014; one interview was conducted over the phone on February 20, 2014. The survey took approximately 20 minutes each and the semi-structured interview took 20 minutes on average.

Measures

Dependent Variables

Treatment adherence is defined as whether or not clients have completed treatment requirements (0 = no, 1 = yes). Among the total sample of 90 clients, 64 participants completed treatment. Twenty-six non-completing cases consisted of 6 unsuccessful discharges, 14 due to incarceration, 4 who were absconding, 1 who was referred to another treatment program, and 1 due to death.

Treatment Satisfaction was assessed using client-rated items that asked about general treatment satisfaction (2 items; e.g., I like the services that I have received in the past three months), access to services (2 items; e.g., Staff where I received services were willing to see me as often as I felt it was needed), and perceptions of counseling quality and appropriateness (4 items; e.g., Staff where I received services encouraged me to take responsibility for how I live my life). Treatment Satisfaction was adapted from the

Mental Health Statistics Improvement Project Survey (MHSIP; Center for Mental Health Services, 2004). The survey has good reliability (Cronbach's $\alpha \geq .73$; Jerrell, 2006).

Treatment Progress is a client rating of how much improvement they have achieved by the end of treatment. Treatment Progress was measured by six items (e.g., "I deal more effectively with daily problems") adapted from the Mental Health Statistics Improvement Project Survey (MHSIP). All the items of Treatment Satisfaction and Progress are on a 5-point Likert scale ranging from "Disagree Strongly" to "Agree Strongly." Treatment adherence, treatment satisfaction, and progress variables were measured at the end of client participation in the 90-day treatment program.

Client-level Predictive Variables

Client Victimization and Violence History was measured at intake with the MacArthur Community Violence Inventory (Steadman, Mulvey, Monahan, Robbins, Appelbaum, Grisso, Roth, & Silver, 1998). Eight items (e.g., "Has anyone kicked, bitten, or choked you?") were used for assessing victimization history; nine items (e.g., "Have you hit anyone with a fist or object or beaten up anyone?") were used for assessing violence history. Responses to all items are on a dichotomous scale (0 = no, 1 = yes).

Psychiatric Disorders and Social Functioning consisted of self-reported psychiatric symptoms, depression, anxiety, self-esteem, and social support. Psychiatric symptoms were rated with 11 items adapted from the Brief Psychiatric Rating Scale (BPRS; internal reliability: Cronbach's $\alpha \geq .62$; Overall & Gorham, 1988). The sample items contain "During the past week, how much were you bothered by feeling low in energy or slowed down?" "During the past week, how much were you bothered by feeling that others are spying on you or plotting against you?" Depression, anxiety, self-

esteem, and social support were measured by the TCU PSY and SOC forms (internal reliability: Cronbach's $\alpha \geq .75$; Simpson, Joe, Knight, Rowan-Szal, & Gray, 2012). The sample items for the TCU PSY and SOC forms include: "You feel sad or depressed," "You have trouble sitting still for long," "You have much to be proud of," and "You have people close to you who can always be trusted."

Drug Severity refers to client self-reported problem severity pertaining to drug use, measured by the TCU Drug Screen II form (e.g., "Did your drug use cause emotional or psychological problems?"; Knight, Simpson, & Morey, 2002). This form has good reliability (Cronbach's $\alpha = .89$; Knight, Simpson, & Morey, 2002).

Treatment Motivation was measured by the TCU MOT form (internal reliability: Cronbach's $\alpha \geq .81$; Simpson, Joe, Knight, Rowan-Szal, & Gray, 2012). Sample items from the MOT form include: "Your drug use is a problem for you" and "You need help with your emotional troubles."

All the forms measuring client-level predictive variables were administered at intake. Forms except Psychiatric Symptoms and Drug Severity are on a 5-point Likert scale (from 1 = "Disagree Strongly" to 5 = "Agree Strongly"). The adapted Brief Psychiatric Rating Scale is on a 7-point Likert scale (from 1 = "Disagree Strongly" to 7 = "Agree Strongly"). Items of Drug Severity are on a dichotomous scale (0 = no, 1 = yes). The composite scores of the corresponding scales were used.

Counselor-level Variables

Counselor Counseling Orientation, Job Satisfaction, Self-efficacy, Cohesion, and Autonomy were measured by items adapted from the TCU Organizational Readiness for Change form (TCU ORC; Lehman, Greener, & Simpson, 2002).

Counseling Orientation refers to which one of the five techniques (including psychodynamic theory, pharmacotherapy and medications, behavior modification, 12-step therapy, and cognitive theory) counselors use to guide their counseling. **Job Satisfaction** was measured by five items (e.g., You are satisfied with your present job). **Self-efficacy** was assessed by five items (e.g., You have the skills needed to conduct effective group counseling). **Cohesion** was measured by six items (e.g., Staff here all get along very well). **Autonomy** was assessed Five items (e.g., Management here fully trusts your professional judgment). All the items except Counseling Orientation are on a 5-point Likert scale ranging from 1 = "Disagree Strongly" to 5 = "Agree Strongly". These scales have good reliability (Job Satisfaction: person separation reliability = .79; Self-efficacy: Cronbach's α = .71; Cohesion: Cronbach's α = .84; Autonomy: Cronbach's α = .57; Broome, Knight, Edwards, & Flynn, 2009; Lehman, Greener, & Simpson, 2002).

Counselor Optimism was measured by ten items assessing counselors' therapeutic optimism towards substance abuse counseling (e.g., substance abuse treatment counselors and clinicians have the capacity to positively influence outcomes for people with substance use problems), which were adapted from the Elsom Therapeutic Optimism Scale (Bryne, Sullivan, & Elsom, 2006). The scale has good reliability (Cronbach's α = .68; Bryne, Sullivan, & Elsom, 2006). **Therapeutic Alliance** was measured by six items assessing the counselors' ratings of their overall rapport with clients during 90-days of treatment (e.g., To which degree you feel your clients easy to talk to; Joe, Simpson, & Rowan-Szal, 2009). The form has good reliability (Cronbach's $\alpha \geq .79$; Joe, Simpson, & Rowan-Szal, 2009). All the items are on a 7-point Likert scale ranging from 1= "Disagree Strongly" to 7 = "Agree Strongly."

Counselor-Rated Factors Related to Client Recovery

This study used a semi-structured interview to investigate counselor perceptions of barriers and facilitators to treatment satisfaction, clients' adherence to treatment, and treatment progress. Initial questions for the interview were developed through an examination of the literature on factors relevant to client treatment success and were then revised through 2 mock interviews. Examples of questions in the interview guide included (a) "What are some of the challenges you face in your interactions with your clients?" (b) "In general, for all your clients, what do you think about the recovery process?" (c) "Are there aspects of the program itself that you think serve as barriers or facilitators to client recovery?" Appropriate probing questions were used so that the participants would provide detailed information regarding their perceptions and experiences of their clients' recovery process. The complete interview guide is attached in Appendix C. Six interviews were conducted by the author, and one interview was conducted by an IBR Research Scientist. All the interviews were recorded with permission using a digital voice recorder. Interview notes were taken along with the recording. Additionally, follow-up interviews were used to increase the trustworthiness of the data (Morrow, 2005).

Data Analysis

In this study, both strands of data were collected and analyzed separately. In the QUAN strand, face-to-face client surveys were conducted at pre- and post-treatment. The quantitative phase consisted of using the multilevel modeling strategies to test the impact of client-level factors on treatment adherence, satisfaction, and progress, and adopting correlation analyses to understand the relationship between counselor-level

characteristics and aggregated client-level outcomes. Qualitative data were collected by semi-structured interviews focusing on counselor-rated factors that impact the initial client recovery process which encompasses treatment processes between intake and discharge. Content analysis was used to analyze qualitative data with a focus on the development of themes across the cases and perspectives. The qualitative component played a supplemental role in understanding why clients did not complete treatment and what factors facilitated/impaired treatment completion and recovery success.

Table 3.

Counselor Characteristics

Counselor ID	Frequency of Clients	Gender	Race	Age	Years Working as a counselor	Years in the current agency	Job Category
1	6	Female	White	34	3	3	Counselor
2	4	Male	White	40	1	1	Counselor
3	20	Male	Black	52	28	6	Counselor Supervisor
4[a]	11	-	-	-	-	-	-
5	9	Female	Black	53	12	3	Counselor
6	3	Male	Black	57	11	8	Intake Coordinator
7	2	Female	White	27	4	1	Counselor
8[a]	3	-	-	-	-	-	-
9[a]	12	-	-	-	-	-	-
10[a]	5	-	-	-	-	-	-
11[b]	10	-	-	-	-	-	-
12	5	Male	Black	62	22	12	Counselor Supervisor

Note: [a] Counselors have left the agency at the time of qualitative data collection; [b] the counselor participant declined to participate.

Quantitative Data Analysis. Because the clients were nested under their counselors, this study used multilevel modeling (i.e., hierarchical linear modeling, HLM) to model the impact of client-level factors on outcome variables, with the control of counselor-level variances. As compared with unilevel modeling techniques (e.g., analysis of variance, multiple linear regression) the hierarchical linear modeling accounts for dependencies among clients due to sharing the same counselors, allowing for valid inferences to be drawn about relationships between predictors and outcomes without violating the assumption of independence. This study also utilized multilevel moderation and mediation analyses to explore whether treatment satisfaction interacted with client-level factors in predicting outcome variables. The analyses were partitioned in four domains: (1) victimization and violence history, (2) psychiatric disorders and social functioning, (3) drug use severity, and (4) motivation. The analyses of the multilevel models were performed with the HLM 6.0 software.

Model Specifications. In HLM models, the researcher specifies whether a given effect is random or fixed. A random effect (i.e., a random slope) implies that the relationship between a predictor and outcome is different between individuals in the study, whereas a fixed effect refers to the same relationship between individuals (Raudenbush & Bryk, 2002). Given a small sample size in some groups (i.e., the number of participants nested under each counselor, see Table 3), the specification of a random (vs. fixed) effect took into consideration two factors: (1) whether the model converged if all slopes were random; (2) whether there was enough variation per group to compute the variance components (i.e., whether there were enough participants in each group for

computing the variance components). Seven out of 12 counselors had less than 5 clients participate in this study (see Table 3). With very few observations per group, there is a greater propensity for nonconvergence or an improper solution (Busing, 1993; Kim, 1990; Mok, 1995). Moreover, although the fixed effects are unbiased regardless of the sample size, the group size, and magnitude of the intra-class correlation, small sample size at level two (a sample of 50 or less) lead to biased estimates of the second-level standard errors (Maas & Hox, 2002).

Preliminary analyses were conducted to examine model convergence and biases of variance estimates in each domain. The results are presented in Table 4. Only the three models in the domain of treatment motivation and the model of treatment adherence in drug use severity were specified as random effects. All the other models were specified as fixed effects because either they had convergence problems or there was only a small proportion of the data been used in the variance estimates that led to biased variance estimation. Moreover, for the four models with random effects, if the variance component tests indicated that there was no variation in the slope, then the effect was fixed. Deviance test and AIC difference test were employed to examine the fit indices and the model selection was performed based on the rule of parsimony and the goodness-of-fit.

All HLM analyses in this study were conducted with the HLM software using the full maximum likelihood procedure (Snijders & Bosker, 2012). The missing values in variables were deleted during the HLM analysis. Furthermore, grand-mean centering was adopted for more parsimonious interpretations of intercepts and slopes. Additionally, SAS 9.2 was used to conduct bivariate correlation analyses to explore the association between counselor-level predictors and aggregated outcome variables.

Table 4.

Results of Preliminary HLM Analyses on Model Specification

Domains	Models convergence & data biases			Model specification
	Treatment Adherence	Treatment Satisfaction	Treatment Progress	Fixed vs. Random
Victimization and Violence	No convergence	Only used data from 7 groups	Only used data from 7 groups	All Fixed
	Interaction with Satisfaction: Not converged			Fixed
Psychiatric Disorders and Social Functioning	Only used data from 7 groups	Only used data from 5 groups	Only used data from 5 groups	All Fixed
	Interaction with Satisfaction: No convergence			Fixed
Drug Use Severity	Converged	Only used data from 9 groups	Only used data from 9 groups	Adherence: Random; other two: Fixed
	Interaction with Satisfaction: Only used data from 3 groups			Fixed
Motivation	Converged	Used data from all 11 groups	Used data from all 11 groups	All Random
	Interaction with Satisfaction: Only used data from 2 groups			Fixed

Model Fit Indices. Two fundamental attributes were taken into account as selecting an optimal statistical model: parsimony and goodness-of-fit. Law of parsimony refers to choosing the simplest model in the candidate collection that adequately fit the data. Goodness-of-fit principle means to select an optimal model that fits the data using certain model selection criteria. Deviance test and Akaike information criterion (AIC) were used to examine which model best fits the data. Following Burnham and Anderson's (2002, p.70) suggestions, the relative AIC values (i.e., differences in AIC values between two models) were used to judge the optimum of the model. That is, order

the AIC values of all the candidate models and select the model with the smallest AIC value as the basis for inference. The next step was to calculate the pairwise differences in AIC values by subtracting the smallest AIC value from the AIC values of all other models (i.e., Δ_i). If $\Delta_i > 10$, it is confident to say the model would be a very poor approximating model for the data. If Δ_i ranges from 4 to 7, the model is considerably less likely to fit the data. If $\Delta_i < 2$, the model is good as approximation to the best model.

Effect size. For the models of treatment satisfaction and progress, R^2 was used to calculate what percentage of variance of the outcome explained by the predictors. The R^2 effect size statistic for the multilevel model can be computed by the formula, $R^2 = \frac{r_0 - r_1}{r_0}$, where r_0 is the within-group residual of the unconditional model and r_1 is the within-group residual of the model with predictors. Cohen's (1988) conventions are applied to interpreting effect size R^2: 2% small, 13% medium, 26% large.

Qualitative Data Analysis. With regard to counselor-rated barriers and facilitators to client recovery, this study used a semi-structured interview to query counselor perceptions of factors impacting client recovery which was operationally defined as treatment satisfaction, client adherence to treatment, and treatment progress. The length of the interviews ranged from 13 to 48 minutes. All participants consented to have their interviews audio recorded. All the interviews were transcribed verbatim. Each interview participant was given a unique de-identified code name. Qualitative data from transcribed semi-structured interviews were imported and analyzed in ATLAS.ti for qualitative content analysis.

Content analysis, as a flexible method for analyzing text data, has been successfully applied in the health studies (Hsieh & Shannon, 2005). Through the

systematic classification process of coding and identifying themes and patterns, content analysis provides knowledge and understanding of the phenomenon under study (Downe-Wamboldt, 1992, p. 314; Hsieh & Shannon, 2005, p. 1278). Applied in this study, content analysis was used to gain direct information from counselor participants, aimed at helping understand the recovery process.

This study used an integrated approach of analysis combing the inductive and deductive procedures (Bradley, Curry, & Devers, 2007; Elo & Kyngäs, 2008). The inductive approach is used when there is not enough former knowledge about the phenomenon, whereas the deductive approach is recommended when the structure of analysis is operationalized on the basis of previous knowledge such as theories, models, mind maps, and literature reviews (Bradley, Curry, & Devers, 2007; Elo & Kyngäs, 2008; Sandelowski, 1995). In the current study, content analysis involved a deductive analysis approach followed by an inductive approach that allowed for the identification of emergent themes (Patton, 2002). The flow chart of the codebook development is presented in Figure 4. The data analysis started with establishing a start-list of initial codes on the basis of the interview guide. These preliminary codes were intended to integrate concepts already identified in the extant literature as well as specified in the interview guide. Next, the author read through all the data to obtain a general sense of the information and to reflect on its overall meaning (Creswell, 2013). Once a priori codes were compiled and the initial data immersion was done, the author began to code the transcripts using the start-list of codes; simultaneously, the coding process was open to additional codes emerging during the analysis. New codes were created inductively from the quotations or segments of data rather than deduced from the interview guide. Data

coding finished when no more new codes emerged in the transcripts. The next step was to classify codes into a few general themes (Creswell, 2013, p. 186). The last step was to refine and finalize the codebook in which the codes were constructed into a hierarchical pyramid with a list of codes and subcodes which were used to explore prominent themes within the data. Themes extracted from early rounds of data analysis were iteratively used to review all data for negative cases, which promoted trustworthiness of the data.

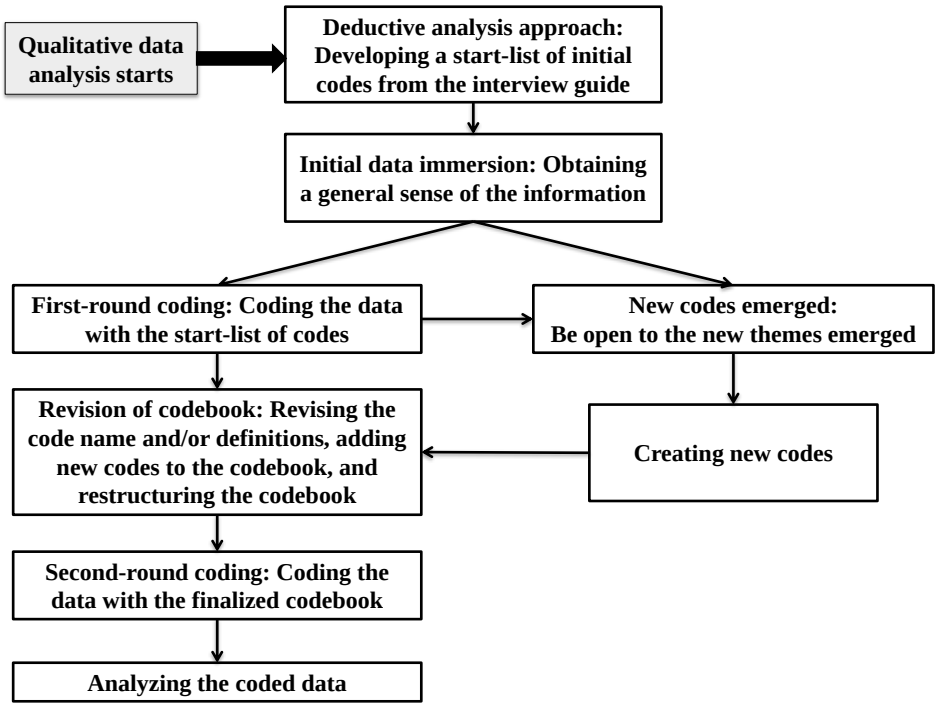

Figure 4. The flow chart of qualitative data analysis: The "winnowing" process of data.

Methodological rigor was attained through triangulation, member checking by participants, and auditing (Chwalisz, Shah, & Hand, 2008). Data triangulation involves comparing information from different counselors to increase the validity of the qualitative findings. With regard to member checking, a follow-up interview was conducted with participants to confirm whether the findings in the qualitative component truly reflected the information that participants had conveyed. In addition, the author kept

a research dialogue as an auditing trail to maintain an ongoing record of the data analysis process, which encompassed interview notes and transcripts (Highlen & Finley, 1996). The author also reviewed the audit trail to confirm that the findings were grounded in the data. The interview notes included (1) notes taken during the interviews about nonverbal information and reminders of questions needed to revisit, (2) information collected during debriefing sessions with participants, and (3) notes and comments drawn during transcription of interview recordings to clarify and add contextual details to what participants have said (Mack, Woodsong, MacQueen, Guest, & Namey, 2005).

With regard to the integration of quantitative and qualitative strands, quantitative and qualitative data were analyzed independently; the findings of two study components were integrated together in the discussion section, with the qualitative findings to support and enhance the understanding the quantitative results.

Results

Quantitative Data Analyses Results

Quantitative data analyses included several steps. First, descriptive analyses and correlations between client-level factors and treatment adherence, satisfaction, and progress were performed as preliminary examination of associations between client-level variables. Second, hierarchical linear regression modeling was used to examine the impact of client-level factors on treatment adherence as well as the moderation and mediation of treatment satisfaction on the relationship between client-level factors and treatment progress. Third, descriptive analyses and correlations were used to examine the relationship between counselor-level factors and aggregated client-level treatment outcomes.

Descriptive Analyses – Client-level data

The descriptive statistical analyses were conducted and the results are presented in Table 5. The zero-order correlations between client-level factors, treatment adherence, satisfaction, and progress are provided in Table 6. Although these correlations do not take into account the hierarchical nature of the data (i.e., clients are nested within counselors), these data do provide some indication of general associations between variables.

Table 5.

Descriptives of Variables (N=90)

Variables	Mean	SD	Range
Baseline Variables			
Victimization (VIC)	0.92	1.52	0 - 6
Violence (VIO)	0.92	1.59	0 - 8
Anxiety (AX)	26.70	6.96	11.43 - 48.57
Depression (DP)	24.33	6.29	10.00 - 40.00
Self-esteem (SE)	36.00	5.76	20.00 - 50.00
Social Support (SS)	40.59	3.95	31.11 - 50.00
Drug Use Severity (DSII)	8.00	1.15	5.00 - 9.00
Motivation (MOT)	37.20	4.25	26.63 - 47.08
Follow-up Variables			
Treatment Adherence	0.71	0.46	
Treatment Satisfaction [a]	32.69	3.54	24.00 - 40.00
Treatment Progress [a]	24.03	3.01	16.00 - 30.00

Note: [a] Follow-up variables, $N = 64$

Table 6.

Correlations between Client-level Variables (N = 90)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Victimization											
2. Violence	0.83***										
3. Anxiety	0.01	0.03									
4. Depression	0.06	-0.01	0.55***								
5. Psychiatric symptoms	-0.50	-0.03	0.56***	0.57***							
6. Self-esteem	-0.07	0.02	-0.51***	-0.71***	-0.42**						
7. Social Support	-0.16	-0.13	-0.16	-0.44***	-0.27*	0.36**					
8. Drug Use Severity	0.18	0.20	0.16	0.13	0.25*	-0.29*	-0.13				
9. Motivation	-0.08	-0.19	0.19	0.12	0.26*	-0.20	0.26*	0.26*			
10. Treatment Satisfaction [a]	0.03	-0.03	-0.28*	-0.27*	-0.20	0.19	0.33**	-0.20	0.24*		
11. Treatment Progress [a]	-0.10	-0.06	-0.22†	-0.36**	-0.07	0.31*	0.34**	-0.07	0.25*	0.44***	
12. Treatment Adherence [b]	-0.02	0.09	0.12	0.06	-0.15	-0.03	0.01	-0.03	-0.11	-	-

Note: [a] Data of these variables were collected at follow-up, the sample size was $N = 64$. [b] Because clients who did not complete 90-day treatment did not complete follow-up assessment, the correlations between treatment satisfaction, progress, and adherence were not performed. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Unconditional Models

Prior to answering the question of how client-level factors influence treatment outcome, three unconditional models were tested to examine the variance in treatment adherence, satisfaction, and progress between individuals without regard to any predictors. Because treatment adherence was a dichotomous variable, multilevel logistic regression was employed. The unconditional model of treatment adherence is as follows:

Level 1: Prob(Tx_Ad_{ij}=1| β) = p_{ij}

Log[(p_{ij}/(1 - p_{ij})] = η_{ij}

$\eta_{ij} = \beta_{0j}$

Level 2: $\beta_{0j} = \gamma_{00} + u_{0j}$

This level-1 model specifies that Tx_Ad_{ij} is the treatment adherence for client *i* with counselor *j*. p_{ij} is the probability of the response equal to one (i.e., whether an individual completed treatment or not). β_{0j} refers to the random coefficient representing the average of the logarithm of odds ratios for clients who adhered to treatment with counselor *j*. The level-2 model specifies that γ_{00} is the grand mean of treatment adherence, and u_{0j} represents the residual of between-counselor deviation. The intraclass correlation (ICC) is employed to calculate the proportion of variance attributable to counselors. The ICC is estimated by the formula: $\rho = \frac{u_0}{u_0 + r}$, where u_0 is between-group variance (i.e., between-counselor variance) and *r* is within-group variance (i.e., between-client variance). In multi-level logistic models, within-group variance is the variance of the standard logistic distribution $u_0 = \frac{\pi^2}{3}$ (i.e., 3.29; Snijders & Bosker, 2012).

Because treatment satisfaction was a continuous variable, multilevel linear regression was employed. The unconditional model of treatment satisfaction is as follows:

Level 1: $Tx\_sat_{ij} = \beta_{0j} + \gamma_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + u_{0j}$

In level 1 of this two-level model, treatment satisfaction (Tx_sat_{ij}) is a function of the mean treatment satisfaction among all clients treated by a counselor (β_{0j}) and the residual error between the estimated and the observed values (γ_{ij}). Level 2 specifies that the mean treatment satisfaction for clients treated by a counselor (β_{0j}) is equal to the grand mean of treatment satisfaction (γ_{00}) plus the residual error of the estimated grand mean (u_{0j}).

In the same vein, the unconditional model of treatment progress is as follows:

Level 1: $Tx\_Prog_{ij} = \beta_{0j} + \gamma_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + u_{0j}$

This level-1 model specifies that Tx_Prog_{ij} is the treatment progress for client *i* with counselor *j*. β_{0j} refers to the random coefficient representing the mean of client treatment progress for counselor *j* (averaging the treatment progress for all clients of counselor *j*), and γ_{ij} refers to the residual which is the within-counselor deviation. The level-2 model specifies that γ_{00} is the grand mean of treatment progress among all clients, and u_{0j} represents the residual of between-counselor variance. Similar to the unconditional model of treatment adherence, the ICC of unconditional models of treatment satisfaction and progress is estimated by the formula: $\rho = \frac{u_0}{u_0 + r}$, respectively (Snijders & Bosker, 2012).

Table 7.

Variance Components, ICC, and Reliability of Treatment Adherence, Satisfaction, and Progress

	Between-Counselor Variance	Within-Counselor Variance	χ^2 (*df*=11)	Intraclass Correlations	Reliability
Treatment Adherence	0.29	3.29	9.95 ($p > .50$)	0.02	0.11
Treatment Satisfaction	0.004	12.31	12.53 ($p = .33$)	0.0003	0.002
Treatment Progress	0.52	8.61	16.30 ($p = .13$)	0.18	0.23

The results of three unconditional models are presented in Table 7, indicating that there were no significant between-group variances in all three outcome variables: treatment adherence, χ^2 (11) = 9.95, $p > .50$, treatment satisfaction: χ^2 (11) = 12.53, $p = .33$, and treatment progress: χ^2 (11) = 16.30, $p = .13$. The between-counselor variables (level-2) only accounted for 2% of the total variance in treatment adherence and 98% of the total variance was explained by the between-client differences (level-1). The intercept of the unconditional model was different from zero, $\gamma_{00} = 0.89$, *S.E* = 0.24, $t = 3.73$, $df = 11$, $p = .004$, showing that the average proportion of treatment adherence was 0.71 (derived from $\frac{e^{0.89}}{e^{0.89}+1}$) across all individuals. The results of the unconditional model of treatment satisfaction revealed that 0.03% of the total variance in treatment satisfaction was accounted for by counselor differences and 99.97% of the total variance was attributed to individual differences. The intercept of the unconditional model was 32.69,

γ_{00} = 32.69, *S.E* = 0.44, *t* = 74.43, *df* = 11, *p* < .001, indicating that the average score of treatment satisfaction was 32.69 for all clients. Likewise, the results of the unconditional model of treatment progress revealed that 18% of the total variance in treatment progress was accounted for by counselor differences and 82% of the total variance was attributed to individual differences. The intercept of the unconditional model was 24.09, γ_{00} = 24.09, *S.E* = 0.44, *t* = 54.37, *df* = 11, *p* < .001, indicating that the average score on treatment progress was 24.09 for all clients. Although the unconditional models showed that there were no counselor-level variations in treatment adherence, satisfaction, and progress, the HLM analyses were still used to understand the influence of client-level factors on dependent variables with the aim of controlling for counselor-level variances. The HLM analyses were performed separately with predictors from each of four domains (i.e., victimization and violence history, psychiatric disorders and social functioning, drug use severity, motivation). The results are displayed in the following sections.

Research Question 1: The Impact of Victimization and Violence History on Treatment Adherence, Satisfaction, and Treatment Progress.

The following model with fixed effects (Model 1) was used to examine the impact of victimization and violence history on treatment adherence:

Level 1: $\text{Prob}(Tx\_Ad_{ij}=1|\,\beta) = p_{ij}$

$\text{Log}[(p_{ij}/(1 - p_{ij})] = \eta_{ij}$

$\eta_{ij} = \beta_{0j} + \beta_{1j}\,(\text{VIC}) + \beta_{2j}\,(\text{VIO})$

Level 2: $\beta_{0j} = \gamma_{00} + u_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

This level-1 model specifies that Tx_Ad_{ij} is treatment adherence for client *i* with counselor *j*. p_{ij} is the probability of the response equal to one (i.e., whether an individual completed treatment or not). The logarithm of the odds ratio of treatment adherence is a function of the average logarithm of odds ratios of clients who adhere to treatment with counselor *j* (β_{0j}), the average impact of victimization for counselor *j*'s clients (β_{1j}), and the average impact of violence for counselor *j*'s clients (β_{2j}). The level-2 model specifies that γ_{00} is the grand mean of treatment adherence, and u_{0j} represents the residual of between-counselor deviation. The results are presented in Table 8. Neither victimization nor violence history had significant impact on treatment adherence; victimization: β_{1j} = -0.22, *S.E.* = 0.21, *t* = -1.03, *p* = 0.30, *Odds Ratio* (*OR*) = 0.80, *Confidence Interval* (*CI*) = [0.53, 1.22]; violence: β_{2j} = 0.30, *S.E.* = 0.23, *t* = 1.33, *p* = 0.19, *OR* = 1.35, *CI* = [0.86, 2.12]. There was no variation in the intercept of treatment adherence; *Var* = 0.09, $\chi^2(11) = 9.40$, $p > .50$.

Table 8.

Coefficients and Variances for the Impact of Victimization and Violence History on Treatment Adherence

	Treatment Adherence					
Variables	*β*	*S.E.*	*t*	*p*	*OR*	*CI*
Fixed Effect						
Intercept	0.88	0.26	3.43	0.006	2.42	1.37,4.28
Victimization	-0.22	0.21	-1.03	0.30	0.80	0.53,1.22
Violence	0.30	0.23	1.33	0.19	1.35	0.86,2.12
Random Effect		Variance Component		*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0		0.09		0.31	9.40	> .50

Note: *OR*: odds ratio; *CI*: confidence interval.

The following model (Model 2) was used to explore the impact of victimization and violence history on treatment satisfaction:

Level 1: $Tx\_sat_{ij} = \beta_{0j} + \beta_{1j}(\text{VIC}) + \beta_{2j}(\text{VIO}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

In Level 1 of the two-level model, treatment satisfaction (*Tx_sat*) for a client (*i*) who was treated by counselor (*j*) is a function of the adjusted mean treatment satisfaction with this counselor (β_{0j}), victimization history (β_{1j}), violence history (β_{2j}), and the error term associated with this estimated mean (r_{ij}). In Level 2 of the two-level model, the adjusted mean treatment satisfaction (β_{0j}) is a function of the grand mean of treatment satisfaction across all clients (γ_{00}) and the between-counselor residuals on treatment satisfaction (μ_{0j}). The slope of victimization history on treatment satisfaction (β_{1j}) is a function of the average main effect of victimization history across all clients (γ_{10}). Likewise, the slope of violence history on treatment satisfaction (β_{2j}) is a function of the average main effect of violence history on treatment satisfaction across all clients (γ_{20}). The results of Model 2 for treatment satisfaction indicated that both victimization and violence history had no significant impact on treatment satisfaction; victimization: $\beta_{1j} = 0.43$, *S.E.* = 0.54, $t = 0.79$, $p = 0.43$; violence: $\beta_{2j} = -0.39$, *S.E.* = 0.49, $t = -0.80$, $p = 0.43$ (see Table 9). The level-1 predictors explained 1% of the total variance. There was no significant variation between clients in the initial level of treatment satisfaction; *Var* = 0.002, $\chi^2(11) = 11.70$, $p = .40$.

Table 9.

Coefficients and Variances for the Impact of Victimization and Violence History on Treatment Progress

	Treatment Satisfaction			
Variables	β	*S.E.*	*t*	*p*
Fixed Effect				
Intercept	32.69	0.44	74.87	< .001
Victimization	0.43	0.54	0.79	0.43
Violence	-0.39	0.49	-0.80	0.43
Random Effect	Variance Component	*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0	0.002	0.05	11.71	0.40
Level-1 Residual, *r*	12.18	3.49		

The impact of victimization and violence on treatment progress was explored with the following model (Model 3):

Level 1: $Tx\_prog_{ij} = \beta_{0j} + \beta_{1j}(\text{VIC}) + \beta_{2j}(\text{VIO}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

In Level 1 of the two-level model, treatment progress (*Tx_prog*) for a client (*i*) who was treated by counselor (*j*) is a function of the adjusted mean treatment progress with this counselor (β_{0j}), victimization history (β_{1j}), violence history (β_{2j}), and the error term associated with this estimated mean (r_{ij}). In Level 2 of the two-level model, the adjusted mean treatment progress (β_{0j}) is a function of the grand mean of treatment progress across all clients (γ_{00}) and the between-counselor residuals on treatment progress (μ_{0j}). The slope of victimization history on treatment progress (β_{1j}) is a function of the average main

effect of victimization history across all clients regardless of their counselors on treatment progress (γ_{10}). Likewise, the slope of violence history on treatment progress (β_{2j}) is a function of the average main effect of violence history across all clients on treatment progress (γ_{20}). The results are presented in Table 10. Similar to treatment satisfaction, the results of this model indicated that both victimization and violence history had no significant impact on treatment progress; victimization: β_{1j} = -0.38, *S.E.* = 0.46, t = -0.82, p = 0.42; violence: β_{2j} = 0.41, *S.E.* = 0.16, t = 0.39, p = 0.70. The level-1 predictors explained 5% of the total variance. The results also revealed that there was no significant variation in the initial level of treatment progress (*Var* = 0.44, $\chi^2(11) = 17.14$, p = .10) and only 3% of the level-1 variance in outcome was accounted by victimization and violence history, R^2 = 3%.

Table 10.

Coefficients and Variance Estimates for the Impact of Victimization and Violence History on Treatment Progress

	Treatment Progress			
Variables	β	*S.E.*	t	p
Fixed Effect				
Intercept	24.07	0.43	56.1	< .001
Victimization	-0.38	0.46	-0.82	0.42
Violence	0.41	0.16	0.39	0.70
Random Effect	Variance Component	*S.D.*	$\chi^2(11)$	p
Intercept, u_0	0.44	0.67	17.14	0.10
Level-1 Residual, r	8.39	2.9		

Research Question 2: The Impact of Treatment Satisfaction on the Relationship between Victimization and Violence History and Treatment Progress.

Because victimization and violence history have no significant impact on treatment satisfaction or treatment progress, the principles of mediation were not satisfied. Thus, the HLM mediation analysis was not conducted.

The following model (Model 4) was used to examine if treatment satisfaction impacted the relationship between victimization and violence history and treatment progress:

Level 1: $Tx\_prog_{ij} = \beta_{0j} + \beta_{1j}(\text{VIC}) + \beta_{2j}(\text{VIO}) + \beta_{3j}(\text{Tx\_sat}) +$

$\beta_{4j}(\text{VIC}\times\text{Tx\_sat}) + \beta_{5j}(\text{VIO}\times\text{Tx\_sat}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

$\beta_{4j} = \gamma_{40}$

$\beta_{5j} = \gamma_{50}$

In Level 1 of the two-model model, treatment progress for client *i* counseled by a counselor *j* (Tx_prog_{ij}) is a function of the average treatment progress of all clients treated by counselor *j* (β_{0j}), victimization history (β_{1j}), violence history (β_{2j}), treatment satisfaction (β_{3j}), the interaction between victimization history and treatment satisfaction (β_{4j}), the interaction between violence history and treatment satisfaction (β_{5j}), and the residual (r_{ij}). In Level 2 of this model, γ_{00} represents the grand mean of treatment progress, γ_{10}, γ_{20}, γ_{30}, γ_{40}, and γ_{50} represent the mean slope of victimization, violence, treatment

satisfaction, victimization × treatment satisfaction interaction, and violence × treatment satisfaction interaction across all participants, respectively. μ_{0j} is the residual term of the estimated grand mean of treatment progress. The results revealed that all predictors and interactions had a significant influence on treatment progress; the coefficients β_{4j} and β_{5j} were of primary interest (see Table 11).

Table 11.

Coefficients and Variances for the Moderation of Treatment Satisfaction in Victimization and Violence History

	β	*S.E.*	*t*	*p*
Intercept	24.03	0.32	75.64	< .001
Victimization	10.83	5.08	2.13	0.04
Violence	-10.74	4.86	-2.21	0.03
Satisfaction	0.36	0.1	3.44	0.001
Victimization × Satisfaction	-0.34	0.15	-2.23	0.03
Violence × Satisfaction	0.33	0.15	2.27	0.03
Random Effect	Variance Component	S.D.	$\chi^2(11)$	*p*
Intercept, u_0	0.003	0.06	11.90	0.37
Level-1 Residual, *r*	6.43	2.54		

As displayed in Figures 5 and 6, the interactions were graphed following established guidelines (Aiken & West, 1991); all continuous predictive and moderator variables were plotted at one standard deviation below and above the respective mean. Supplemental analyses examining two-way interactions were conducted to decompose the significant interactions using the program created by Preacher, Curran, and Bauer (2003) available from the quantpsy.org website. With respect to victimization, simple slope analyses

revealed that the slope was significantly different from zero for clients with a high level of treatment satisfaction, $t = -3.62$, $p = .0006$; whereas the slope was not significantly different from zero for clients with a low level of treatment satisfaction, $t = 1.35$, $p = 0.18$ (see Figure 5). The simple slope analyses indicated that for clients with a high level of treatment satisfaction, victimization history was negatively associated with treatment progress. For clients with a low level of treatment satisfaction, victimization history had no impact on treatment progress. Further analyses were carried out to examine the relationship between treatment satisfaction and progress at different levels of victimization history. For those with less victimization history, clients with high levels of treatment satisfaction made more treatment progress than the counterparts, $t = 4.05$, $p < .001$. For those with more victimization history, treatment satisfaction did not impact their treatment progress, $t = 1.22$, $p = .23$.

With respect to violence, in spite of the significant interaction between violence and satisfaction, simple slope analyses revealed that the slopes were not different from zero for clients regardless of the levels of treatment satisfaction, low level: $t = -1.16$, $p = 0.25$; high level: $t = 1.18$, $p = .24$ (see Figure 6). The nonsignificant simple slopes could be attributed to the fact that one standard deviation above and below the mean was not sufficient enough to detect the differences at the current situation. Further analyses were conducted to analyze the association between treatment satisfaction and progress at different levels of violence history. For those with less violence history, treatment satisfaction did not impact their treatment progress, $t = 0.87$, $p = .39$. For those with more violence history, clients with high levels of treatment satisfaction made more treatment progress than the counterparts with low levels of treatment satisfaction, $t = 3.27$, $p = .002$.

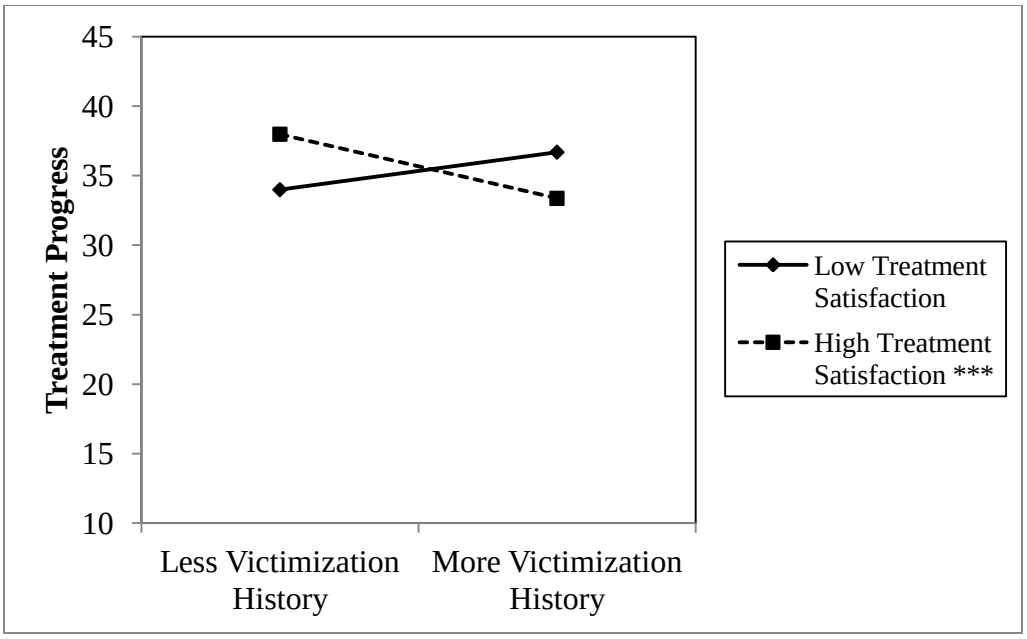

Figure 5. Plots illustrate the level of satisfaction (low vs. high) as a function of victimization history on treatment progress. *** $p < .001$.

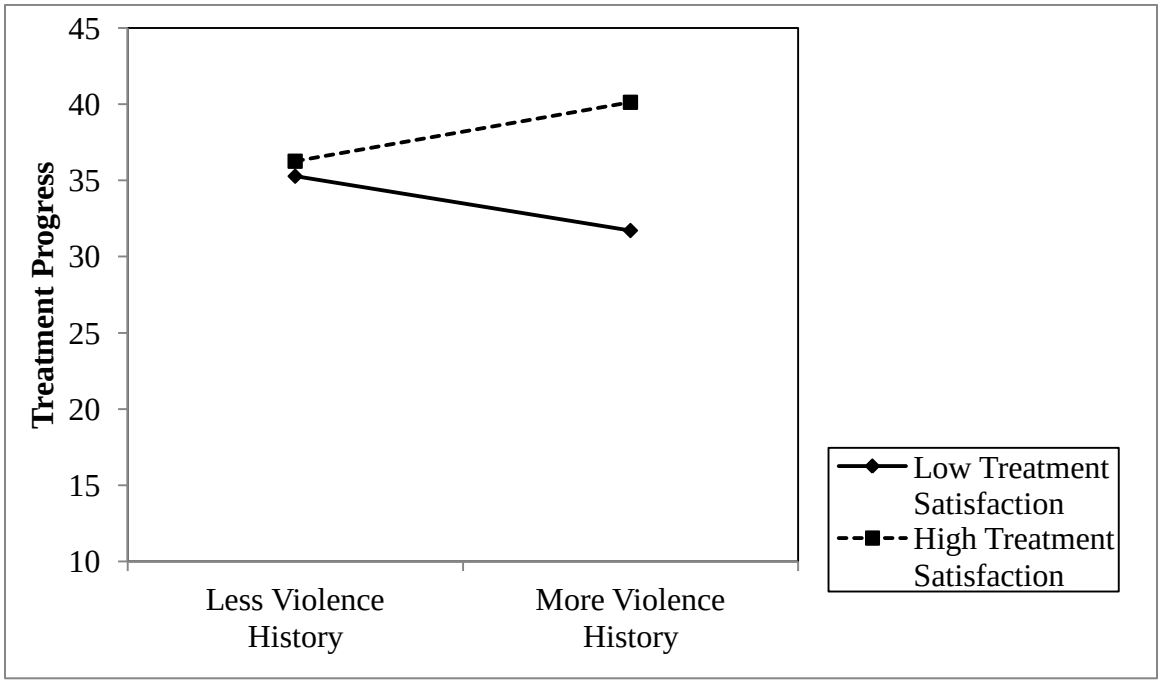

Figure 6. Plots illustrate the level of satisfaction (low vs. high) as a function of violence history on treatment progress.

Research Question 3: The Impact of Psychiatric Symptoms and Social Functioning on Treatment Adherence, Satisfaction, and Progress.

The following model with fixed slopes was used to examine the impact of psychiatric symptoms and social functioning on treatment adherence (Model 5):

Level 1: $\text{Prob}(Tx\_Ad_{ij}=1|\,\beta) = p_{ij}$

$$\text{Log}[(p_{ij}/(1 - p_{ij})] = \eta_{ij}$$

$$\eta_{ij} = \beta_{0j} + \beta_{1j}(\text{BPRS}) + \beta_{2j}(\text{AX}) + \beta_{3j}(\text{DP}) + \beta_{4j}(\text{SS}) + \beta_{5j}(\text{SE})$$

Level 2: $\beta_{0j} = \gamma_{00} + u_{0j}$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

This level-1 model specifies that Tx_Ad_{ij} is the treatment adherence for client *i* with counselor *j*. p_{ij} is the probability of treatment completion (i.e., the percentage of individuals adhering to treatment). The logarithm of the odds ratio of treatment adherence is a function of the average logarithm of odds ratios of clients who adhere to treatment with counselor *j* (β_{0j}), the average impact of psychiatric symptoms for clients treated by counselor *j* (β_{1j}), the average impact of anxiety for clients treated by counselor *j* (β_{2j}), the average impact of depression for clients treated by counselor *j* (β_{3j}), the average impact of social support for clients treated by counselor *j* (β_{4j}), and the average impact of self-esteem for clients treated by counselor *j* (β_{5j}). The level-2 model specifies that γ_{00} is the grand mean of treatment adherence of the counselor-specific means (β_{0j}) from the level-1

model, and u_{0j} represents the residual of between-counselor deviation. γ_{10}, γ_{20}, γ_{30}, γ_{40}, and γ_{50} represent the grand mean of the respective slope. The variable of psychiatric symptoms was the only significant predictor of treatment adherence: β_{1j} = -0.16, *S.E.* = 0.07, t = -2.24, p = 0.03, *OR* = 0.85, *CI* = [0.73, 0.98]. For each unit increase in psychiatric symptoms, the average odds ratio of adhering to treatment among all individuals decreased by 15%. All the other predictors were not significantly associated with treatment adherence (see Table 12). There was no variation in the intercept of treatment adherence, *Var* = 0.0003, $\chi^2(11) = 9.90$, $p > .50$.

Table 12.

Coefficients and Variances for the Impact of Psychosocial Functioning on Treatment Adherence

	Treatment Adherence					
Variables	*β*	*S.E.*	*t*	*p*	*OR*	*CI*
Fixed Effect						
Intercept	0.97	0.25	3.9	0.003	2.65	1.53, 4.60
Psychiatric Symptoms	-0.16	0.07	-2.24	0.03	0.85	0.73, 0.98
Anxiety	0.06	0.05	1.37	0.18	1.06	0.97, 1.16
Depression	0.05	0.07	0.82	0.42	1.05	0.93, 1.20
Social Support	0.01	0.07	0.16	0.87	1.01	0.89, 1.16
Self-esteem	0.005	0.06	0.09	0.93	1.01	0.90, 1.13
Random Effect		Variance Component		*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0		0.0003		0.02	9.9	> .50
Level-1 Residual, *r*		6.11		2.47		

The influences of psychiatric symptoms, anxiety, depression, social support, and self-esteem on treatment satisfaction were measured with the following model (Model 6):

Level 1: $Tx\_sat_{ij} = \beta_{0j} + \beta_{1j}(\text{BPRS}) + \beta_{2j}(\text{AX}) + \beta_{3j}(\text{DP}) + \beta_{4j}(\text{SS}) + \beta_{5j}(\text{SE}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

$\beta_{4j} = \gamma_{40}$

$\beta_{5j} = \gamma_{50}$

In Model 6, treatment satisfaction for client *i* treated by counselor *j* (Tx_sat_{ij}) is a function of the average treatment satisfaction for all clients treated by counselor j (β_{0j}), the influences of psychiatric symptoms (β_{1j}), anxiety (β_{2j}), depression (β_{3j}), social support (β_{4j}), and self-esteem (β_{5j}), respectively, and the residual error (r_{ij}). In Level 2 of Model 6, γ_{00} represents the grand mean of treatment satisfaction for all clients, and μ_{0j} is the error term of the estimated grand mean. $\gamma_{10}, \gamma_{20}, \gamma_{30}, \gamma_{40}, and\ \gamma_{50}$ represent the mean slope of psychiatric symptoms, anxiety, depression, social support, and self-esteem, respectively. The results revealed that social support was the only one significant predictor of treatment satisfaction, $\beta_{4j} = 0.25$, *S.E.* = 0.11, $t = 2.34$, $p = 0.02$. All the other predictors did not significantly influence treatment satisfaction (see Table 13). The fit statistics of this model include $\chi^2(8) = 330.43$ and AIC = 346.43. The predictors explained 17% of level-1 variance, $R^2 = 17\%$.

Then psychiatric symptoms and anxiety were removed from the model because of corresponding large p value sizes. The reduced model is as follows (Model 7):

Level 1: $Tx\_sat_{ij} = \beta_{0j} + \beta_{1j}(\text{DP}) + \beta_{2j}(\text{SS}) + \beta_{3j}(\text{SE}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

The results of the reduced model the results revealed that social support remained the only significant predictor of treatment satisfaction, $\beta_{2j} = 0.22$, *S.E.* = 0.11, $t = 2.06$, $p = 0.04$. For one unit increase in social support, the average treatment satisfaction among all the participants increased by 0.22 units. All the other predictors did not significantly influence treatment satisfaction (see Table 13). The fit indices are $\chi^2(6) = 333.49$ and AIC = 345.49. These three predictors explained 11% of the level-1 variances, $R^2 = 11\%$. Deviance test indicated that the random-slope model did not fit the data better than the fixed-slope model, $\Delta\chi^2(20) = 26.78$, $p = .14$, whereas the difference between AIC indicated that Model 7 fit data better than Model 6, $\Delta AIC = 13.02 > 10$. Thus, the fixed-slope model was retained.

Table 13.

Coefficients and Variances for the Impact of Psychosocial Functioning on Treatment Satisfaction

	Model 6 Treatment Satisfaction				Model 7 Treatment Satisfaction			
	β	*S.E.*	*t*	*p*	*β*	*S.E.*	*t*	*p*
Intercept	32.69	0.40	81.68	< .001	32.69	0.41	79.84	< .001
Psychiatric Symptoms	0.02	0.13	0.17	0.87	-	-	-	-
Anxiety	-0.13	0.07	-1.70	0.90	-	-	-	-
Depression	-0.04	0.10	-0.36	0.72	-0.09	0.09	-0.96	0.34
Social Support	0.25	0.11	2.34	0.02	0.22	0.11	2.06	0.04
Self-esteem	-0.05	0.09	-0.53	0.60	-0.01	0.09	-0.16	0.88
Random Effect	Variance Component	*S.D.*	$\chi^2(11)$	*p*	Variance Component	*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0	0.003	0.05	12.06	0.36	0.003	0.06	12.04	0.36
Level-1 Residual, *r*	10.23	3.20			10.73	3.28		

The influences of psychiatric symptoms, anxiety, depression, social support, and self-esteem on treatment progress were examined using the following model (Model 8):

Level 1: $Tx\_prog_{ij} = \beta_{0j} + \beta_{1j}(\text{BPRS}) + \beta_{2j}(\text{AX}) + \beta_{3j}(\text{DP}) + \beta_{4j}(\text{SS}) + \beta_{5j}(\text{SE}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

$\beta_{4j} = \gamma_{40}$

$\beta_{5j} = \gamma_{50}$

In Model 8, treatment progress for client *i* treated by counselor *j* (Tx_prog_{ij}) is a function of the average treatment progress for all clients treated by counselor *j* (β_{0j}), the influences of psychiatric symptoms (β_{1j}), anxiety (β_{2j}), depression (β_{3j}), social support (β_{4j}), and self-esteem (β_{5j}), respectively, and the residual error (r_{ij}). In the Level 2 of Model 7, γ_{00} represents the grand mean of treatment progress for all clients, and μ_{0j} is the error term of the estimated grand mean. γ_{10}, γ_{20}, γ_{30}, γ_{40}, *and* γ_{50} represent the mean slope of psychiatric symptoms, anxiety, depression, social support, and self-esteem, respectively.

Table 14.

Coefficients and Variances for the Impact of Psychosocial Functioning on Treatment Progress

	Model 8 Treatment Progress				Model 9 Treatment Progress			
	β	*S.E.*	*t*	*p*	*β*	*S.E.*	*t*	*p*
Intercept	24.39	0.42	58.15	< .001	24.21	0.45	54.01	< .001
Psychiatric Symptoms	0.16	0.10	1.72	0.11	0.15	0.09	1.62	0.11
Anxiety	-0.03	0.06	-0.51	0.62	-	-	-	-
Depression	-0.10	0.07	-1.41	0.19	-0.15	0.06	-2.36	0.02
Social Support	0.25	0.09	2.67	0.02	0.20	0.09	2.54	0.01
Self-esteem	0.07	0.09	0.78	0.45	-	-	-	-
Random Effect	Variance Component	*S.D.*	$\chi^2(11)$	*p*	Variance Component	*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0	0.96	0.98	21.13	0.03	0.96	0.98	21.28	0.03
Level-1 Residual, *r*	6.11	2.47			6.21	2.49		

The results of Model 8 indicated that social support was the only significant predictor of treatment progress, $\beta_{4j} = 0.25$, *S.E.* = 0.09, $t = 2.67$, $p = 0.02$ (see Table 14). All the other predictors had no significant impact on treatment progress, all p values ≥ 0.10. The predictors had counted for 14% of the total variance in treatment progress;

there was significant variation in the intercept of treatment progress, $Var = 0.96$, $\chi^2(11) = 21.13$, $p = .03$. The fit statistics of this model included $\chi^2(8) = 304.14$ and AIC = 320.14, and the predictors explained 29% of the level-1 variances, $R^2 = 29\%$.

The variables of anxiety and self-esteem were removed from the model because of their large p values. Psychiatric symptoms, depression, and social support were retained in the following model (Model 9).

Level 1: $Tx\_prog_{ij} = \beta_{0j} + \beta_{1j}(\text{BPRS}) + \beta_{2j}(\text{DP}) + \beta_{3j}(\text{SS}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

The analyses of the reduced model showed that depression and social support significantly predicted treatment progress (see Table 14). For each unit increase in depression, the average treatment progress decreased 0.15 units, $\beta_{2j} = -0.15$, $S.E. = 0.06$, $t = -2.36$, $p = 0.02$; for each unit increase in social support, the average treatment progress across individuals incremented 0.20 units, $\beta_{3j} = 0.20$, $S.E. = 0.09$, $t = 2.54$, $p = 0.01$. However, the variable of psychiatric symptoms was not associated with treatment progress, $\beta_{1j} = 0.15$, $S.E. = 0.09$, $t = 1.62$, $p = 0.11$. The fit indices were $\chi^2(6) = 305.08$ and AIC = 317.08. Deviance test indicated that there was no significant difference between Model 8 and Model 9 in terms of examining the variance in treatment progress, $\Delta\chi^2(2) = 1.06$, $p = .59$; ΔAIC = 3.06. Even though the fit indices suggest that Model 9 was not a better fit with the data, Model 9 was retained because of its parsimony. In the

final model, 28% of the level-1 variance (R^2 = 28%) in treatment progress was explained by psychiatric symptoms, depression, and social support.

Research Question 4: The Influence of Treatment Satisfaction on the Association between Psychosocial Functioning and Treatment Progress.

The primary aim of this question is to examine if treatment satisfaction mediates and/or moderates the influence of psychiatric symptoms and social functioning on treatment progress. To test the multilevel mediation, this study followed established procedures (Mackinnon, 2008) that were similar to those in simple mediation but were interpreted in a multilevel fashion (Krull & MacKinnon, 1999; Preacher & Hayes, 2008). First, the independent variables must be associated with the dependent variable (treatment progress). Second, the independent variables must be associated with the mediator (treatment satisfaction). Third, the mediator must be associated with the dependent variable when the independent variables are controlled. Finally, the association between independent and dependent variables must be of non-significance or of lesser magnitude.

Based on the previous analyses, social support was the only predictor that was significantly associated with both treatment satisfaction and progress. Following the established procedures, three equations (equations 1-3) were used to examine the mediation of treatment satisfaction on the relationship between social support and treatment progress. First, in equation 1 social support must significantly impact on treatment progress (β_c). In equation 2, social support must be significantly associated with treatment satisfaction (β_a). Equation 3 represents the final multilevel equation in the mediation analyses. In equation 3, treatment satisfaction must be associated with treatment progress (β_b). Because all the variables were in the level 1 of two-level model,

the final model was represented as a 1→1→1 model, where level-1 variables impacted level-1 mediator, which in turn influenced the level-1 outcome variable (see Figure 7; Krull & MacKinnon, 1999). The multiplication of β_a and β_b calculates the indirect effect of social support on treatment progress through treatment satisfaction, the mediator (see Figure 7). Partial mediation is the case when the path from social support to treatment progress ($\beta_{c'}$) is reduced and statistically different from zero with the mediator (i.e., treatment satisfaction) in the model (Model 10). Complete mediation is the case when the path ($\beta_{c'}$) is no longer significant with the mediator present.

Equation 1:

Level 1: $\text{Tx\_Prog} = \beta_{0j} + \beta_c(\text{SS}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_0$

$\beta_c = \gamma_{10}$

Equation 2:

Level 1: $\text{Tx\_sat} = \beta_{0j} + \beta_a(\text{SS}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_0$

$\beta_a = \gamma_{10}$

Equation 3:

Level 1: $\text{Tx\_prog} = \beta_{0j} + \beta_{c'}(\text{SS}) + \beta_b(\text{Tx\_sat}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_0$

$\beta_{c'} = \gamma_{10}$

$\beta_b = \gamma_{20}$

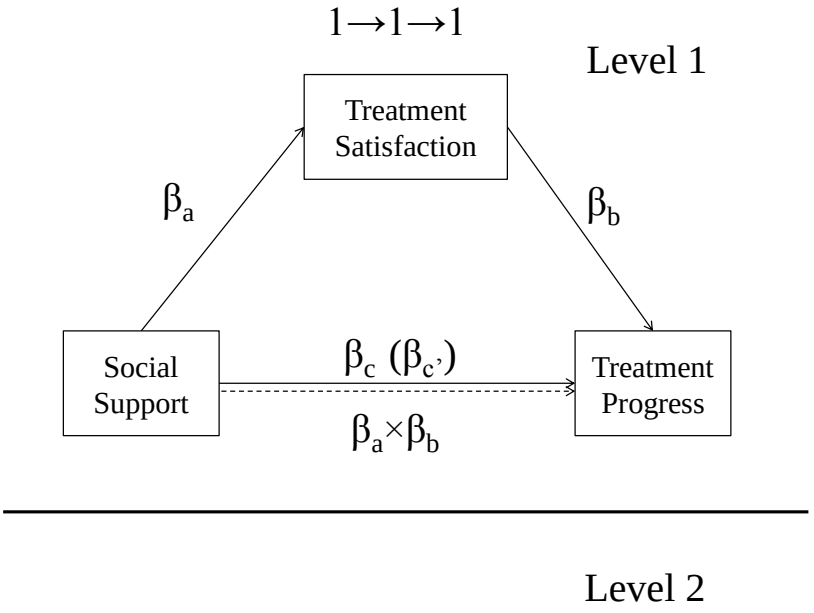

Figure 7. Conceptual model: How treatment satisfaction mediates the association between social support and treatment progress.

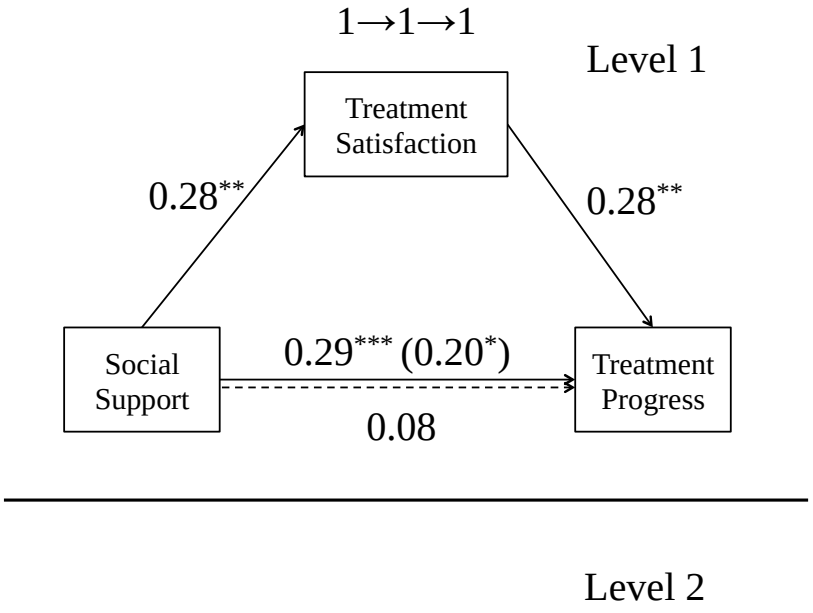

Figure 8. Mediation model: How treatment satisfaction mediates the influence of social support on treatment progress with unstandardized parameter estimates.

As table 15 shows (step 1), there was a significant main effect of social support on treatment progress: Higher levels of social support were related to greater treatment progress. Specifically, for every one unit increase in social support, treatment progress increased by 0.29 points, $\beta_c = 0.29$, *S.E.* = 0.08, $t = 3.60$, $p = .001$. After establishing the main effect social support on treatment progress, the next step was to establish association between social support and the mediator, treatment satisfaction. Table 15 (step 2) shows that higher levels of social support were associated with higher ratings of treatment satisfaction: For one unit increase in social support, treatment satisfaction improved by 0.28 units, $\beta_a = 0.28$, *S.E.* = 0.10, $t = 2.82$, $p = .007$. Step 3 establishes the effect of the mediator on the dependent variable when controlling for social support. Table 15 (step 3) shows that higher ratings of treatment satisfaction were associated with greater treatment progress. Specifically, controlling for social support, for every unit increase in treatment satisfaction, treatment progress increased 0.28 units, $\beta_b = 0.28$, *S.E.* = 0.10, $t = 2.95$, $p = .005$. Moreover, the association between social support and treatment progress must either be nonsignificant or of lesser magnitude when taking the mediator into account. When comparing parameter estimates of the association between social support and treatment progress in steps 1 and 3, the final parameter estimate (in step 3) was of lesser magnitude than the first ($\beta_{c'} = 0.20$ vs. 0.29), demonstrating partial mediation (see Figure 8). The final step also had a significantly better fit than the first step, as the significant deviance test specifies, $\Delta\chi^2(1) = 8.00$, $p = .005$. Krull and MacKinnon's (1999) guidelines were used to further test the indirect effect of social support on treatment progress (path ab; see Figure 8). The specific pathway from social

support to treatment progress through treatment satisfaction was significant (Sobel's z = 2.80, *S.E.* = 2.80, p = .005).

Table 15.

Coefficient and Variance Estimates for the Mediation of Treatment Satisfaction in the Relationship between Social Support and Treatment Progress

	Step 1 (ICC% = 16) Treatment Progress				Step 2 (ICC% = 13) Treatment Satisfaction				Step 3 (ICC% = 18) Treatment Progress			
Variables	*β*	*S.E.*	*t*	*p*	*β*	*S.E.*	*t*	*p*	*β*	*S.E.*	*t*	*p*
Intercept	24.21	0.49	49.91	< .001	23.69	0.41	78.89	< .001	24.17	0.42	57.53	< .001
Level 1 Predictor												
Social support	0.29	0.08	3.60	0.001	0.28	0.10	2.82	0.007	0.20	0.08	2.48	0.02
Level 1 Mediator												
Treatment Satisfaction									0.28	0.10	2.95	0.005
Random Effect	Variance Components	*S.D.*	$\chi^2(11)$	*p*	Variance Components	*S.D.*	$\chi^2(11)$	*p*	Variance Components	*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0	1.23	1.11	23.85	0.01	0.005	0.07	12.78	0.31	0.74	0.86	19.58	0.05
Level-1 Variance, *r*	6.68	2.58			10.95	3.31			6.08	2.47		
Fit Indices												
AIC	318.64				342.79				312.64			
Deviance, χ^2 (df)	$\chi^2(4) = 310.64$				$\chi^2(4) = 334.79$				χ^2 (5) = 302.64			
$\Delta\chi^2(df)$	8.89 (2)**				7.50 (1)**				8.00 (1)**[a]			
AIC difference	6.5				11.68				8.71			

Note: Unconditional model of treatment progress: $\chi^2(2) = 319.53$; unconditional model of treatment satisfaction: $\chi^2(3) = 342.29$. [a] The deviance test between the models in steps 1 and 3. ** $p < .01$.

In order to examine if treatment satisfaction moderated the influence of psychosocial functioning on treatment progress, the interactions between each predictor and moderator (treatment satisfaction) in the moderation model were included. The following model (Model 11) was used to examine if treatment satisfaction served to influence the relationship between psychosocial functioning and treatment progress:

Level 1: $Tx\_prog_{ij} = \beta_{0j} + \beta_{1j}(BPRS) + \beta_{2j}(SS) + \beta_{3j}(SE) + \beta_{4j}(DP) + \beta_{5j}(AX) + \beta_{6j}(Tx\_sat) + \beta_{7j}(BPRS \times Tx\_sat) + \beta_{8j}(SS \times Tx\_sat) + + \beta_{9j}(SE \times Tx\_sat) + \beta_{10j}(DP \times Tx\_sat) + \beta_{11j}(AX \times Tx\_sat) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

$\beta_{4j} = \gamma_{40}$

$\beta_{5j} = \gamma_{50}$

$\beta_{6j} = \gamma_{60}$

$\beta_{7j} = \gamma_{70}$

$\beta_{8j} = \gamma_{80}$

$\beta_{9j} = \gamma_{90}$

$\beta_{10j} = \gamma_{100}$

$\beta_{11j} = \gamma_{110}$

In Level 1 of the two-model model, treatment progress for client *i* treated by a counselor *j* (Tx_prog_{ij}) is a function of the average treatment progress of all clients treated by counselor *j* (β_{0j}), psychiatric symptoms (β_{1j}), anxiety (β_{2j}), depression (β_{3j}), social support (β_{4j}), self-esteem (β_{5j}), treatment satisfaction (β_{6j}), the interaction between psychiatric symptoms and treatment satisfaction (β_{7j}), the interaction between anxiety and treatment satisfaction (β_{8j}), the interaction between depression and treatment satisfaction (β_{9j}), the interaction between social support and treatment satisfaction (β_{10j}), the interaction between self-esteem and treatment satisfaction (β_{11j}), and the residual (r_{ij}). In Level 2 of this model, γ_{00} represents the grand mean of treatment progress, γ_{10}, γ_{20}, γ_{30}, γ_{40}, γ_{50}, γ_{60}, γ_{70}, γ_{80}, γ_{90}, and γ_{100} represent the mean slope of psychiatric symptoms, anxiety, depression, social support, self-esteem, treatment satisfaction, psychiatric symptoms × treatment satisfaction interaction, anxiety × treatment satisfaction interaction, depression × treatment satisfaction interaction, social support × treatment satisfaction interaction, and self-esteem × treatment satisfaction interaction, respectively. μ_{0j} is the residual term of the estimated grand mean of treatment progress.

The results revealed that the predictors had no significant impact on treatment progress (see Table 16). The model accounted for 7% of the total variance. The fit indices included $\chi^2(14) = 291.30$ and AIC = 319.30. The nonsignificant results could be attributed to having a relatively large number of predictors in comparison to the sample size. Thus, predictors of psychiatric symptoms, anxiety, depression, and the interactions between these three predictors and treatment satisfaction were removed from the model because of the size of the corresponding p values (see Model 12).

Level 1: $Tx\_prog_{ij} = \beta_{0j} + \beta_{1j}(SS) + \beta_{2j}(SE) + \beta_{3j}(Tx\_sat) + \beta_{4j}(SS \times Tx\_sat) + \beta_{5j}(SE \times Tx\_sat) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

$\beta_{4j} = \gamma_{40}$

$\beta_{5j} = \gamma_{50}$

Table 16.

Coefficients and Variances for the Moderation of Treatment Satisfaction on the Impact of Psychosocial Functioning on Treatment Satisfaction

	β	*S.E.*	*t*	*p*
Intercept	24.15	0.44	55.35	< .001
psychiatric symptoms	0.14	1.22	0.12	0.91
social support	-0.81	0.94	-0.86	0.39
self-esteem	-0.19	0.66	-0.30	0.77
depression	-0.27	0.87	-0.31	0.76
anxiety	-0.01	0.57	-0.02	0.99
treatment satisfaction	-1.36	1.85	-0.73	0.47
psychiatric symptoms × Treatment Satisfaction	-0.0002	0.04	-0.006	0.99
social support × Treatment Satisfaction	0.03	0.03	1.02	0.31
self-esteem × Treatment Satisfaction	0.01	0.02	0.41	0.69
depression × Treatment Satisfaction	0.004	0.03	0.18	0.86
anxiety × Treatment Satisfaction	0.001	0.02	0.06	0.96
Random Effect	Variance Component	*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0	0.42	0.65	15.57	0.16
Level-1 Residual, *r*	5.51	2.28		

The results revealed that none of predictors and interactions was significantly associated with treatment progress (see Table 17). The fit indices included $\chi^2(2) = 320.66$ and AIC = 324.66. The results of models 11 and 12 suggested that treatment satisfaction did not interact with any psychosocial predictors in relation to treatment progress.

Table 17.

Coefficients and Variances for the Moderation of Treatment Satisfaction on the Impact of Social Support and Self-esteem on Treatment Progress

	β	*S.E.*	*t*	*p*
Intercept	24.14	0.43	56.54	< .001
social support	-0.75	0.75	-1.00	0.32
self-esteem	-0.04	0.43	-0.09	0.93
treatment satisfaction	-1.04	0.94	-1.10	0.28
social support × Treatment Satisfaction	0.03	0.02	1.21	0.23
self-esteem × Treatment Satisfaction	0.004	0.01	0.31	0.76
Random Effect	Variance Component	S.D.	$\chi^2(11)$	*p*
Intercept, u_0	0.76	0.87	15.67	0.15
Level-1 Residual, *r*	6.21	2.49		

Research Question 5: The Impact of Drug Use Severity on Treatment Adherence, Satisfaction, and Progress.

The following model with fixed slopes was used to examine the impact of drug use severity on treatment adherence (Model 13):

Level 1: $\text{Prob}(Tx\_Ad_{ij}=1|\beta) = p_{ij}$

$\text{Log}[(p_{ij}/(1 - p_{ij})] = \eta_{ij}$

$\eta_{ij} = \beta_{0j} + \beta_{1j}(\text{DSII})$

Level 2: $\beta_{0j} = \gamma_{00} + u_{0j}$

$\beta_{1j} = \gamma_{10} + u_{1j}$

This level-1 model specifies that Tx_Ad_{ij} is the treatment adherence for client *i* with counselor *j*. p_{ij} is the probability of the response (i.e., whether an individual completed treatment or not) equal to one. The logarithm of the odds ratio of treatment adherence is a function of the average logarithm of odds ratios of clients who adhere to treatment with counselor *j* (β_{0j}), and the average impact of drug use severity for clients treated by counselor *j* (β_{1j}). In the level-2 model, the proportion of clients treated by counselor *j* adhering to treatment (β_{0j}) is a function of the grand mean of treatment adherence (γ_{00}) and the residual of between-counselor deviation (u_{0j}). Likewise, the average impact of drug use severity for client with counselor *j* (β_{1j}) is a function of is the grand mean of the slope of drug use severity (γ_{10}) and the residual of between-counselor deviation (u_{1j}). The results are presented in Table 18. Drug use severity was not significantly associated with treatment adherence, β_{1j} = -0.44, *S.E.* = 0.43, t = -1.01, p = 0.33, *OR* = 0.65, *CI* = [0.25, 1.67]. There was no variation in the intercept of treatment adherence, *Var* = 0.001, $\chi^2(9)$ = 4.02, $p > .50$. However, the slope of drug use severity was significantly different between counselors (*Var* = 1.18, $\chi^2(9)$ = 20.87, p = .01), suggesting that the impact of drug use severity on treatment progress was different among clients with different counselors.

Table 18.

Coefficients and Variances for the Impact of Drug Use Severity on Treatment Adherence

	Treatment Adherence					
Variables	β	*S.E.*	*t*	*p*	*OR*	*CI*
Fixed Effect						
Intercept	1.24	0.29	4.27	0.001	3.46	1.83,6.55
Drug Use Severity	-0.44	0.43	-1.01	0.33	0.65	0.25,1.67
Random Effect		Variance Component		*S.D.*	$\chi^2(9)$	*p*
Intercept, u_0		0.001		0.03	4.02	> .50
Drug Use Severity Slope u_1		1.18		1.08	20.87	0.01

Notes: *OR* = odds ratio; *CI* = confidence interval.

The influence of drug use severity on treatment satisfaction was examined with Model 14:

Level 1: $Tx\_sat_{ij} = \beta_{0j} + \beta_{1j}(\text{DSII}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

In level 1 of the two-level model, treatment satisfaction for client *i* treated by counselor *j* (Tx_sat_{ij}) is a function of the average treatment satisfaction for all clients treated by counselor *j* (β_{0j}), the influences of treatment motivation (β_{1j}), and the residual error (r_{ij}). In the level 2 of Model 14, γ_{00} represents the grand mean of treatment satisfaction for all clients, and μ_{0j} is the error term of the estimated grand mean. γ_{10} represents the mean slope of drug use severity. As shown in Table 19, the results of this model indicated that drug use severity was not associated with treatment satisfaction, β_{1j} = -0.30, *S.E.* = 0.38, *t* = -0.79, *p* = 0.44. The level-1 predictor explained less than 1% of the total variance. There was not variation in the initial level of treatment satisfaction, *Var* = 0. 005, $\chi^2(11)$ = 12.54, *p* = .32, suggesting that the initial level of treatment satisfaction was not different

among clients served by different counselors. The fit indices were $\chi^2(6) = 341.68$, AIC = 349.68; drug use severity accounted for 1% of the level-1variance, $R^2 = 1\%$.

Table 19.

Coefficients and Variances for the Impact of Drug Use Severity on Treatment Satisfaction

	Treatment Satisfaction			
Variables	*β*	*S.E.*	*t*	*p*
Fixed Effect				
Intercept	32.69	0.44	74.78	< .001
Drug Use Severity	-0.30	0.38	-0.79	0.44
Random Effect	Variance Component	*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0	0.004	0.07	12.54	0.32
Level-1 Residual, *r*	12.19	3.49		

Likewise, the influence of drug use severity on treatment progress was examined using the following model (Model 15):

Level 1: $Tx\_prog_{ij} = \beta_{0j} + \beta_{1j}(\text{DSII}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

In Model 15, treatment progress for client *i* treated by counselor *j* (Tx_prog_{ij}) is a function of the average treatment progress for all clients treated by counselor j (β_{0j}), the influence of drug use severity (β_{1j}), and the residual error (r_{ij}). In level 2 of Model 15, γ_{00} represents the grand mean of treatment progress for all clients, and μ_{0j} is the error term of the estimated grand mean. β_{1j} represents the mean slope of drug use severity. As shown in Table 20, the results of this model indicated that drug use severity was not significantly associated with treatment progress, $\beta_{1j} = 0.05$, *S.E.* = 0.33, $t = 0.15$, $p = 0.88$. The level-1

predictors explained 2% of the total variance. The initial level of treatment progress was invariant for clients of different counselors, *Var* = 0.21, $\chi^2(11) = 16.04$, $p = .14$. The fit indices were $\chi^2(4) = 321.47$, AIC = 329.47; the proportion of the level-1 variance explained by drug use severity was less than 1%.

Table 20.

Coefficients and Variances for the Impact of Drug Use Severity on Treatment Progress

	Treatment Progress			
Variables	*β*	*S.E.*	*t*	*p*
Fixed Effect				
Intercept	24.06	0.4	59.74	< .001
Drug Use Severity	0.05	0.33	0.15	0.88
Random Effect	Variance Component	*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0	0.21	0.46	16.04	0.14
Level-1 Residual, *r*	8.70	2.95		

Research Question 6: The Influence of Treatment Satisfaction on the Relationship between Drug Use Severity and Progress.

Because drug use severity was not associated with treatment satisfaction or progress, the assumptions of the mediation analysis were not met and the corresponding analyses were not performed.

In order to examine if treatment satisfaction moderated the influence of drug use severity on treatment progress, the interaction between drug use severity and moderator (treatment satisfaction) was included in the moderation model. The following model (Model 16) was used to examine if satisfaction interacted with drug use severity in relation to treatment progress (Model 16):

Level 1: $Tx\_prog_{ij} = \beta_{0j} + \beta_{1j}(\text{DSII}) + \beta_{2j}(\text{Tx\_sat}) + \beta_{3j}(\text{DSII} \times \text{Tx\_sat}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

In Level 1 of the two-model model, treatment progress for client *i* treated by a counselor *j* (Tx_prog_{ij}) is a function of the average treatment progress of all clients treated by counselor *j* (β_{0j}), drug use severity (β_{1j}), treatment satisfaction (β_{2j}), the interaction between drug use severity and satisfaction (β_{3j}), and the residual (r_{ij}). In the Level 2 of this model, γ_{00} represents the grand mean of treatment progress; γ_{10}, γ_{20}, and γ_{30} represent the mean slope of drug use severity, treatment satisfaction, and drug use severity × treatment satisfaction interaction, respectively. μ_{0j} is the residual term of the estimated grand mean of treatment progress (see Table 21). The results revealed that neither the predictors nor the interaction between drug use severity and satisfaction were significantly associated with treatment progress. The test of variance components indicated that there were no significant variations in the intercept of treatment progress, $Var = 0.01$, $\chi^2(11) = 13.13$, $p = .28$. Therefore, treatment satisfaction did not moderate the association between drug use severity and treatment progress.

Table 21.

Coefficients and Variances for the Moderation of Satisfaction in the Impact of Drug Use Severity on Treatment Progress

	β	*S.E.*	*t*	*p*
Intercept	24.03	0.34	71.6	< .001
drug use severity	0.87	3.4	0.26	0.80
treatment satisfaction	0.55	0.83	0.66	0.51
drug use severity × Treatment Satisfaction	-0.02	0.1	-0.2	0.84
Random Effect	Variance Component	*S.D.*	$\chi^2(11)$	*p*
Intercept	0.01	0.12	13.13	0.28
Level-1 Residual, *r*	7.1	2.66		

Research Question 7: The Impact of Treatment Motivation on Treatment Adherence, Satisfaction, and Progress.

The following model with random slopes was used to examine the impact of motivation on treatment adherence (Model 17):

Level 1: $\text{Prob}(Tx\_Ad_{ij}=1|\,\beta) = p_{ij}$

$\text{Log}[(p_{ij}/(1 - p_{ij})] = \eta_{ij}$

$\eta_{ij} = \beta_{0j} + \beta_{1j}\,(\text{MOT})$

Level 2: $\beta_{0j} = \gamma_{00} + u_{0j}$

$\beta_{1j} = \gamma_{10} + u_{1j}$

This level-1 model specifies that Tx_Ad_{ij} is the treatment adherence for client *i* with counselor *j*. p_{ij} is the probability of the response (i.e., whether an individual completed treatment or not) equal to one. The logarithm of the odds ratio of treatment adherence is a function of the average logarithm of odds ratios of clients who adhere to treatment with counselor *j* (β_{0j}), and the average impact of motivation for clients treated by counselor *j*

(β_{1j}). In the level-2 model, the proportion of clients treated by counselor *j* adhere to treatment (β_{0j}) is equal to the grand mean of treatment adherence (γ_{00}) plus the residual of between-counselor deviation (u_{0j}). Likewise, the average impact of motivation for client with counselor *j* (β_{1j}) is a function of the grand mean of the slope of motivation (γ_{10}) and the residual of between-counselor deviation (u_{1j}). The results are presented in Table 22. Treatment motivation had nonsignificant impact on treatment adherence, β_{1j} = -0.06, *S.E.* = 0.06, *t* = -0.94, *p* = 0.37, *OR* = 0.94, *CI* = [0.82, 1.08]. There was no variation in the intercept of treatment adherence (*Var* = 0.08, $\chi^2(11) = 8.48$, $p > .50$) or the grand mean of motivation (*Var* = 0.01, $\chi^2(11) = 14.22$, $p = .22$). Because the slope of motivation was invariant, the HLM model was re-run with the slope fixed (see Table 23). The results were similar to the previous analyses (see Table 19) indicating that motivation was not associated with treatment adherence, β = -0.05, *S.E.* = 0.06, *t* = -0.99, *p* = 0.33, *OR* = 0.95, *CI* = [0.85, 1.06]. There was no variation in the intercept of treatment adherence, *Var* = 0.08, $\chi^2(11) = 8.48$, $p > .50$.

Table 22.

Coefficients and Variance Estimates for the Impact of Motivation on Treatment Adherence and Variance Estimates for Random Effect

	Treatment Adherence					
Variables	β	*S.E.*	*t*	*p*	*OR*	*CI*
Fixed Effect						
Intercept	0.88	0.25	3.49	0.005	2.42	1.39,4.21
Motivation	-0.06	0.06	-0.94	0.37	0.94	0.82,1.08
Random Effect		Variance Component		*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0		0.08		0.27	8.48	> .50
Motivation Slope u_1		0.01		0.08	14.22	0.22

Note: *OR* = Odds Ratio, *CI* = Confidence Interval.

Table 23.

Coefficients and Variances for the Impact of Motivation on Treatment Adherence

	Treatment Adherence					
Variables	*β*	*S.E.*	*t*	*p*	*OR*	*CI*
Fixed Effect						
Intercept	0.88	0.24	3.71	0.003	2.42	1.43,4.08
Motivation	-0.05	0.06	-0.99	0.33	0.95	0.85,1.06
Random Effect		Variance Component		*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0		0.08		0.28	8.48	> .50

Note: *OR* = Odds Ratio, *CI* = Confidence Interval.

The influence of treatment motivation on treatment satisfaction was examined using Model 18:

Level 1: $Tx\_sat_{ij} = \beta_{0j} + \beta_{1j}(\text{MOT}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10} + \mu_{1j}$

In level 1 of the two-level model, treatment satisfaction for client *i* treated by counselor *j* (Tx_sat_{ij}) is a function of the average treatment satisfaction for all clients treated by counselor j (β_{0j}), the influences of treatment motivation (β_{1j}), and the residual error (r_{ij}). In the level 2 of Model 11, γ_{00} represents the grand mean of treatment satisfaction for all clients, and μ_{0j} is the error term of the estimated grand mean. γ_{10} represents the mean slope of treatment motivation. μ_{1j} represents the residual term of the corresponding estimated mean slope of motivation. As shown in Table 24, the results of this model indicated that treatment motivation was not associated with treatment satisfaction, β_{1j} = 0.19, *S.E.* = 0.13, t = 1.51, p = 0.16. The level-1 predictor explained 1% of the total variance. There was no variation in the initial level of treatment satisfaction, *Var* = 0.10, $\chi^2(10) = 9.23$, $p > .50$, suggesting that the initial level of treatment satisfaction was

similar for clients with different counselors; however the slope of treatment motivation was variant among counselors, $Var = 0.04$, $\chi^2(10) = 20.30$, $p = .03$, indicating that the impact of motivation on satisfaction was significantly different between clients with different counselors. The fit indices were $\chi^2(4) = 338.96$, AIC = 346.96; motivation explained 13% of the level-1 variance, $R^2 = 13\%$.

Table 24.

Coefficients and Variance Estimates for the Impact of Motivation on Treatment Satisfaction

	Treatment Satisfaction			
Variables	*β*	*S.E.*	*t*	*p*
Fixed Effect				
Intercept	32.58	0.25	3.9	0.003
Motivation	0.19	0.13	1.51	0.16
Random Effect	Variance Component	*S.D.*	$\chi^2(10)$	*p*
Intercept, u_0	0.10	0.32	9.23	> .50
Motivation Slope, u_1	0.04	0.21	20.30	0.03
Level-1 Residual, *r*	10.65	3.26		

Likewise, the influence of motivation on treatment progress examined using the following model (Model 19):

Level 1: $Tx\_prog_{ij} = \beta_{0j} + \beta_{1j}(\text{MOT}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10} + \mu_{1j}$

In Model 19, treatment progress for client *i* treated by counselor *j* (Tx_prog_{ij}) is a function of the average treatment progress for all clients treated by counselor j (β_{0j}), the influence of motivation (β_{1j}), and the residual error (r_{ij}). In Level 2 of Model 19, γ_{00} represents the grand mean of treatment progress for all clients, and μ_{0j} is the error term of

the estimated grand mean. γ_{10} represents the mean slope of motivation. μ_{1j} represents the residual term of the corresponding estimated mean slope. As shown in Table 25, the results of this model indicated that motivation was marginally associated with treatment progress, $\beta_{1j} = 0.16$, *S.E.* = 0.09, $t = 1.88$, $p = 0.09$. The level-1 predictors explained 6% of the total variance. Both the initial level of treatment progress (*Var* = 0.51, $\chi^2(10) = 15.59$, $p = .11$) and the slope of treatment motivation (*Var* = 0.01, $\chi^2(10) = 11.94$, $p = .29$) were invariant for clients of different counselors. Therefore, the model was re-run with the slope of treatment motivation fixed. The results (see Table 26) showed that treatment motivation significantly influenced treatment progress, $\beta_{1j} = 0.18$, *S.E.* = 0.08, $t = 2.13$, $p = 0.04$. For each unit increase in treatment motivation, the average treatment progress increased 0.18 units among all clients. The fit indices were $\chi^2(6) = 316.55$, AIC = 328.55; motivation explained 7% of the level-1 variance, $R^2 = 7\%$.

Table 25.

Coefficients and Variance Estimates for the Impact of Motivation on Treatment Progress and Variance Estimates for Random Effect

	Treatment Progress			
Variables	*β*	*S.E.*	*t*	*p*
Fixed Effect				
Intercept	24.11	0.42	57.37	< .001
Motivation	0.16	0.09	1.88	0.09
Random Effect	Variance Component	*S.D.*	$\chi^2(10)$	*p*
Intercept, u_0	0.51	0.71	15.59	0.11
Motivation Slope, u_1	0.01	0.08	11.94	0.29
Level-1 Residual, *r*	7.72	2.78		

Table 26.

Coefficients and Variance Estimates for the Impact of Motivation on Treatment Progress

	Treatment Progress			
Variables	β	*S.E.*	*t*	*p*
Fixed Effect				
Intercept	24.09	0.41	59.06	< .001
Motivation	0.18	0.08	2.13	0.04
Random Effect	Variance Component	*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0	0.34	0.58	16.28	0.13
Level-1 Residual, *r*	8.01	2.83		

Research Question 8: The Influence of Treatment Satisfaction on the Relationship between Treatment Motivation and Progress.

Because treatment motivation was not associated with satisfaction, the assumptions of mediation analysis were not met. The mediation effect of satisfaction on the relationship between motivation and progress was not examined.

In order to examine if treatment satisfaction moderated the influence of treatment motivation on treatment progress, the interaction between motivation and moderator (treatment satisfaction) was included in the moderation model. The following model (Model 20) was used to examine if treatment satisfaction served to increase the relationship between victimization and treatment progress (Model 20):

Level 1: $Tx\_prog_{ij} = \beta_{0j} + \beta_{1j}(\text{MOT}) + \beta_{2j}(\text{Tx\_sat}) + \beta_{3j}(\text{MOT} \times \text{Tx\_sat}) + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \mu_{0j}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

In Level 1 of the two-model model, treatment progress for client *i* treated by a counselor *j* (Tx_prog_{ij}) is a function of the average treatment progress of all clients treated by counselor *j* (β_{0j}), treatment motivation (β_{1j}), treatment satisfaction (β_{2j}), the interaction between treatment motivation and satisfaction (β_{3j}), and the residual (r_{ij}). In Level 2 of this model, γ_{00} represents the grand mean of treatment progress; $\gamma_{10,}$ γ_{20}, and γ_{30} represent the mean slope of treatment motivation, treatment satisfaction, and motivation × treatment satisfaction interaction, respectively. μ_{0j} is the residual term of the estimated grand mean of treatment progress.

The results revealed that treatment motivation, satisfaction, and the interaction between treatment motivation and satisfaction did not significantly influence treatment progress. The test of variance components indicated that there were no significant variations in the intercept of treatment progress, $Var = 0.22$, $\chi^2(11) = 13.99$, $p = .23$.

Table 27.

Coefficient and Variance Estimates for the Moderation of Satisfaction on the Impact of Motivation on Treatment Progress

	β	*S.E.*	*t*	*p*
Intercept	24.10	0.36	67.03	< .001
motivation	-0.83	0.66	-1.26	0.21
treatment satisfaction	-0.76	0.77	-0.99	0.33
Motivation × Treatment Satisfaction	0.03	0.02	1.44	0.16
Random Effect	Variance Component	*S.D.*	$\chi^2(11)$	*p*
Intercept, u_0	0.22	0.57	13.99	0.23
Level-1 Residual, *r*	6.54	2.56		

Research Question 9: The Association between Counselor-Level Factors and Client Outcome.

Table 28.

Means (Standard Deviations) and Correlations between Counselor-level Factors and Aggregated Client Dependent Variables

		Correlation (N = 7)		
	Mean (SD)	Aggregated Client Adherence	Aggregated Client Treatment Satisfaction	Aggregated Client Treatment Progress
Efficacy	45.71 (3.90)	-0.52	0.7	0.29
Satisfaction	42.38 (7.19)	-0.2	0.13	0.66
Cohesion	40.71 (8.27)	-0.38	-0.04	0.53
Autonomy	38.57 (7.72)	-0.43	-0.10	0.23
Counselor Rapport	44.00 (12.44)	0.20	0.06	0.91**
Therapeutic Optimism	60.71 (3.25)	-0.66	0.58	0.03

** $p < .01$.

The quantitative analysis did not include the association between counseling orientation and treatment outcome because some counseling techniques were only employed by one counselor which means there was no variation at certain levels of the variable. The correlation analyses indicated that counselor rapport was the only significant predictor of aggregated client outcome (see Table 28). Counselors who reported a higher level of counselor rapport tended to have greater client treatment progress, $r = .91$, $p = .005$. All of the other counselor-level factors were not associated with aggregated client adherence, satisfaction, or progress.

Qualitative Data Analyses Results

Brief descriptions of the seven participants are presented on pages 26 and 34. Three of the respondents identified their race as "white;" four respondents identified their race as "Black." Four respondents were female and three respondents were males. All respondents had counseling credentials. Among these seven respondents, 5 individuals were substance abuse counselors and 2 individuals were counselor supervisors; the remaining individual was responsible for intake assessment with extensive previous counseling experiences. On average, interviewees had 12 years (range: 1-48) of substance abuse counseling experience and three years experience (range: 1-12) in their current position.

Research Question 10: Counselor-Rated Factors that Impact Client Recovery Process.

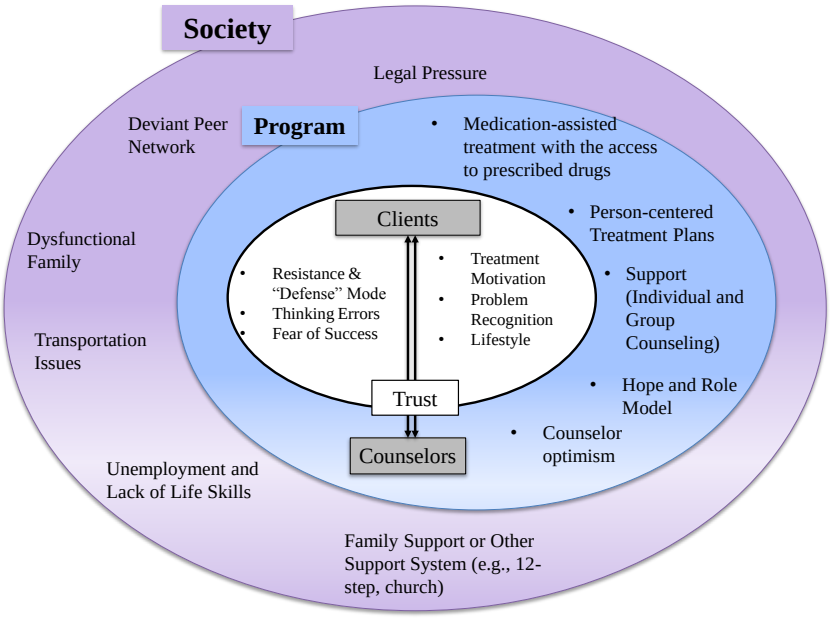

Figure 9. Barriers and Facilitators to Treatment Adherence and Recovery Success.

As the conceptual diagram in Figure 9 shows, 18 counselor-rated barriers and facilitators to client recovery process emerged in the qualitative data. These factors are grouped into three levels: individual, program, and society. According to counselors, the therapeutic relationship can be influential in changing client-level factors such as resistance and motivation. Program-level factors relate to treatment options, staff morale, and program environment, which impact client treatment participation and engagement. Society-level barriers (e.g., structural barriers), such as transportation issues, may be influenced by agency practices to provide assistance with travel vouchers. The barriers and facilitators represented in the three levels are discussed below, grouped into five themes: (1) reducing resistance and enhancing motivation, (2) building strong therapeutic relationships, (3) encouraging empowerment, (4) reducing relapse and recidivism risk, and (5) recognizing other practical considerations (e.g., transportation assistance). These counselor-rated themes resonated with previous quantitative findings focusing on client-attributed factors, which comprised of being motivated to change, having positive influences of family, avoiding risky people and places, recognizing problems associated with use, participating in self-help or support groups, gaining strength from religion and spirituality, and getting help from drug treatment (Connors, Maisto, & Zywiak, 1998; Flynn, Joe, Broome, Simpson, & Brown, 2003).

Reducing Resistance and Enhancing Motivation

Reducing Resistance. Counselors indicated that clients tended to resist referral to treatment because of the frustration associated with continued care after discharge from institutional treatment. One counselor explained that clients commented on not understanding the benefits of continued care, indicating that if they had known about

having to do more treatment after getting out of institutional treatment, they would not have agreed to treatment in the institution. In some cases, the resistance was persistent throughout the duration of treatment, interfering with adherence. Moreover, counselors noted that the lack of problem recognition also was a hindrance to treatment adherence, but when recognized, clients reached out for help. One counselor noted:

> I think the reasons that [clients complete treatment] are […] they have fully accepted that they are no longer in control of how to use drugs…they surrender their idea of needing this system to get on drugs because a lot of time[s] addicts think they can stop using on their own. But they prove that they cannot because of the repeated relapse […and] getting caught [by police]. So I think that those individuals who have completed the program see that they don't have to use drugs to escape reality [...].

Treatment Motivation. When being asked what reasons lead to treatment adherence, all counselors made a reference to client motivation for treatment as a facilitative factor.

> They (clients) want to change their lives. They want to realize that all the things they have done in the past have got them nowhere but trouble. So it's been like "I want to do something different, not only for me but for family as well."

Counselors strive to enhance intrinsic treatment motivation by a variety of counseling techniques including motivational interviewing.

> I usually will start out asking (the clients) more about things that are important to them to try to find intrinsic motivation because saying Department of Correction says you have to be here, that is gonna get you so far. But if [they] can find [their]

> children are very important […] or [that they] don't [want to] let down […] grandparents any more, whatever, they can be more motivated.

Legal Pressure. Legal pressure serves as both a barrier and a motivator for offenders mandated to treatment post release. One counselor reported that for some clients, legal pressure is associated with more treatment adherence because attending more than 85% of treatment sessions would lead to a certain length of probation reduction. But legal pressure also deters clients attending treatment, especially for those with high no-show rates because of the risk of being arrested.

> I think one of things I've seen a lot of is how discouraged [clients] get with their relapse and efforts to reengage them. If [clients] relapse a lot of times they don't come in for 2-3 weeks. After a couple of weeks, probation and parole are gonna issue a warrant, so [clients] may want to come back to get reengaged in treatment, but if they are here [the thinking is] am I gonna get arrested.. Approaching [clients], providing additional support […] will increase their treatment […], so could get back on track.

Building Strong Therapeutic Relationships

Trust between Clients and Counselors. One of the primary facilitators to treatment success endorsed by counselors is the positive therapeutic relationship in which mutual trust, honesty, and genuineness are the core properties. Gaining trust and asking clients to share their goals and disclose their addiction and other pertinent problems is effective in terms of helping to maintain treatment retention rates and increase treatment adherence. Counselors explained that clients often feel resistant to treatment because they perceived that counselors and probation officers teamed up together "on the other side". One

counselor noted that clients mandated to treatment often come with high resistance or nonchalant attitudes; thus one of the top priorities is to establish therapeutic rapport. One counselor emphasized that displaying sincerity was important to help clients understand the counselors' role and that offering a sense of safety promotes the therapeutic relationship.

> I explain the definition of continuum to them because in most cases it's not been explained that it goes from inpatient to outpatient and give them that clarity of why they are here. That begins breaking down the resistance. We'll let them know our relationship is a therapeutic one. I am here to assist them [and] explain to them that what a therapeutic relationship is and that has to be based off […] honesty from both parties.

Person-centered Treatment Plans. Counselors believed that making individualized treatment plans in which personalized treatment needs have been addressed promote quality of service delivery and treatment adherence. Moreover, individualized treatment plans demonstrate to clients the genuineness of counselors' efforts in facilitating treatment.

> [Clients] see me as an authoritarian, […] their response will be like, hell you are, and they push back. But the conversation is what can we do to help clients. Because these are the goals […] what do you think we can do as a collaborative effort to help you get back to where you want to be […] they will be a lot more committed to the change process if they feel like they had a role in it instead of people telling them what to do.

In addition, counselors adopted a pragmatic approach to address clients' relapse by revisiting treatment plans and goals with clients and reengaging clients into treatment.

> If they relapse, we talk about that and we process the relapse. Right now, [based on] the relationship I have with my clients they will tell me.

Encouraging Empowerment

In addition to a strong therapeutic relationship, counselors promoting client empowerment (including dissolving the fear of success, having support system, and having hope and a role model) help clients remain in treatment and eventually succeed. Empowerment is a concept that is closely associated with personal control of the events that determine health (World Health Organization, Health and Welfare Canada, Canadian Public Health Organization, 1986). In this study, empowerment is defined as a process whereby clients achieve substantial control of various aspects of their lives in a conventional manner, under the influence of social interactions and environment, which eventually help them improve their personal health.

Fear of Success. Counselors conveyed that clients experienced the sense of powerlessness; for some clients, this is attributed to having a disadvantageous background (e.g., poverty, abuse, lack of role model) and being unfamiliar with a clean and sober environment.

> One of the individuals (clients) says I'm afraid to change. I know what is like if I continue to use drugs; I know what exactly to expect. I don't know how to live sober; I don't know what will happen if I try to live sober.

Support Systems. Counselors strive to create a positive, supportive environment where clients work through frustrations with treatment disruptions. Other sources of

support (e.g., individual and group counseling sessions) enable clients to share their success stories and their struggles with fellow clients and counselors. Counselors also emphasized the importance of family involvement and other support systems (e.g., 12-step, church, NA, AA meetings) in the recovery process.

> So they have to build a sober support network. […] If they are in trouble they are struggling with whatever they got a team member that they can call at that particular moment.

Hope and Role Models. People in recovery often experience drug relapse and treatment disruption. They have a difficult time believing that recovery is possible and tend to slide back to addiction under stress. Therefore, finding new sources of hope is important to sustain treatment motivation and prompt continuing treatment attendance. One counselor noted that the recovery staff in the program (i.e., staff who are in the recovery) served as a role model and sustained clients' hope.

> We have staff [who] have been incarcerated. We have staff [who] been through treatment who go to meetings; they can really be an example about how things could turn around. I think that is huge for these clients cause a lot of them coming in pretty hopeless.

Reducing Relapse and Recidivistic Risk

Clients in the current study were offenders mandated to treatment, whose lifestyle, thinking patterns, and networks are prominently deviant from the society-accepted standard which places them at high risk of drug relapse and recidivism.

Thinking Errors and Lifestyle. According to Walters' theory of lifestyle criminality (Walter, 1990, p.51), individuals must be responsible for the choices they

make, even though the choice of behavior is influenced by personal and situational factors. Counselors reported that criminal lifestyle and criminal thinking, particularly related to drug dealing was a major barrier to recovery.

> If we're talking about this is supposed to be the safe place for you to come, we cannot have someone selling drugs outside.

According to counselors, recovery requires lifestyle changes and teaching clients how to gain control over their environment. One counselor described introducing clients to new activities, aimed at shifting the focus of lifestyle from the old irresponsible behaviors to a new, constructive one.

> Ok, you may still live in the same environment, but you have to do new things in this environment that will manifest you stay clean. […] It is either 12-step program, or religious activities, or faith-based [program] because you want to incorporate them (all aspects of their life) as a whole […]; also incorporate the family in this as well.

Dysfunctional Family and Deviant Peer Network. Clients often return to dysfunctional family environments and old peer networks after release from prison. Furthermore, clients are at risk for relapse and recidivating if their family and peers use drugs and violate laws (Bahr, Amstrong, Gibbs, Harris, & Fisher, 2005). Counselors mentioned the importance of steering away from the influence of deviant peer networks in order to minimize the likelihood of recidivating and using drug. According to the counselors, deviant peers in a treatment facility also interfere with treatment adherence for some clients.

> So when we talk to them (clients) change their people, places, and things, it kind of contradiction when all the people that they used to have issues with are now in treatment with them.

Recognizing other Practical Reasons

Transportation Issues. Counselors noted that one of the biggest challenges for clients to maintain treatment adherence was the transportation or financial support to help them attend treatment.

> One issue is transportation for most clients. […] This is a real issue for clients who cannot have transportation and money to get treatment regularly so we provide transportation tickets. But we don't have [a lot of tickets].

Unemployment and Lack of Life Skills. Unemployment is often cited as a barrier to offender post-release reintegration and work programs are effective in reducing recidivism (Uggen & Staff, 2001; Uggen, 2000; Urban Institute, 2006). When being asked about reasons leading to drug relapse and recidivating, counselors recognized the impact of unemployment and noted that employment serves as an important protective factor for success.

In addition, a low level of literacy tends to constrain client life chances and further marginalize them, which makes their recovery process even harder. One counselor stressed the significance of providing vocational supports to "win" clients back to the conventional society.

> So, I think there are variables [associated with treatment non-completion]: lack of employment and lack of education. A lot of them don't have a resume. Their counselors help them obtain or refer them out to get one. It is not they don't understand that engaging in criminal activities is wrong, [but] some of them

(clients) view them (criminal activities) as a survival. I know it is wrong. You know it is wrong. The society knows it is wrong. But they view it as a way to survive.

Discussion

The current study sought to understand client- and counselor-level factors associated with treatment outcome for individuals referred to community-based drug treatment. A mixed-methods design was used to capture a comprehensive picture of factors associated with treatment adherence and progress whereby the quantitative analyses were used to explore the influence of client-level factors on treatment outcome, and the qualitative methods were used to elicit counselor-rated factors that were associated with client recovery processes.

The collective findings of the quantitative analyses demonstrated that, among those with high treatment satisfaction ratings, victimization history was negatively associated with treatment progress. No relationship between victimization and treatment progress was found among those reporting low treatment satisfaction. Psychiatric symptoms was the only significant predictor of treatment adherence, with a high number of psychiatric symptoms being associated with a lower rate of treatment adherence. Social support was the only significant predictor of treatment satisfaction with high ratings of social support being associated with higher ratings of treatment satisfaction. Also, a lower rating on depression and a higher rating on social support significantly predicted treatment progress. With regard to mediation effects, social support significantly predicted treatment satisfaction, which in turn impacted treatment progress. In addition, treatment motivation significantly predicted treatment progress. In spite of nonsignificant associations at the individual level, the influence of drug use severity on treatment adherence differed between counselors; the influence of motivation on treatment satisfaction also differed between counselors.

Treatment Satisfaction as a Moderator of the Relationship between Victimization and Treatment Process

For individuals with a high rating on treatment satisfaction, victimization was negatively associated with treatment progress, whereas victimization did not significantly impact treatment progress among individuals with low ratings of treatment satisfaction. This could be attributed to the fact that clients with low treatment satisfaction tended not to engage in treatment; thus, no matter how much victimization they had experienced, they tended not to make progress. However, when treatment satisfaction was high, clients with a lower level of victimization history may have been more likely to participate in treatment (e.g., Swartz et al., 2001) and subsequently make more progress than those with a higher level of victimization history. The findings also highlight that treatment satisfaction serves as a protective factor for clients, particularly for those with fewer past victimization experiences. It is consistent with previous findings that treatment satisfaction is associated with favorable treatment outcomes, including a higher rate of treatment retention, longer drug abstinence, and fewer posttreatment criminal activities (Carlson & Gabriel, 2001; Hser, Evans, Huang, & Anglin, 2004; Kelly, O'Grady, Mitchell, Brown, Schwartz, 2011). Moreover, these positive perceptions towards treatment team reinforce client treatment motivation and strengthen the therapeutic relationship, which in turn increases treatment satisfaction.

The Impact of Psychiatric Disorders and Social Functioning

Few studies have discovered that psychiatric severity impacts treatment completion for clients receiving substance abuse treatment (McLellan, Luborsky, Woody, O'Brien, & Druley, 1983; Petry & Bickel, 1999). The current study found that psychiatric

symptoms were negatively associated with treatment adherence; clients with a greater number of psychiatric symptoms were associated with dropping out of treatment. This could be attributed to the fact that psychiatric symptoms impair a client's capability to perform treatment requirements, such as attending treatment sessions, or contribute to a perception that treatment needs were not being addressed. Furthermore, clients with a higher level of depression reported less treatment progress, resonating with the findings from a meta-analysis on the risk factors of opiate addiction treatment outcome: Depression is one of the strongest predictors of continued illicit drug use (Brewer, Catalano, Haggerty, Gainey, & Fleming, 1998). Previous studies have revealed that depression significantly predicts a higher level of drug craving, a shorter period of abstinence, and a higher likelihood of drug relapse (Brown, Monti, Myers, Martin, Rivinus, Dubreuil, & Rohsenow, 1998; Greenfield, Weiss, Muenz, Vagge, Kelly, Bello, & Michael, 1998); negative treatment performance may disrupt treatment plans and exacerbate client depression. Moreover, a negative emotional affect could impair treatment participation and engagement, which in turn could negatively impact therapeutic alliance and client perceptions of treatment programs, eventually leading to a lack of therapeutic benefits.

The current study found that social support was associated with both treatment satisfaction and progress; treatment satisfaction mediated the impact of social support on treatment progress. Numerous studies have recognized the importance of social support in recruiting and retaining individuals in treatment, as well as serving as a protective factor for drug abstinence (Hser, Grella, Hsieh, Anglin, & Brown, 1999; Landau, Garrett, Shea, Stanton, Brinkman-Sull, & Baciewicz, 2000; Richter, Brown, & Mott, 1991; Soyez,

De Leon, Broekaert, & Rosseel, 2006; William & Change, 2000). Social support likely serves as an incentive to encourage clients to get access to treatment. This, in turn, can lead to a high level of treatment participation, engagement, treatment motivation, and treatment satisfaction and progress. The findings of the current study not only highlight the role of social support in promoting treatment progress, but also underscore the importance of social support in enhancing treatment satisfaction which in turn prompts treatment progress.

The Impact of Drug Use Severity and Treatment Motivation

Drug use severity has been found to be associated negatively with treatment completion and outcome, with greater severity leading to a lower likelihood of treatment retention and less treatment achievement (Lang & Belenko, 2000; Marrero et al., 2005; Williams & Chang, 2000). Despite finding a nonsignificant relationship, this study discovered that the influence of drug use severity on treatment adherence differed between counselors, which could be attributed to a diversity of counseling techniques and treatment strategies to address client problems. Likewise, the current findings revealed that the relationship between motivation and satisfaction differed across counselors, which suggests that counselor-level factors (e.g., counselor expertise, therapeutic alliance) could contribute to the influence of motivation on client satisfaction.

Treatment motivation significantly predicted treatment progress; clients who were highly motivated reported more treatment progress than their counterparts. Numerous studies have demonstrated the importance of treatment motivation in engaging clients in treatment and making greater treatment achievements (Joe, Simpson & Broome, 1999; Simpson & Joe, 1993). During treatment, highly motivated clients display more

treatment-seeking behaviors (e.g., adhering to interventions), are more likely to commit to treatment plans, and have fewer health-comprising behaviors (e.g., drug relapse), all leading to greater treatment progress.

The Contribution of Qualitative Results to Understanding Client-level Findings

The analysis of qualitative data yielded 18 codes and five prominent themes that were associated with barriers and facilitators to client recovery. These help to illuminate an understanding of the quantitative findings. Individuals with drug use problems are usually from marginalized social groups or dysfunctional families (Henderson, Boyd, & Mieczkowski, 1994; Nelson-Zlupko, Kauffman, & Dore, 1995; Semple, Grant, & Patterson, 2004), which may play a detrimental role in the development of self-esteem and an evaluation of self-worthiness, contributing to a lack of belief that they can succeed in treatment. Results from the qualitative data analysis corroborated the importance of social support in recovery. Counselors described that clients benefited tremendously from individual and group counseling sessions where clients shared their successful and unsuccessful recovery stories with the primary counselor or/and clients. Also, there is an encouraging atmosphere in the facility where counselors worked together to engage clients in treatment. Staff, especially those in recovery, provided a strong feeling of hope which encouraged clients' adherence to treatment and persistence in recovery.

Qualitative data analysis also supported the importance of both intrinsic and extrinsic motivation in treatment adherence and recovery success; treatment resistance and the lack of intrinsic motivation were found to be barriers to treatment success. This underscores the importance of using counseling techniques to break down client treatment resistance, design individualized treatment plans, and cultivate intrinsic

treatment motivation, eventually improving the chances of recovery. In addition, legal pressure can serve as an incentive for adhering to treatment when attending treatment is a condition probation or parole. Previous findings report that the desire to minimize negative consequences is associated with a greater desire to receive help (Cahill, Adinoff, Hosig, Muller, & Pulliam, 2003).

Counselor-level Factors that are Associated with Treatment Outcome

The quantitative analyses found that counselor rapport was the only counselor-level factor that influenced aggregated client treatment outcome. Higher counselor rapport ratings were associated with a higher level of client treatment progress. The quantitative analysis did not find significant associations between other counselor-level factors and aggregated client treatment outcomes, most likely because of the lack of statistical power due to a small sample size. Further research is needed to replicate the significant association between counselor rapport and aggregated client treatment progress with a larger sample.

In terms of the qualitative data, counselors reported that although they experienced frustrations with client setbacks, they felt rewarded if they could have some impact on their clients' lives. That is, counselor job satisfaction could be augmented by favorable client outcomes, which is supported by the research that substance abuse counselors feel most satisfied with successful client outcomes (Evans & Hohenshil, 1997). Moreover, counselors tended to externally attribute client setbacks to the power of addiction and adopted problem-focused coping strategies to address client relapse. Counselors strategically utilized treatment goals to tie clients back to treatment plans if they relapse, and "prod" them to proceed. This is aligned with a general belief that health

professionals' beliefs and optimism are central to treatment effectiveness (Ryan, Merighi, Healy, & Renouf, 2004).

Counselors also reported that high treatment cohesion and program morale helped create a supportive environment, where all the resources were forged together and geared towards helping client recovery. Moreover, high treatment cohesion and teamwork spirit may buffer counselors from getting strained from work and maintain or enhance organizational commitment (Knudsen, Johnson, & Roman, 2003). Consistent with the literature (Connors et al., 1997; Joe et al., 2001; Meier et al., 2006; Simpson et al., 1997), qualitative analysis also revealed that therapeutic alliance led to positive treatment outcomes, including treatment adherence and recovery success.

Limitation and Future Directions

The current study has several limitations. First, this study had a relatively small sample size of client participants from one treatment facility in a large Midwest metropolitan city. The generalization of the results should be made with caution. The results may be different with individuals who live in another geographical location with a different community structure. Moreover, the current study did not find significant relationships among anxiety, self-esteem, and drug use severity with any of the three dependent variables. This could be attributed to a lack of sufficient statistical power. Second, the findings of the current study were derived from a sample of male offenders mandated to community-based drug addiction treatment. However, the prevalence of psychiatric disorders and the characteristics of psychosocial functioning may differ between genders. The current findings have shown counselor-level variations in the

association of drug use severity and treatment motivation on treatment process and outcome.

Given these limitations, future research should focus on understanding what counselor-level factors contribute to client treatment process and outcome. Moreover, future research is needed to investigate risk and protective factors for treatment progress and outcome among female clients in community-based drug treatment.

Clinical Implications

Collectively, the quantitative and qualitative findings of the current study have several important clinical implications. The results suggest that treatment providers need to consider incorporating a broad spectrum of services, and that logistical pieces (such as appointment schedule and service delivery methods) are important contributors to client outcome. For example, substance abuse and mental health treatment need to be coordinated in order to maximize the capacity of treatment resources. Referring clients with co-occurring disorders to mental health services would be particularly beneficial in terms of increasing treatment adherence. Also, given the negative influence of depression on treatment progress, clinicians may want to consider improving individualized treatment plans so they incorporate more specific treatment needs. Also, it is beneficial to increase client access to support groups (such as 12-step group, NA, and AA) and to provide them with a role model who has been successful in recovery. Furthermore, counselors should continue to focus on reducing client resistance and increasing treatment motivation. It is important to motivate clients by providing them with a clear understanding of the benefits of continuing care services. Finally, counselors should

emphasize building therapeutic alliance with clients, and convey a sense of genuineness to these clients.

For program administrators, it is essential to provide clients with access to individual and group counseling sessions and to maintain relatively small treatment groups which should lead to increased client treatment satisfaction. Considering that legal pressure serves as a strong external motivator, it is important for program administrators to continue collaborating with community corrections in order to motivate and engage clients. Lastly, it is beneficial for programs to teach clients self-management strategies about how to deal with deviant peers.

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Appendix A

Victimization and Violence History

In 3 months prior to incarceration,

Has anyone…

1. Thrown something at you?
2. Pushed, grabbed, or shoved you?
3. Slapped you?
4. Kicked, bitten, or choked you?
5. Hit you with a fist or object or beaten you up?
6. Tried to physically force you to have sex against your will?
7. Threatened you with a knife or gun or other lethal weapon?
8. Used a knife or fired a gun at you?

Have you…

1. Thrown something at someone?
2. Pushed, grabbed or shoved anyone?
3. Slapped anyone?
4. Kicked, bitten or choked anyone?
5. Hit anyone with a fist or object or beaten up anyone?
6. Tried to physically force anyone to have sex against their will?
7. Threatened anyone with a knife or gun or other lethal weapon?
8. Used a knife or fired a gun at anyone?
9. Have you done anything else which might be considered violent?

Treatment Satisfaction

1. I like the services that I have received in the past three months.
2. If I had other choices, I would still get services from the places I have gotten them before.
3. Staff where I received services were willing to see me as often as I felt it was needed.
4. I was able to get all the services I thought I needed.
5. Staff where I received services believed that I could grow, change and recover.
6. I felt free to complain.
7. Staff where I received services encouraged me to take responsibility for how I live for my life.
8. Staff where I received services respected my wishes about who was and who was not to be given information about my treatment.

Treatment Progress

1. I deal more effectively with daily problems.
2. I am better able to control my life.
3. I am getting along better with my family.
4. I do better in school and/or work.
5. My symptoms are not bothering me as much.
6. I am better able to stay out of trouble with law.

Brief Psychiatric Rating Scale

1. Somatic concern

    Preoccupation with physical health, fear of physical illness, hypochondriasis.

2. Anxiety

    Worry, fear, over-concern for present or future, uneasiness.

3. Emotional withdrawal

    Lack of spontaneous interaction, isolation deficiency in relating to others.

4. Conceptual disorganization

    Thought processes confused, disconnected, disorganized, disrupted.

5. Guilt feelings

    Self-blame, shame, remorse for past behavior.

6. Tension

    Physical and motor manifestations of nervousness, over-activation.

7. Mannerisms and posturing

    Peculiar, bizarre, unnatural motor behavior (not including tic).

8. Grandiosity

    Exaggerated self-opinion, arrogance, conviction of unusual power or abilities.

9. Depressive mood

    Sorrow, sadness, despondency, pessimism.

10. Hostility

    Animosity, contempt, belligerence, disdain for others.

11. Suspiciousness

    Mistrust, belief others harbor malicious or discriminatory intent.

12. Hallucinatory behavior

Perceptions without normal external stimulus correspondence.

13. Motor retardation

    Slowed, weakened movements or speech, reduced body tone.

14. Uncooperativeness

    Resistance, guardedness, rejection of authority.

15. Unusual thought content

    Unusual, odd, strange, bizarre thought content.

16. Blunted affect

    Reduced emotional tone, reduction in formal intensity of feelings, flatness.

17. Excitement

    Heightened emotional tone, agitation, increased reactivity.

18. Disorientation

    Confusion or lack of proper association for person, place or time.

Psychosocial Functioning

Depression (DP)

1. You feel interested in life. ®
2. You feel sad or depressed.
3. You feel extra tired or run down.
4. You worry or brood a lot.
5. You feel hopeless about the future.
6. You feel lonely.

Anxiety (AX)

1. You have trouble sleeping.
2. You have trouble concentrating or remembering things.
3. You feel afraid of certain things, like elevators, crowds, or going out alone.
4. You feel anxious or nervous.
5. You have trouble sitting still for long.
6. You feel tense or keyed-up.
7. You feel tightness or tension in your muscles.

Self-Esteem (SE)

1. You have much to be proud of.
2. You feel like a failure. ®
3. You wish you had more respect for yourself. ®
4. You feel you are basically no good. ®
5. In general, you are satisfied with yourself.

6. You feel you are unimportant to others. ®

Social Support (SS)

1. You have people close to you who motivate and encourage your recovery.
2. You have close family members who want to help you stay away from drugs.
3. You have good friends who do not use drugs.
4. You have people close to you who can always be trusted.
5. You have people close to you who understand your situation and problems.
6. You work in situations where drug use is common. ®
7. You have people close to you who expect you to make positive changes in your life.
8. You have people close to you who help you develop confidence in yourself.
9. You have people close to you who respect you and your efforts.

Treatment Motivation Form

Problem Recognition (PR)

1. Your drug use is a problem for you.
2. Your drug use is more trouble than it's worth.
3. Your drug use is causing problems with the law.
4. Your drug use is causing problems in thinking or doing your work.
5. Your drug use is causing problems with your family or friends.
6. Your drug use is causing problems in finding or keeping a job.
7. Your drug use is causing problems with your health.
8. Your drug use is making your life become worse and worse.
9. Your drug use is going to cause your death if you do not quit soon.

Desire For Help (DH)

1. You need help dealing with your drug use.
2. It is urgent that you find help immediately for your drug use.
3. You will give up your friends and hangouts to solve your drug problems.
4. Your life has gone out of control.
5. You are tired of the problems caused by drugs.
6. You want to get your life straightened out.

Treatment Readiness (TR)

1. You need to be in treatment now.
2. This treatment gives you a chance to solve your drug problems.
3. This kind of treatment program is not helpful to you. ®
4. This treatment program gives you hope for recovery.
5. You want to be in drug treatment.

6. You are ready to leave this treatment program. ®
7. You are at this treatment program only because it is required. ®
8. You are not ready for this kind of treatment program. ®

TCU DRUG SCREEN II

During the last 12 months (before being locked up, if applicable) – Yes No

1. Did you use larger amounts of drugs or use them for a longer time than you planned or intended?

2. Did you try to cut down on your drug use but were unable to do it?

3. Did you spend a lot of time getting drugs, using them, or recovering from their use?

4a. Did you get so high or sick from using drugs that it kept you from doing work, going to school, or caring for children?

4b. Did you get so high or sick from drugs that it caused an accident or put you or others in danger?

5. Did you spend less time at work, school, or with friends so that you could use drugs?

6a. Did your drug use cause emotional or psychological problems?

6b. Did your drug use cause problems with family, friends, work, or police?

6c. Did your drug use cause physical health or medical problems?

7. Did you increase the amount of a drug you were taking so that you could get the same effects as before?

8. Did you ever keep taking a drug to avoid withdrawal symptoms or keep from getting sick?

9. Did you get sick or have withdrawal symptoms when you quit or missed taking a drug?

Appendix B

Instructions: Please mark your answers to the series of questions listed below.

1. What is your current age? .....|___|___|

2. Your highest degree status [MARK ONE]?

   ○ High school diploma or equivalent
   ○ Some college, but no degree
   ○ Associate's degree
   ○ Bachelor's degree
   ○ Master's degree
   ○ Doctoral degree or equivalent
   ○ Other (specify)_____

3. How long have you been working as a counselor (lifetime)?

   _____Years_____Months

4. How long have you been in Gateway?

   _____Years_____Months

5. What is your current position?

   _____

6. How long have you been in your current position?

   _____Years_____Months

7. Substance Abuse Counseling Credentials? ○ No ○ Yes

   If yes, pleaase specify: _____

8. Which one of these approaches do you use most often with your clients? (select all that apply)

   ○ Psychodynamic theory
   ○ Medication-assisted Treatment and other pharmacotherapy
   ○ Behavior modification (contingency management)
   ○ 12-step therapy (AA/NA)
   ○ Cognitive-Behavioral therapy (CBT)
   ○ Others, please specify:_____

Below are about how you see yourself as a counselor and how you see your program

1. You have the skills needed to conduct effective group counseling.
2. You are effective and confident in doing your job.
3. You usually accomplish whatever you set your mind on.
4. You have the skills needed to conduct effective individual counseling.
5. You consistently plan ahead and carry out your plans.
6. You are satisfied with your present job.
7. You feel appreciated for the job you do at work.
8. You give high value to the work you do.
9. You are proud to tell others where you work.
10. You like the people you work with.
11. You would like to find a job somewhere else.
12. Staff members at your program work together as a team.
13. Mutual trust and cooperation among staff in your program are strong.
14. Staff members at your program get along very well.
15. Staff members at your program are quick to help one another when needed.
16. There is too much friction among staff members you work with.
17. Some staff in your program do not do their fair share of work.
18. The heavy staff workload reduces the effectiveness of your program.
19. You are under too many pressures to do your job effectively.
20. Staff members at your program often show signs of high stress and strain.
21. Staff frustration is common where you work.

Below are about the therapeutic alliance with your clients

Generally, to which degree, you feel your clients

1. Easy to talk to.
2. Warm and caring.
3. Honest and sincere.
4. Not hostile nor aggressive.
5. Not in denial about problems.

Appendix C

Thank you for taking your time and doing the interview with me. I am excited to have the opportunity to talk to clinicians in the field who make referrals to MAT.
I'm mindful of your time so I try to keep the interview to about 15 minutes.
I have one last instruction before I switch on the recorders. Instead of referring to others by name, please use generic terms like "my supervisor", "my fellow staff", and "my client" during this interview. That said, if you happen to mention someone's name, I will remove the name from the transcript.

1. Can you describe your role as a counselor here at this agency?

   Probe: What do you do exactly?

   Probe: What is your average client caseload per week?

2. How did you get started in the field?

Now, I am switching gears to a new topic – how treatment plans are developed.

3. Please describe how client treatment plans are developed and used clinically?

   Probe: In particular, how are specific treatment needs (e.g., medical needs) addressed in the present treatment plans?

   Probe: How do you determine which needs should be addressed? What assessment do you use?

4. What are some of the challenges you face in your interactions with your clients? Please describe how these challenges impact the treatment process.

5. What do you do to develop relationships with your clients?

   Probe: What do you do to get them open up and talk to you?

Now, I am interested in your thoughts about the recovery process for your clients.

6. In general, for all your clients, what do you think about the recovery process? How would you describe that process to someone who is not familiar with substance

abuse treatment programs?

Probe: Are the recovery stories the same for everyone? How are they different?

7. Do the twists and turns during treatment make it hard to stay positive about recovery?

   Probe: How do you feel when clients don't make progress?

   Probe: Can you tell me how you deal with that?

   Probe: Do you consider yourself optimist about the recovery process?

   Probe: What kind of toll does it have on you personally?

Let us talk about the referral process for your clients.

8. In general, how do your clients react about their referral to your agency? Do their reactions and/or feelings change once they are here awhile? Why? Please describe.

   Probe: What is the first day that they arrive here like for them?

   Probe: Do they feel relieved to finally be in treatment?

9. What do you think are factors/reasons that lead to a client not completing the program? What do you do to address these factors?

10. Are your clients generally satisfied with the treatment at Gateway? What do you think can be done to increase client satisfaction with treatment? How does their satisfaction with treatment keep them clean and sober?

11. Are there aspects of the program itself that you think serve as barriers or facilitators to client recovery?

    Probe: What are some program activities your clients like? What are some program activities that are hard to get clients to complete?

12. Is there anything I haven't asked about that would be important to include in describing client recovery.

Thank you for your time.

VITA

Yang Yang was born April 16, 1986, in Dafeng, Jiangsu Province, China. She is the daughter of Fukuan Yang and Guiqin Liu. She graduated from Shijiazhuang No.1 Middle School in 2003, completed her Bachelor of Science in Applied Psychology from East China Normal University in 2007, and received a Master of Education in Developmental Psychology from East China Normal University in 2010.

In August, 2010, she enrolled in graduate study at Texas Christian University, where she received her Master of Science in Experimental Psychology from Texas Christian University in 2012. While working on her doctorate in Experimental Psychology, she served as a research assistant at the Institute of Behavioral Research.

She attended several conferences presenting her work on substance abuse treatment process and outcome for criminal justice populations. She is a member of both the American Psychological Association and the American Statistical Association.

ABSTRACT

A MIXED-METHODS STUDY OF TREATMENT ADHERENCE AND PROGRESS FOR OFFENDERS REFERRED TO COMMUNITY-BASED DRUG ADDICTION TREATMENT

by Yang Yang, M.S., 2012

Department of Psychology

Texas Christian University

Dissertation Advisors:

Kevin Knight, Associate Director of the Institute of Behavioral Research

Patrick M. Flynn, Director of the Institute of Behavioral Research, Professor of Psychology, and Holder of the Saul B. Sells Chair of Psychology

The current study used a mixed-method design to examine the influence of client- and counselor-level factors on treatment adherence and progress for offenders referred to community-based drug addiction treatment. The sample included 90 client participants and 7 counselor participants from community-based treatment in a Midwest metropolitan area. A multilevel modeling technique was conducted to examine the influence of victimization and violence history, psychiatric disorders (i.e., psychiatric symptoms, anxiety, depression), social functioning (i.e., social support, self-esteem), drug use severity, and treatment motivation on treatment adherence, satisfaction, and progress after controlling for counselor-level variances. Multilevel modeling also was employed to test the mediation and moderation of treatment satisfaction on the relationship between client-

level factors and treatment progress. The results revealed that treatment satisfaction moderated the relationship between victimization and treatment progress, whereby a lower level of victimization was associated with more treatment progress among clients with high treatment satisfaction; there was no significant relationship between victimization and treatment progress among clients with low treatment satisfaction. Moreover, psychiatric symptoms predicted treatment adherence. Social support was correlated with treatment satisfaction which in turn was associated with treatment progress; social support also directly predicted treatment progress. A lower level of depression and a higher level of treatment motivation predicted greater treatment progress. Despite the nonsignificant findings, the association of client drug use severity and treatment motivation with treatment progress differed between counselors. Qualitative analyses that were derived from counselors' perception of factors that influence successful recovery yielded five prominent themes comprised of reducing resistance and enhancing treatment motivation, building strong therapeutic alliance, encouraging empowerment, reducing relapse and recidivating risks, and recognizing practical considerations (e.g., transportation assistance). The findings collectively underscore the importance of integrated interventions, social support, treatment motivation, satisfaction, and therapeutic alliance on treatment outcome. Also, the current findings highlight the importance of relatively small counseling groups, collaborating with community corrections, and teaching clients strategies for dealing with deviant peers in facilitating client recovery.