

Bryn Mawr College
Scholarship, Research, and Creative Work at Bryn Mawr College

Psychology Faculty Research and Scholarship

Psychology

2011

Pathways to treatment retention for individuals legally coerced to substance use treatment: The interaction of hope and treatment motivation

Ashley S. Hampton

Bradley T. Conner

Dustin Albert

Bryn Mawr College, walbert@brynmawr.edu

Douglas Longshore

[Let us know how access to this document benefits you.](#)

Follow this and additional works at: http://repository.brynmawr.edu/psych_pubs

 Part of the [Psychology Commons](#)

Custom Citation

Hampton, A.S., Conner, B.T., Albert, D., Anglin, M.D., Urada, D., & Longshore, D. 2011. Pathways to treatment retention for individuals legally coerced to substance use treatment: The interaction of hope and treatment motivation. *Drug and Alcohol Dependence* 118(2-3): 400-407.

This paper is posted at Scholarship, Research, and Creative Work at Bryn Mawr College. http://repository.brynmawr.edu/psych_pubs/54

For more information, please contact repository@brynmawr.edu.

Pathways to Treatment Retention for Individuals Legally Coerced to Substance Use Treatment:

The Interaction of Hope and Treatment Motivation

Ashley S. Hampton^{a,*}, Bradley T. Conner^a, Dustin Albert^a, M. Douglas Anglin^b, Darren Urada^b,
and Douglas Longshore^{b**}

^a *Temple University, Department of Psychology, Weiss Hall, 1701 N. 13th St., Philadelphia, PA 19122, United States*

^b *Integrated Substance Abuse Programs, Semel Institute for Neuroscience and Human Behavior, David Geffen School of Medicine, UCLA, 1640 S. Sepulveda Blvd., Ste. 200, Los Angeles, CA 90025, USA.*

***Douglas Longshore died December 2005.*

* Corresponding author at: Temple University, Department of Psychology, Weiss Hall, 1701 N. 13th Street, Philadelphia, PA 19122, United States. Tel.: +1 215 804 9806; fax: +1 215 204 5539. *Email address:* ashleyhampton@temple.edu (A.S. Hampton).

Word Count: 5,448

Abstract

Although several states have adopted policies diverting individuals convicted of non-violent drug offenses to substance use treatment, in lieu of incarceration or as a condition of probation, previous research has produced inconsistent findings on the effectiveness of such programs when comparing outcomes for legally coerced individuals to more voluntary entrants. Less studied in these populations is within group variation in treatment expectations and motivation influences, which have been shown to affect retention as well. As motivation has traditionally been viewed as contributing to treatment retention and higher levels of hope (the perception that goals can be met) are viewed as an asset in treatment, the role of these factors in predicting better retention between legally coerced and more voluntary clients were examined in a sample of 289 treatment admissions in California. Results found that motivation mediates the relationship between hope and retention for participants in general. Although the differences in mediation between the legally coerced and the non-legally coerced were not significant, when examining the groups separately, there was a significant mediation of the relationship between hope and retention by motivation only for those individuals who were not legally coerced into treatment ($p < .05$). The findings imply that while being legally coerced may lead to different pathways to treatment retention, for individuals who were not legally coerced, higher levels of hope may play an important role in determining treatment retention.

Keywords: Proposition 36; SACPA; moderated mediation; coerced treatment; offender diversion.

Pathways to Treatment Retention for Individuals Legally Coerced to Substance Use Treatment:
The Interaction of Hope and Treatment Motivation

1. Introduction

Given concerns about the costs of incarcerating drug offenders (McCollister et al., 2004; Wild, 1999), several states, including Arizona, Maryland, Hawaii, and Washington, have adopted policies diverting individuals convicted of non-violent drug offenses to substance use treatment, in lieu of incarceration, as a potentially cost-effective and more rehabilitative solution (The Avisa Group, 2005). Broadly, the procedure whereby individuals are choosing between receiving treatment or experiencing legal sanction is referred to as legal coercion (Klag et al., 2005; Miller & Flaherty, 2000). The criminal justice system has been motivated to develop policies of legal coercion as they offer the promise of providing treatment to reduce recidivism caused by substance use related criminal activity (Anglin et al., 1989). One widely implemented type of legal coercion is drug courts, which exert legal pressure on offenders to undergo substance use treatment through a structure connecting supervision with treatment (National Institute of Justice, 2006). In California, Proposition 36 (Prop 36), the Substance Abuse and Crime Prevention Act (SACPA) of 2000, was implemented in July 2001 as an alternative to the drug court system. Prop 36 allows those convicted of non-violent, drug possession or drug use offences the opportunity to receive drug treatment instead of incarceration (for detailed review, see www.prop36.org).

A consensus about the intermediate, long-term, and cost effectiveness of legal coercion has not yet been reached (as reviewed in Klag et al., 2005 and Farabee et al., 1998; Marlowe et al., 2003). Instead, previous research has produced inconsistent findings when comparing the legally coerced to those entering treatment voluntarily (Klag et al., 2005; Marlowe, 2000; Polcin, 2001). Legal coercion has been found to directly promote drug treatment entry (Hser et al., 1998)

and favorable outcomes (reviewed in Miller and Flaherty, 2000). Evidence suggests that legally coerced individuals have greater engagement in recovery-oriented behavior, readiness to change, attendance, and retention (Gregoire and Burke, 2004; Marlowe et al., 2001), all of which likely contribute to the superior outcomes associated with legal coercion, including lower dropout rates, longer retention, greater abstinence from substance use, and reduced addiction severity (e.g., Burke and Gregoire, 2007; Daughters et al., 2008; Gainey et al., 1993; Marlowe et al., 2001; Perron and Bright, 2008). However, several other studies have found no significant differences in outcomes, levels of improvement, and retention between the two groups (Brecht and Anglin, 1993; Grichting et al., 2002; Simpson and Friend, 1988). Furthermore, Klag and colleagues (2005) report that many of these findings, both positive and negative, are based on small, single-site studies that have serious conceptual and methodological problems. As such, it is not yet possible to make a definitive conclusion regarding legal coercion's effectiveness.

The inconclusive findings regarding legal coercion's efficacy suggest that examining treatment retention in simple main effects models is insufficient to fully understand the impact of legal coercion on substance use treatment and the factors that might impact the process. Research should take a broader multivariate perspective by examining its relationship with other salient factors identified in the literature as associated with retention. Investigating how such factors may differentially influence process and outcomes between legally coerced and non-legally coerced individuals will improve understanding of legal coercion's effect on various pathways to treatment retention and other positive indicators of treatment efficacy. Such findings may lead to improved policies and practices to optimize intervention effects.

Motivation is considered a critical component for initiating change, reducing risky behaviors (Dam et al., 2004), and effective intervention (Prochaska et al., 1992). It consists of

external motivation, characterized by seeking treatment due to external forces pressuring involvement in treatment (Ryan et al., 1995), and internal motivation, or internal factors involving one's perceived need to change (de Leon et al., 2000). Motivation has been consistently linked to better outcomes in substance use treatment (de Leon et al., 2000; DiClemente and Bellino, 1999; Gregoire and Burke, 2004), including improvements in treatment engagement, attendance, and retention (Ryan et al., 1995), treatment entry and completion (Cunningham et al., 1994), greater personal confidence and commitment to the treatment process (Broome et al., 1999), and acknowledgement, at an emotional level, of problem behavior and its impact (Conner et al., 2009).

Motivation may then contribute to treatment retention among individuals legally coerced into treatment. Specifically, understanding internal motivation may be relevant as it is possible that some legally coerced individuals may simply be “going through the motions” of treatment if their compliance allows them to avoid the consequence of legal sanction (Longshore and Teruya, 2006). In other words, some offenders may be willing to commit to attending treatment to avoid incarceration, but may not be motivated to making changes in their behaviors (DiClemente and Bellino, 1999), thus lacking the internal motivation needed to succeed in treatment. In DATOS, a national drug abuse treatment outcome study, legal pressure, as defined by legal status and supervisory pressures, was associated with longer engagement in treatment, regardless of internal motivation, represented by treatment readiness (Knight et al., 2000), with the two factors exerting independent influences on treatment retention, rather than interacting.

However, other research has demonstrated that, among the legally coerced, aspects of internal motivation, specifically desire for help and treatment readiness, were associated with therapeutic engagement (Hiller et al., 2002), suggesting that internal motivation is important for

these individuals. The field may have an incomplete view of how motivation affects the recovery process and varies among individuals (DiClemente and Bellino, 1999), specifically the legally coerced. To better establish how internal motivation is translated into retention, underlying factors that affect its predictive value, such as hope (Irving et al., 2004), should be investigated.

Hope is an overall expectation that personal goals can be met (Snyder et al., 1991), whereas hopelessness is comprised of negative expectancies concerning oneself and one's future (Beck et al., 1989). Higher levels of hope are considered an asset in promoting treatment entry, engagement, and participation, as they relate to better functioning throughout the treatment process, greater well-being, and having the ability to cope with stress and regulate distressing emotions (Irving et al., 2004). Hope is postulated to have a pathways component, involving the perceived capacity to generate strategies for attaining goals, and an agency component, involving both the motivation to move toward those goals (Snyder et al., 1999) and the perceived capacity to initiate and sustain movement on the pathway to attaining those goals (Snyder et al., 1999). Conceptualizing hope in this manner suggests that motivation is salient to the agency component of hope, compared to the pathways component, as it highlights the importance of motivation in goal achievement and thus relates to individual motivational expectations (Snyder et al., 2002).

Despite the likely connection between hope and motivation in general, hope's relationship to treatment motivation, specifically in substance use treatment, has rarely been explored. Additionally, there is a lack of research on the relationship between legal coercion and its potential interactions with and between hope and motivation. It is possible that the agency component of hope makes an important contribution to treatment retention for both those legally and non-legally coerced into treatment, with legal coercion providing further, external motivation (Gregoire and Burke, 2004). However, the pathways component of hope may be less

important for those legally coerced. Individuals who are in treatment primarily because of legal pressure may not perceive themselves as capable of generating strategies for achieving goals, as it was not on their own volition that they entered treatment. If the pathways component is less important for the legally coerced, the relationship between hope and treatment motivation may be different for them, as compared to individuals who were not legally coerced.

The primary purpose of this study was to analyze the roles of internal motivation, hope, and legal coercion in predicting pathways to treatment retention. First, internal motivation was examined as a mediator between hope and treatment retention, as previous research indicates that internal motivation is both strongly related to hope and predictive of drug treatment retention. Next, to determine if such mediation occurs differently between individuals who were legally coerced and those who were not, legal coercion was examined as a moderator of this mediated relationship. As it is likely that the pathways component of hope is less salient for legally coerced compared to non-legally coerced individuals, it was thus hypothesized that legal coercion would moderate the mediation of hope to treatment retention by internal motivation so that those not legally coerced to treatment would evidence significant mediation, whereas those legally coerced would not (See Figure 1).

2. Methods

2.1 Participants

Participants ($n = 289$) were substance users between the ages of 18 and 63 consecutively admitted into drug treatment in one of four drug treatment programs throughout the Greater Los Angeles area (see Table 1 for demographic and descriptive data), including the Los Angeles Matrix Institute, the Inland Empire Matrix Institute, the Tarzana Treatment Center, and the Aegis Medical Systems, Inc. in Pomona. All of the clinics provide a variety of services, including

residential, outpatient drug-free, and/or methadone maintenance treatment. Data were collected between September 2002 and January 2005. Of the total sample, 21.1% were court ordered to drug treatment (referred to as the Prop 36 group) and 79.9% were referred from some other source (referred to as the Non-Prop 36 group). Participants were asked to enter the study during treatment admission, and, if they agreed and gave informed consent, they completed study intake measures. Treatment retention was assessed from clinical records. All participants received compensation for their participation. The study had the approval of both the UCLA Institutional Review Board (IRB) and Matrix Clinics IRB.

2.2 Measures

2.2.1 Treatment Motivation. Treatment motivation was measured using the Treatment Motivation Questionnaire (TMQ; Ryan et al., 1995), which contains reasons for entering and/or staying in treatment. Participants responded regarding how true each reason was for them at the moment they were completing the scale using a four-point Likert-type scale, anchored with “Very True” and “Not at All True.” The TMQ consists of four subscales: internalized motivation, externalized motivation, interpersonal help seeking, and confidence in treatment. For the present study, the external motivation subscale was not included because it overlapped with participants’ Prop 36 Status. Exploratory factor analysis conducted using the participants from this study suggested that the internal motivation subscales of the TMQ (internalized motivation, interpersonal help seeking, confidence in treatment) may be best represented as a unidimensional treatment motivation construct. The single factor scale had an eigenvalue of 1.90 and explained 47% of the variance. As such, responses to each item were summed across all items. The total score was then used as a single measured variable. The scale had good internal reliability (Cronbach’s $\alpha = 0.85$).

2.2.2. Hope. Hope was assessed using the Beck Hopelessness Scale (BHS; Beck et al., 1974), which measures positive and negative expectations about the future. Participants were prompted to respond to each item regarding how true that statement is for them using a yes-no scale. Typically, the total score is calculated by reverse scoring positive expectation items and then summing the responses across items to create a hopelessness total score. For the present study, hope was the variable of primary interest so only the sum of the positive expectation items (“I look forward to the future with hope and enthusiasm.” “When things are going badly, I am helped by knowing they can’t stay that way forever.” “I have enough time to accomplish the things I most want to do.” “In the future, I expect to succeed in what concerns me most.” “I expect to get more of the good things in life than the average person.” “My past experiences have prepared me well for my future.” “When I look ahead to the future, I expect I will be happier than I am now.” “I have great faith in the future.” “I can look forward to more good times than bad times.”) was used. Because the negative expectation items reflect hopelessness, they were not included in the measure of hope. Items were coded so that high scores indicated hope and then summed for the total score. This version of the scale for these participants had good internal reliability (Kuder-Richardson 20 = 0.63).

2.2.3. Treatment Retention. This was a single item where participants’ status at discharge was assessed and reported in the California Alcohol and Drug Data System (CADDSS; <http://www.adp.ca.gov/cadds/main.shtml>). The CADDSS records information about individuals receiving alcohol or drug treatment at facilities that receive funding from the California Department of Alcohol and Drug Programs or are licensed by the Department, and covers drug treatment services that include detox, residential, outpatient drug-free, day care, and narcotic

replacement therapy. At discharge or departure from treatment, service providers are required to report individuals' status in relation to his/her recovery plan or treatment goals at that time.

Statuses coded as the following were considered to reflect positive retention status: "Completed treatment/recovery plan and/or goals," when the participant has met the major goals set forth in his/her recovery plan and is not being referred or transferred to another treatment program; "Left before completion with satisfactory progress," when the participant did not complete the program, but was in recovery services long enough to have made significant progress toward achieving the goals in the recovery plan, and is not being referred or transferred to another treatment program. At discharge, 49.8% of participants had a positive retention status (23.8% completed treatment, 26.0% left before completion with satisfactory progress). Statuses coded as "Left before completion with unsatisfactory progress," when the participant has dropped out of or has been dismissed from recovery services, were considered to reflect negative retention status. At discharge, 50.2% had a negative retention status. Finally, 37 (11.3%) participants whose status was coded as "Referred or transferred for further drug/alcohol treatment/recovery," when the participant was referred or transferred to another program or facility to continue recovery services, were excluded from analyses, as it was unclear how this status relates to retention. This resulted in a binary outcome variable referred to as Retention wherein 0 was scored for negative retention status, or not retained, and 1 was scored for positive retention status, or retained.

2.3 Analysis Plan

Two sets of analyses were conducted to examine the role of hope, treatment motivation (Motivation), and legal coercion in pathways to treatment retention (Retention). First, a series of ordinary least squares (OLS) and logistic regressions were utilized to evaluate the significance of

individual associations within the proposed path model (i.e., Hope→Motivation→Retention), as well as moderation of each association by Prop 36 Status. Specifically, the following were examined: (a) whether greater hope predicted increased probability of Retention, not accounting for variation in Motivation (i.e., the direct effect); (b) whether greater Hope predicted greater Motivation (i.e., Path A of the indirect effects model); (c) whether greater Motivation predicted increased probability of Retention (i.e., Path B of the indirect effects model); and (d) whether the strength of the Hope→Retention, Hope→Motivation, and Motivation→Retention associations differed for those legally coerced into treatment by Prop 36, relative to those entering treatment voluntarily (see Figure 1).

The second set of analyses was guided by two aims. First, the significance of the indirect path from Hope through Motivation to Retention (i.e., mediation) was tested. A mediation effect is demonstrated when regression coefficients for both Path A (e.g., Hope→Motivation) and Path B (e.g., Motivation→Retention) are significant, *and* the product of the two coefficients is significantly greater than zero (Preacher et al., 2007). In practical terms, this mediation analyses asks: If a feeling of hopefulness about one's future does indeed increase motivation to engage in treatment, does this hope-related increment in motivation bolster one's odds of treatment retention? Second, whether the strength of this indirect path differed for individuals legally coerced into treatment (i.e., moderated mediation) was examined. To address these two aims, a moderated path analysis (Edwards and Lambert, 2007) was implemented to simultaneously estimate the size and significance of the indirect Hope→Motivation→Retention effect (a) across the full sample, and (b) separately for Prop 36 and non-Prop 36 groups to determine whether the strength of the path from Hope through Motivation to Retention differed based on coercion.

Because moderated path analysis is a relatively new approach, a brief overview is provided. Although “moderated mediation” effects are commonly asserted based on evidence of individual path moderation, methodologists have argued that this piecemeal approach does not demonstrate moderation at the level of the indirect effect as a whole (e.g., Preacher et al., 2007). Edwards and Lambert (2007) proposed an alternative technique that combines mediation and moderation regression equations into a reduced form equation capable of estimating indirect effects that are conditional on the value of the moderating variable. Substituting pre-selected values of the moderator (e.g., Prop 36 = Yes (1) or No (0)) into a reduced form equation derived from the full sample produces separate estimates of indirect effect parameters corresponding to each level of the moderating variable, while retaining maximum statistical power. Furthermore, the moderated path analysis approach utilizes a bootstrapping procedure (i.e., repeated sampling with replacement) to estimate coefficients and standard errors for each path in the model. This technique allows for significance testing of indirect effects at both the global (i.e., full sample) and conditional (i.e., Prop 36 group) levels based on bias-corrected confidence intervals, and are therefore robust to violations of normality. Given methodological concerns regarding the viability of assuming normality for distributions of indirect effects, bootstrapping is gaining widespread acceptance as a preferred alternative to traditional tests of mediation like the Sobel test (for review, see Preacher et al., 2007).

All analyses included the following covariates: (1) Prop 36 Status; (2) Modality (i.e., via dichotomous dummy variables to capture variance related to Methadone vs. Outpatient vs. Residential treatment modalities); (3) Age; (4) Race (i.e., via dummy variables for African American vs. Non-White Hispanic vs. White vs. Other); and (5) Sex (i.e., via one dummy variable for Male vs. Female). Results for Prop 36 Status and Treatment Modality are reported

only when significant. All other demographic variables are treated as non-interpreted covariates. Hope and Motivation are mean-centered to aid interpretation of regression coefficients.

3. Results

3.1 Individual Path Effects

3.1.1. Prediction of Treatment Retention by Hope. To test main and interactive effects within the direct path from Hope to Retention, a logistic regression on Retention, with Hope and the Hope-by-Prop 36 Status interaction terms as primary predictor variables was conducted, controlling for Prop 36 Status, treatment modality, and all demographic covariates. Contrary to predictions, Hope did not significantly predict Retention ($\beta = .12$, Odds Ratio (*OR*) = 1.13, OR 95% C.I.: .90 - 1.41, *ns*). As summarized in Table 2, only Modality predicted Retention in this first model, such that being enrolled in a methadone maintenance program (relative to residential or outpatient) was associated with a significantly lower probability of Retention ($\beta = -2.45$, *OR* = .09, OR 95% C.I.: .04 - .18, $p < .001$). Although this lack of a direct effect from Hope to Retention may intuitively appear to preclude further testing of the mediated path, several prominent methodologists have convincingly argued that a significant direct effect is not a precondition for a significant indirect effect (e.g., Edwards and Lambert, 2007; Preacher et al., 2007). Furthermore, results from an alternative logistic regression omitting Modality as a covariate show a positively significant direct effect from Hope to Retention ($\beta = .21$, *OR* = 1.24, OR 95% C.I.: 1.01 - 1.52, $p = .040$). No direct or interactive effects related to Prop 36 Status were significant within either of these logistic regressions.

3.1.2. Path A: From Hope to Treatment Motivation. To examine the first path of the hypothesized indirect effects model, the ability of Hope and/or Hope-by-Prop 36 Status to significantly predict variance in Motivation, a hierarchical multiple regression was tested, controlling for Prop 36

Status, Modality, and all demographic covariates. Consistent with predictions, Hope significantly positively predicted Motivation ($\beta = .97, t = 2.87, p = .004$). In addition, a significant effect was again found for Modality, such that enrollment in methadone maintenance significantly predicted decreased Motivation ($\beta = -2.66, t = -2.77, p = .020$).

3.1.3. Path B: From Motivation to Retention. To examine the second path of the hypothesized indirect effects model, a logistic regression was utilized to test whether Motivation increased the odds of Retention and whether this effect was moderated by Prop 36 Status, controlling for Hope, Prop 36 Status, Hope-by-Prop 36 Status, Modality, and all demographic covariates. Providing support for Path B of the indirect effects model, stronger Motivation significantly predicted increased probability of Retention ($\beta = .05, OR = 1.06, OR\ 95\% \text{ C.I.: } 1.01 - 1.11, p = .032$). In addition, Modality was important, as enrollment in methadone maintenance significantly predicted a decreased probability of Retention ($\beta = -2.36, OR = .095, OR\ 95\% \text{ C.I.: } .04 - .20, p < .001$). No evidence was found for moderation of the Motivation \rightarrow Retention relation by Prop 36 Status.

3.2. Moderated Path Analysis of Unconditional and Conditional Indirect Effects. To simultaneously examine unconditional (i.e., across the entire sample) and conditional (i.e., varying by Prop 36 Status) indirect effects, a moderated path analysis was implemented as follows. First, a macro was executed in SPSS 18.0 that conducted separate OLS and logistic regressions for each of 1000 bootstrapped samples, providing 1000 sets of coefficient estimates for Path A (Hope \rightarrow Motivation) and Path B (Motivation \rightarrow Retention), continuing to control for Prop 36 Status, Modality, and all demographic covariates. In addition, Path A regressions included the interaction term for Hope-by-Prop 36 Status and Path B regressions included terms for Hope-by-Prop 36 Status and Motivation-by-Prop 36 Status.

3.2.1. Examination of the Unconditional Indirect Effect. To test the significance of the indirect Hope→Motivation→Retention path effect, the indirect effect AB as the product of the two corresponding path coefficients (i.e., $(\beta \text{ for Hope} \rightarrow \text{Motivation}) * (\beta \text{ for Motivation} \rightarrow \text{Retention})$) was calculated, and bootstrapped variability estimates were utilized to construct a bias-corrected confidence interval for the effect magnitude (Stine, 1989). The resulting 95% confidence interval for the unconditional indirect effect AB did not include zero (C.I.: .014-.110), supporting the predictions of a significant positive indirect path from Hope through Motivation to Retention.

3.2.2. Examination of Conditional Indirect Effects. To evaluate potential moderation of this indirect effect by Prop 36 Status, the bootstrapped coefficient estimates generated for the interaction terms in the Path A and Path B equations were utilized to calculate separate estimates of indirect effect magnitude for Prop 36 and non-Prop 36 Statuses, and the magnitude of the difference between the respective estimates was examined to determine if it was greater than zero. Specifically, first partial path effects for each Status were calculated by multiplying the beta coefficient for each interaction term (e.g., $\beta \text{ for Hope-by-Prop 36 Status} \rightarrow \text{Motivation}$) by the value of the Status variable (i.e., Prop 36 Status = Yes (1) or No (0)). The full path effects for each Status were then calculated by summing the conditional partial effect with the corresponding unconditional path effect (e.g., $\beta \text{ for Hope} \rightarrow \text{Motivation}$). Thus, the full conditional effect for Path A is the sum of the unconditional Hope→Motivation and conditional Hope-by-Prop 36 Status→ Motivation effects, the full conditional effect for Path B is the sum of effects for Motivation→ Retention and Motivation-by-Prop 36 Status→Retention, and the conditional indirect effect AB is the product of these full conditional path effects.

As summarized in Table 3, the difference in magnitude between indirect effects for Prop 36 and Non-Prop 36 Statuses was not significantly different from zero, suggesting no differences

in the indirect effect based on Prop 36 Status. However, the results from these analyses reveal a trend toward differing associations between the two groups. Specifically, the estimated indirect effect for Non-Prop 36 participants was significant within a 95% C.I., consistent with significant effects for Path A and Path B. In contrast, for Prop 36 participants, only Path A was significant; both Path B and the indirect effect were not significantly different from zero.

4. Discussion

The impact of legal coercion on treatment retention can be better understood by examining how pathways to treatment retention differ between individuals legally coerced to treatment and those who entered voluntarily. The current study found that internal motivation mediates the relationship between hope and treatment retention for individuals in general, but not specifically for those legally coerced to treatment. Although a significant difference was not found between the two groups, examining them separately reveals that there is a significant mediation of the relationship between hope and treatment retention by motivation for individuals not legally coerced to treatment, but that this mediation is not significant for individuals who were legally coerced. This finding suggests that internal motivation for treatment and hope are likely not predictive of treatment retention for individuals who are legally coerced, which is construed as a form of external motivation. As such, the findings imply that being legally coerced may lead to different pathways to treatment retention. The results also suggest that legal coercion may lead to a distinct pathway than that commonly held in the field, which positions motivation as essential for successful treatment for substance use (Prochaska et al., 1992).

The implication that hope is less influential in determining treatment retention for those legally coerced sheds light on legal coercion's interaction with the individual components of hope. Because individuals legally coerced to treatment have the external motivation of legal

sanction if they do not stay in treatment, it is possible that the agency component of hope, which is highly related to motivation (Snyder et al., 2002), does not play a role in reducing hope's importance for these individuals. Instead, it can be hypothesized that the pathways component of hope, involving one's perceived capacity for generating strategies to attain goals (Snyder et al., 1999), is less influential for the legally coerced. The lesser importance of the pathways component potentially occurs because these individuals did not enter treatment on their own volition. As such, they may doubt their capability to generate strategies to achieve treatment goals, which would not promote retention. Perhaps those legally coerced have sufficient external motivation to remain in treatment, lessening hope's role in determining treatment retention.

However, the study's findings do imply that hope is an important part of the pathway to treatment retention for those individuals seeking substance use treatment on their own or through a non-criminal justice referral, in addition to also supporting previous evidence that motivation is consistently associated with improved outcomes in substance use treatment (de Leon et al., 2000; DiClemente and Bellino, 1999; Gregoire and Burke, 2004). This potentially influential role of hope is thus relevant for the majority of individuals seeking substance use treatment in the United States, as non-criminal justice referrals comprised of 62.5% of the 1.8 million treatment seekers in 2007 (Substance Abuse and Mental Health Services Administration, 2009). Though there has been substantial focus in the literature on motivation for treatment (e.g., de Leon et al., 2000; DiClemente and Bellino, 1999; Gregoire and Burke, 2004), which relates to the agency component of hope, little is known about the role of the pathways component of hope in substance use treatment. However, it could be hypothesized that, as the pathways component involves an individual's perceived capacity to generate strategies for attaining goals, the best treatment for non-legally coerced individuals should be client-centered and focused on

improving clients' feelings of competency and problem solving abilities. Perhaps if individuals in substance use treatment felt more capable of their ability to generate solutions to problems and strategize how to best achieve their goals, they would be less likely to drop out of treatment.

4.1 Limitations and Future Directions

The study had several limitations. Treatment outcome data were only collected at discharge, and, therefore, long-term treatment success, as measured through participants' reduction in or abstinence from substance use, cannot be examined beyond that time point. Additionally, participants consisted of the population of individuals in substance use treatment in California, and thus findings may not generalize to individuals in states with different regulations regarding legal coercion or to less diverse populations. Another limitation is the use of the CADDs discharge data to determine participants' retention, as the CADDs discharge data are an imperfect measure. An annually updated CADDs manual containing detailed instructions and definitions for the discharge codes (e.g. California Department of Alcohol and Drug Programs, 2001) was made available to all programs and counselors, though actual training and use of the manual likely varied. The California definition of treatment completion, which is based on that employed by the national Treatment Episode Dataset, is based on completion of treatment plan or program goals (Substance Abuse and Mental Health Services Administration, 2006), which allows for a degree of subjectivity. This may have reduced the reliability of the instrument. However, evidence for convergent validity can be found in studies showing treatment completion as measured by CADDs to be associated with lower arrests (Urada et al., 2007; Urada and Hawken, 2008) and lower overall costs (Longshore et al., 2006; Hawken et al., 2008). This suggests that the discharge measures may have been "noisy" but meaningful. While this may have introduced a source of increased variation, making it more difficult to obtain

statistically significant results via inferential statistics, there is no reason to believe it has introduced a systematic bias into the findings of the current study.

Future research should focus on the relative importance of legal coercion in the pathway to treatment retention, as it is possible that legal coercion is such a strong source of external motivation that other individual factors are not as contributory. Similarly, the efficacy of motivationally based treatments (e.g., motivational interviewing) for the legally coerced should be examined, as the lesser influence of internal motivation on their treatment outcomes may result in these treatments being less effective. Additionally, individual characteristics, such as history of substance use or treatment, that are essential for treatment to be effective for those legally coerced to treatment should be clarified, as an improved understanding of the important factors for treatment retention for these individuals could be used to inform both prevention and intervention practices. The role of the components of hope in predicting treatment retention of the legally coerced should be specifically investigated to determine if the pathways component is less influential for those individuals. Finally, further research should examine the influence of hope on treatment outcomes for individuals who were not legally coerced, as the current study suggests that it may be an important part of pathways to treatment retention. This could lead to the development of interventions to increase both the agency and pathways components of hope in individual's abilities to affect change in their drug use. Previous research has shown that hope can be increased using cognitive-behavioral therapies (for review, see Snyder et al., 2000).

The study had several strengths. First, the sample was racially and ethnically diverse, suggesting that the results may be applicable to most racial and ethnic groups in the United States. The sample was further varied in participants' drug of choice, implicating that the findings may hold true across drug types. Additionally, the treatment of both the legally coerced

and non-legally coerced was in similar treatment facilities and programs, which ensures that the quality of treatment received by both groups is comparable. These strengths suggest that the findings of the study may be meaningfully interpreted and then applied to further research on the relationships between legal coercion and pathways to treatment retention.

The findings more broadly implicate that, for individuals legally coerced into substance use treatment, traditional views of treatment retention were not applicable and, thus, other avenues should be explored. Previous work has suggested that external motivation, such as from legal coercion, could translate to increased motivation for treatment if that legal pressure is internalized (Ryan et al., 1995). However, the current finding that hope and internal motivation are not predictive of treatment retention suggests otherwise. It is possible that hope is not relevant for the legally coerced because they were not the ones who initiated their substance use treatment. Perhaps having this external, legal pressure to remain in treatment is a more influential factor than their levels of hope. Regardless, this study further demonstrates that the pathways to longer treatment retention for those who are legally coerced continue to be unknown.

Of note, this study is the first to identify hope as an important variable in this pathway to treatment retention for individuals seeking substance use treatment voluntarily or through non-criminal justice referrals. The findings thus imply that hope should also be included when assessing appropriateness for substance use treatment, in addition to continuing to examine individuals' internal motivation for treatment. Hope may be indicative of how effective treatment will be. If hope is assessed and found to be low, increasing client feelings of hope likely needs to be addressed before starting or during treatment.

References

- Anglin, M. D., Brecht, M., & Maddhian, E., 1989. Pretreatment characteristics and treatment performance of legally coerced versus voluntary methadone maintenance admissions. *Criminology*, 27, 537–557.
- Avisa Group, 2005. Comparing California's Proposition 36 (SACPA) with Similar Legislation in Other States and Jurisdictions. Retrieved July 15, 2010 from <http://www.prop36.org/pdf/ComparisonProp36OtherStates.pdf>
- Baron, R. M., & Kenny, D. A., 1986. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *J Pers Soc Psychol.* 51, 1173-1182.
- Beck, A. T., Brown, G., & Steer, R. A., 1989. Prediction of eventual suicide in psychiatric inpatients by clinical ratings of hopelessness. *J Consult Clin Psychol.* 57, 309-310.
- Beck, A. T., Weissman, A., Lester, D., & Trexler, L., 1974. The measurement of pessimism: The Hopelessness Scale. *J Consult Clin Psychol.* 42, 861-865.
- Brecht, M., & Anglin, M. D., 1993. Treatment effectiveness for legally coerced versus voluntary methadone maintenance clients. *Am J Drug Alcohol Abuse.* 19, 89-106.
- Broome, K. M., Simpson, D. D., & Joe, G. W., 1999. Patient and program attributes related to treatment process indicators in DATOS. *Drug Alcohol Depend.* 57, 127-135.
- Burke, A. C., & Gregoire, T. K., 2007. Substance Abuse Treatment Outcomes for Coerced and Noncoerced Clients. *Health Soc Work.* 32, 7-15.
- California Department of Alcohol and Drug Programs, 2001. California Alcohol and Drug Data System Instruction Manual. Sacramento: California Department of Alcohol and Drug Programs.

- Conner, B. T., Longshore, D., & Anglin, M. D., 2009. Modeling attitude towards drug treatment: The role of internal motivation, external pressure, and dramatic relief. *J Behav Health Serv Res.* 36, 150-158.
- Cunningham, J. A., Sobell, L. C., Sobell, M. B., & Gaskin, J., 1994. Alcohol and drug abusers' reasons for seeking treatment. *Addict Behav.* 19, 691-696.
- Dam, E. A., Hosman, C. M. H., & Keijsers, G. P. J., 2004. A new instrument to assess participant motivation for involvement in preventive interventions. *J Clin Psychol.* 60, 555-565.
- Daughters, S. B., Stipelman, B. A., Sargeant, M. N., Schuster, R., Bornovalova, M. A., & Lejuez, C. W., 2008. The interactive effects of antisocial personality disorder and court-mandated status on substance abuse treatment dropout. *J Subst Abuse Treat.* 34, 157-164.
- de Leon, G., Melnick, G., & Kressel, D., 1997. Motivation and readiness for therapeutic community treatment among cocaine and other drug abusers. *Am J Drug Alcohol Abuse.* 23, 169-189.
- de Leon, G., Melnick, G., Thomas, G., Kressel, D., & Wexler, H. K., 2000. Motivation for treatment in a prison-based therapeutic community. *Am J Drug Alcohol Abuse.* 26, 33–46.
- DiClemente, C. C., & Bellino, L. E., 1999. Motivation for change and alcoholism treatment. *Alcohol Res Health.* 23, 86 - 92.
- DiClemente, C. C., Schlundt, D., & Gemmell, L., 2004. Readiness and stages of change in addiction treatment. *Am J Addict.* 13, 103–119
- Edwards, J.R., & Lambert, L.S., 2007. Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychol Methods.* 12, 1-22.

- Gainey, R. R., Wells, E. A., Hawkins, J. D., & Catalano, R. F., 1993. Predicting treatment retention among cocaine users. *Subst Use Misuse*. 28, 487-505.
- Gregoire, T. K., & Burke, A. C., 2004. The relationship of legal coercion to readiness to change among adults with alcohol and other drug problems. *J Subst Abuse Treat*. 26, 35-41.
- Grichting, E., Uchtenhagen, A., Rehm, J., 2002. Modes and impact of coercive and inpatient treatment for drug-related conditions in Switzerland. *Eur Addict Res*. 8, 78–83.
- Hawken, A., Longshore, D., Urada, D., Fan, J., & Anglin, D., 2008. Proposition 36 Benefit-Cost Analysis. In: *Evaluation of the Substance Abuse and Crime Prevention Act 2008 Report*. 215-229. Retrieved from:
<http://www.uclaisap.org/prop36/documents/2008%20Final%20Report.pdf>.
- Hiller, M. L., Knight, K., Leukefeld, C., & Simpson, D. D., 2002. Motivation as a predictor of therapeutic engagement in mandated residential substance abuse treatment. *Crim Justice Behav*. 29, 56-75.
- Hser, Y., Maglione, M., Polinsky, M. L., & Anglin, M. D., 1998. Predicting drug treatment entry among treatment-seeking individuals. *J Subst Abuse Treat*. 15, 213-220.
- Irving, L. M., Snyder, C. R., Cheavens, J., Gravel, L., Hanke, J., Hilberg, P., & Nelson, N., 2004. The relationships between hope and outcomes at the pretreatment, beginning, and later phases of psychotherapy. *J Psychother Integr*. 14, 419-443.
- Joe, G. W., Broome, K. M., Rowan-Szal, G. A., & Simpson, D. D., 2002. Measuring patient attributes and engagement in treatment. *J Subst Abuse Treat*. 22, 183-196.
- Klag, S., O'Callaghan, F., & Creed, P., 2005. The use of legal coercion in the treatment of substance abusers: An overview and critical analysis of thirty years of research. *Subst Use Misuse*. 40, 1777-1795.

- Knight, K., Hiller, M. L., Broome, K. M., & Simpson, D. D., 2000. Legal pressure, treatment readiness, and engagement in long-term residential programs. *J Offend Rehab.* 31, 101-115.
- Longshore, D., Hawken, A., Urada, D., & Anglin, M. D., 2006. SACPA Cost Analysis Report (First and Second Years). Prepared for the Department of Alcohol and Drug Programs, California Health and Human Services Agency. Los Angeles: UCLA Integrated Substance Abuse Programs. Retrieved from:
http://www.uclaisap.org/prop36/documents/SACPA_COSTANALYSIS.pdf
- Longshore, D., & Teruya, C., 2006. Treatment motivation in drug users: A theory-based analysis. *Drug Alcohol Depend.* 81, 179-188.
- Marlowe, D. B., 2000. Coercive treatment of substance abusing criminal offenders. *J Forensic Psychol P.* 1, 65-73.
- Marlowe, D. B., DeMatteo, D. S., Festinger, D. S., 2003. A sober assessment of drug courts. *Federal Sentencing Reporter.* 16, 153–157.
- Marlowe, D. B., Merikle, E. P., Kirby, K. C., Festinger, D. S., & McLellan, A. T., 2001. Multidimensional assessment of perceived treatment-entry pressures among substance abusers. *Psychol Addict Behav.* 15, 97-108.
- McCollister, K. E., French, M. T., Prendergast, M. L., Hall, E., & Sacks, S., 2004. Long-term cost effectiveness of addiction treatment for criminal offenders. *Justice Quarterly,* 21, 659-679.
- Miller, N. S., & Flaherty, J. A., 2000. Effectiveness of coerced addiction treatment (alternative consequences): A review of the clinical research. *J Subst Abuse Treat.* 18, 9-16.

- National Institute of Justice, 2006. Drug courts: The second decade. Washington, DC: U.S. Department of Justice.
- Perron, B. E., & Bright, C. L., 2008. The influence of legal coercion on dropout from substance abuse treatment: Results from a national survey. *Drug Alcohol Depend.* 92, 123-131.
- Polcin, D., 2001. Drug and alcohol offenders coerced into treatment: A review of modalities and suggestions for research on social model programs. *Subst Use Misuse.* 36, 589.
- Preacher, K.J., & Hayes, A.F., 2004. SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behave Res Meth Ins C.* 36, 717-731.
- Preacher, K.J., Rucker, D.D., & Hayes, A.F., 2007. Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivar Behav Res.* 42, 185-227.
- Prochaska, J. O., DiClemente, C. C., & Norcross, J. C., 1992. In search of how people change: Applications to addictive behaviors. *Am Psychol.* 47, 1102-1114.
- Ryan, R. M., Plant, R. W., & O'Malley, S., 1995. Initial motivations for alcohol treatment: Relations with patient characteristics, treatment involvement, and dropout. *Addict Behav.* 20, 279-297.
- Shrout, P.E., & Bolger, N., 2002. Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychol Methods.* 7, 422-445.
- Simpson, D. D., & Friend, H. J., 1988. Legal status and long-term outcomes for addicts in the DARP followup project. In C. G. Leukefeld & F. M. Tims (Eds.), *Compulsory treatment of drug abuse: Research and clinical practice* (pp. 88-98). NIDA Research Monograph No. 86, Washington, DC: U.S. Government Printing Office, 1988.
- Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., Yoshinobu, L., Gibb, J., Langelle, C., & Harney, P., 1991. The will and the ways:

- Development and validation of an individual-differences measure of hope. *J Pers Soc Psychol.* 60, 570-585.
- Snyder, C. R., Ilardi, S. S., Cheavens, J., Michael, S. T., Yamhure, L., & Sympson, S., 2000. The role of hope in cognitive-behavior therapies. *Cognitive Ther Res.* 24, 747-762.
- Snyder, C. R., Michael, S. T., & Cheavens, J. S., 1999. Hope as a psychotherapeutic foundation of common factors, placebos, and expectancies. In M. A. Hubble, B. L. Duncan, & S. D. Miller (Eds.), *The heart and soul of change: What works in therapy* (pp. 179-200). Washington, DC: American Psychological Association.
- Snyder, C. R., Shorey, H. S., Cheavens, J., Pulvers, K. M., Adams, V. H. I,II, & Wiklund, C., 2002. Hope and academic success in college. *J Educ Psychol.* 94, 820-826.
- Stine, R., 1989. An introduction to bootstrap methods. *Sociol Method Res.* 24, 353-379.
- Substance Abuse and Crime Prevention Act, 2000. Retrieved July 15, 2010 from <http://www.courtinfo.ca.gov/programs/drugcourts/documents/highlights.pdf>.
- Substance Abuse and Mental Health Services Administration, 2006. Treatment Episode Data Set (TEDS): 2006 Discharges from Substance Abuse Treatment Services. Retrieved March 6, 2011 from: http://www.dasis.samhsa.gov/teds06/tedsd2k6_508.pdf.
- Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 2009. Treatment Episode Data Set (TEDS). Highlights - 2007. National Admissions to Substance Abuse Treatment Services, DASIS Series: S-45, DHHS Publication No. (SMA) 09-4360, Rockville, MD.
- Urada, D. & Evans, E., 2008. Proposition 36 Offender Characteristics. In: Evaluation of the Substance Abuse and Crime Prevention Act 2008 Report. 201-214. Retrieved from: <http://www.uclaisap.org/prop36/documents/2008%20Final%20Report.pdf>.

- Urada, D., Longshore, D., & Hawken, A., 2007. Re-Offending. In: Evaluation of the Substance Abuse and Crime Prevention Act Final Report. 57-67. Retrieved from:
<http://www.uclaisap.org/prop36/documents/SACPAEvaluationReport.pdf>.
- Urada, D. & Hawken, A., 2008. Re-Offending and Crime Trends. In: Evaluation of the Substance Abuse and Crime Prevention Act 2008 Report. 201-214. Retrieved from:
<http://www.uclaisap.org/prop36/documents/2008%20Final%20Report.pdf>.
- Wild, T. C., 1999. Compulsory substance-user treatment and harm reduction: A critical analysis. *Subst Use Misuse*. 34, 83-102.
- Zeldman, A., Ryan, R. M., & Fiscella, K., 2004. Motivation, autonomy support, and entity beliefs: Their role in methadone maintenance treatment. *J Soc Clin Psychol*. 23, 675-696.