

# CORRELATES OF INTERORGANIZATIONAL SERVICE COORDINATION IN COMMUNITY CORRECTIONS

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Because weak interagency coordination between community correctional agencies (e.g., probation and parole) and community-based treatment providers has been identified as a major barrier to the use of evidence-based practices (EBPs) for treating drug-involved offenders, this study sought to examine how key organizational (e.g., leadership, support, staffing) and individual (e.g., burnout, satisfaction) factors influence interagency relationships between these agencies. At each of 20 sites, probation/parole officials ( $n = 366$ ) and community treatment providers ( $n = 204$ ) were surveyed about characteristics of their agencies, themselves, and interorganizational relationships with each other. Key organizational and individual correlates of interagency relationships were examined using hierarchical linear models (HLM) analyses, supplemented by interview data. The strongest correlates included Adaptability, Efficacy, and Burnout. Implications for policy and practice are discussed.

**Keywords:** substance use; treatment; community corrections; interagency relationships; interorganizational relationships; interorganizational collaboration; implementation

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An estimated 4,751,400 adults were under probation or parole supervision at year end 2013 (Herberman & Bonczar, 2015). Drug abuse or dependence is a significant problem for this population with estimates indicating that at least 15% are opioid-dependent and 60% show signs of alcohol abuse (Polcin & Greenfield, 2003). At the time of their arrest, drug dependent or abusing State prisoners (48%) were also more likely than other inmates (37%) to have been on probation or parole supervision (Mumola & Karberg, 2007). Although the vast majority of criminal justice referrals to publicly funded drug abuse treatment programs in the United States are through community corrections, linkages between justice and treatment agencies are generally weak and referrals to EBPs are rare (Duffee & Carlson, 1996; Taxman, Cropsey, Young, & Wexler, 2007). Using an implementation science framework, this article examines key organizational and individual factors that influence interagency coordination between community corrections agencies (probation and parole) and community-based treatment providers.

### IMPLEMENTATION OF EBPS

Implementation can be characterized as specific and identifiable processes with the explicit purpose of facilitating change in individual and/or collective behavior (Aarons, Hurlburt, & Horwitz, 2011; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Proctor et al., 2009). The Consolidated Framework for Implementation Research (CFIR) identifies five sets of factors that influence the degree to which EBPs are implemented and sustained within organizations (Damschroder et al., 2009): the external environment (e.g., interagency communication and service coordination), the internal organizational environment (e.g., organizational structure and climate), the characteristics of the EBP being implemented (e.g., specific treatment services such as medication-assisted treatment [MAT]), the nature and quality of the implementation processes (e.g., training, supervision, and monitoring),

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and the characteristics of the individuals (e.g., demographics, experience) involved in the implementation process.

Extant studies have rarely tested entire conceptual models of implementation, such as the CFIR, due to substantial resource, logistical and measurement challenges (Aarons et al., 2011; Proctor et al., 2011). This article thus focused on three main components of the CFIR: the external environment, the internal organizational environment, and individual background characteristics. Although we do not examine the other two components (attitudes toward specific EBP and nature and quality of implementation processes) here, other studies suggest that those components also provide potential barriers or facilitators of EBP implementation (Friedmann et al., 2015; Roman, Abraham, & Knudsen, 2011) and are worthy of further study.

CJ-DATS (Criminal Justice Drug Abuse Treatment Studies) was a 5-year national multi-site collaborative research project funded by the National Institute on Drug Abuse (NIDA). In CJ-DATS, the research studies examined implementation of EBPs for treating drug abuse within criminal justice settings (Ducharme, Chandler, & Wiley, 2013). One of the CJ-DATS studies, Medication-Assisted Treatment Implementation in Community Correctional Environments (MATICCE), focused on improving linkages between community correctional agencies and community-based treatment providers as a means of strengthening the use of EBPs for treating alcohol- and opioid-involved offenders (Friedmann et al., 2013). In this article, we examine how key organizational and individual factors influence inter-agency relationships between probation/parole (P/P) agencies and community-based treatment providers.

MAT is an EBP that refers to any treatment for a substance use disorder that includes a pharmacologic intervention as part of a comprehensive substance abuse treatment plan with the ultimate goal of patient recovery with full social function (SAMHSA, 2013). MAT has been demonstrated to be effective in the treatment of alcohol dependence with Food and Drug Administration (FDA) approved drugs such as disulfiram, naltrexone, and acamprosate (Johnson, 2008), and in opioid dependence with methadone, naltrexone, and buprenorphine (Amato et al., 2005). Although MAT has long been recommended for use in criminal justice (CJ) and non-CJ involved populations (National Institutes of Health [NIH] Consensus Development Panel on Effective Medical Treatment of Opiate Addiction, 1998), current MAT availability in CJ settings is extremely limited (Pecoraro, Ma, & Woody, 2012).

Health service delivery for correctional clients often requires coordination between distinct agencies. Although many individuals with mental health needs or substance use disorders are under the supervision of community corrections, treatment services are rarely delivered by correctional staff (Duffee & Carlson, 1996; Friedmann et al., 2013; Friedmann et al., 2012). Rather, receipt of treatment services typically requires that individuals be referred to treatment providers in the community. Such referrals to care are dependent on the functioning of interorganizational relationships between community corrections and treatment organizations.

However, community correctional agencies report few existing linkages with local treatment programs (Duffee & Carlson, 1996; Friedmann et al., 2012). Probation and parole agencies generally do not perceive themselves as having an active service delivery role, and most believe that substance abuse treatment services, including MAT, can be easily obtained through local treatment providers (Friedmann et al., 2012). This lack of interorganizational linkages undermines efforts to identify and refer drug-involved offenders to local programs where MAT is available. Effective implementation of evidence-based treatment practices in

community correctional settings would thus appear to require more effective collaboration between P/P and community treatment providers (Friedmann et al., 2013).

### INTERORGANIZATIONAL RELATIONSHIPS (IOR)

IOR vary on a continuum ranging from the ad hoc, market-based delivery of services from local providers to the complete coordination of a fully integrated, centralized service delivery system (D'Aunno 1997; Friedmann, D'Aunno, Jin, & Alexander, 2000; Oliver 1990). Stronger interagency linkages, in theory, lower barriers to innovation and increase client access to services. Although some IOR consist of formally structured arrangements such as joint ventures, contracts, or memoranda of understanding (MOUs), a far greater amount of coordination between human service organizations occurs in the form of short-term, ad hoc efforts (Hughes & Weiss, 2007; Van de Ven & Walker, 1984; Welsh & Harris, 2013). These unstructured forms of IOR are important because of their pervasiveness and influence on client outcomes (Tsasis, 2009). Particularly important is the need to explore the reciprocal dynamics of stakeholder participation (e.g., contribution, commitment) and the management of communicative tensions, a perspective somewhat missing in the literature (Koschmann & Isbell, 2009).

Several major dimensions are critical for understanding the development of IOR between human service agencies such as P/P and community-based drug treatment providers (Van de Ven & Ferry, 1980; Van de Ven & Walker, 1984). First, in a pairwise (dyadic) relationship, resource dependence refers to the extent to which one agency (e.g., a community treatment provider) needs something from another (e.g., referrals) to achieve its organizational goals. Interagency coordination often develops in response to a perceived need for resources. A resource may include any valued transaction between agencies, whether tangible or intangible. Tangible resources include money, office space, and physical equipment, client or customer referrals, and perhaps joint problem-solving activities among agencies. Intangible resources may include consultation or technical assistance, public visibility, goodwill, and prestige that one agency may give or receive in its involvement with another. The perceived effectiveness of a relationship is defined as the extent to which the parties perceive that each carries out its commitments to the other and the degree to which each judges the relationship to be worthwhile, productive, and satisfying. Two levels of awareness are important: agency awareness and personal acquaintance. In a dyadic relation, agency awareness is the extent to which members of one agency are familiar with the services and goals of the other, and vice versa. Personal acquaintance refers to how long and how well the members of each agency know each other on a personal basis. Communication quality refers to the clarity and ease of sending and receiving messages between agencies involved in a dyadic relationship. Communication frequency is typically defined as the number of instances during a specific period of time that messages about the nature of the relationship or units of exchange are transmitted between members of two agencies through various media (e.g., written reports, letters, telephone calls, face-to-face discussions, and group or committee meetings).

### INFLUENCE OF ORGANIZATIONAL AND STAFF CHARACTERISTICS ON IOR

Although major conceptual models of implementation have emphasized IORs as critical influences on the implementation of EBPs, little research to date has explored or identified

the most important determinants of IOR between health and justice agencies (Friedmann, Taxman, & Henderson, 2007; Lehman, Fletcher, Wexler, & Melnick, 2009; McCarty & Chandler, 2009; Welsh et al., 2015). Such research has potentially important implications for improving IOR and facilitating implementation of EBP in justice settings.

There is some evidence that measures of organizational culture, resources, and climate may affect the quality of relationships between organizations. Organizational culture, which refers to the norms, values, and processes within organizations, can influence interorganizational relationships, particularly when norms and communication from leadership indicate support for interorganizational collaboration (Jolink & Dankbaar, 2010; Wichinsky, Thomlison, & Pennell, 2012; Yang & Maxwell, 2011). In addition to leadership and supervisory support, cultures that empower workers through job autonomy may be better positioned to form and maintain high-functioning interorganizational relationships (Palinkas et al., 2014; Palinkas et al., 2013; Tsisis, 2009). Organizations with greater resources may have advantages in building interorganizational relationships, partly because they are better able to bear the costs, including the time required for networking (Yang & Maxwell, 2011). However, organizations in which employees face significant time pressures in performing their work may be less willing to invest the time in building interorganizational networks (Jolink & Dankbaar, 2010). Finally, organizational climate, or employees' responses to the organizational environment, may be associated with the quality of interorganizational relationships. Indicators of organizational climate, such as employee job satisfaction and perceived job security, are linked to organizational capacity for interorganizational coordination (Jolink & Dankbaar, 2010; Smith & Mogro-Wilson, 2007; Wichinsky et al., 2012).

Organizational staff characteristics can also be important in determining the nature and quality of IOR. Education, level of professional experience, primary discipline, and race/ethnicity are often associated with openness toward adopting EBPs (Aarons, 2005; Aarons, Glisson, Hoagwood, Landsverk, & Cafri, 2010). Although there is considerable research describing IORs in a variety of fields, limited attention has been given to individual-level characteristics that may influence IORs and virtually no attention has been devoted to individual characteristics related to service coordination between community correctional agencies and treatment providers. Individual-level influences on IORs may include not only demographic factors (gender, age, race/ethnicity, education), but also the experiences and perceptions of staff related to their professional roles and duties, including adaptability, openness to change, communication skills, job satisfaction, stress, and burnout (Courtney, Joe, Rowan-Szal, & Simpson, 2007; Fuller et al., 2007; Klein & Sorra, 1996; Simpson, Joe, & Rowan-Szal, 2007).

In one of the few studies that has examined the influence of individual characteristics on interagency collaboration, Smith and Mogro-Wilson (2007) found that engagement in collaborative practices was more likely among staff who perceived more advantages to collaboration and who had greater confidence in their skills to collaborate (efficacy). Contrary to expectations (as reported in Glisson & Hemmelgarn, 1998), collaboration was higher in agencies where staff reported higher levels of role overload and emotional exhaustion. More generally, even in the presence of organizational factors favorable to interagency collaboration, staff expectations and experiences may undermine the success of such collaboration. Hence, there is a need to examine both organizational and individual characteristics as influences on IOR.

## HYPOTHESES

Probation and parole agencies, which usually do not provide substance abuse treatment themselves, are dependent on community providers to deliver these services (Latessa & Smith, 2011). Through interorganizational linkages between community correctional agencies and treatment providers, appropriate and timely exchanges of client referrals and resources can occur (Kaluzny, Zuckerman, & Rabiner, 1998). However, little is currently known about the factors that influence these interagency relationships. Based on our review, we hypothesize that key organizational factors (e.g., staffing, leadership, support, communication) and individual staff characteristics (e.g., efficacy, burnout, and adaptability) will predict five dimensions of IOR between community correctional agencies and community treatment providers: resource dependence, effectiveness of relationship, agency and personal awareness, quality of communication, and frequency of communication. Such variables may play critical roles in the implementation of EBPs that cut across health and justice agencies.

## METHOD

### PARTICIPANTS AND DESIGN

#### Sites and Study Populations

Nine CJ-DATS Research Centers (RCs) invited P/P agencies, representing 20 geographical catchment areas in a dozen states and U.S. territories, to partner in the study. One or more community-based MAT providers (typically two per site) were selected by the P/P agency from a pool of local providers. If a P/P agency did not directly refer clients to any community provider that currently offered MAT services, RC staff helped identify local MAT providers who were eligible to receive referrals. P/P agencies rarely made direct referrals to MAT or any other type of treatment. Most P/P agencies contract with outside agencies that perform drug and alcohol assessments. An officer may request an assessment based on screening criteria such as a drug charge, a positive drug test, and/or an intake interview (if substance abuse is suspected). Subsequent recommendations for treatment by the provider might or might not include MAT.

Participants included P/P and treatment provider personnel from both supervisory and front line (e.g., probation officers, treatment counselors) positions. All procedures pertaining to human subjects were reviewed and approved by each RC's Institutional Review Board (IRB), and all participants provided written informed consent.

#### Data Collection Procedures

In consultation with P/P and treatment partners, RCs identified and recruited relevant personnel from both types of agencies to participate. Key members from both agencies (8-12 per site) formed a local change team as part of an Organizational Linkage Intervention (OLI; for further details, see Friedmann et al., 2013). Surveys assessing participant demographics and experience, organizational characteristics, and IOR were administered to P/P and treatment personnel at baseline (prior to any intervention).

## MEASURES

### Dependent Measures

The 20-item IOR survey was adapted from a well-validated instrument designed by Van de Ven and Ferry (1980) to measure dyadic relationships between human service agencies. At each site, the IOR survey was administered at baseline to P/P supervisors and staff and to treatment agency counselors, supervisors, and managers. All scales except Frequency were 5-point Likert-type scales (e.g., 1 = *not at all*; 5 = *very much*). Resource Dependence (5 items,  $\alpha = .83$ ) assesses client referrals, information exchanges, and funding flows between agencies (e.g., "To what extent does probation/parole send clients with alcohol or opioid problems to the local treatment provider?"). Perceived Effectiveness of Relationship is a 4-item scale ( $\alpha = .94$ ) that assesses how productive and worthwhile the respondent feels the relationship with the other agency is (e.g., "To what extent do you believe the relationship between P/P and this treatment agency is productive?"). Agency and Personal Awareness is a 3-item scale ( $\alpha = .87$ ) that asks how familiar the respondent is with the other agency and its personnel (e.g., "How well informed are you about the specific goals and services that are provided by this treatment agency?"). Quality of Communication (3 items,  $\alpha = .67$ ) asks the respondent how easy it is to reach staff in the other agency and how useful such interactions are (e.g., "When you have wanted to communicate with persons in this treatment agency, how much difficulty have you had in getting in touch with them?"). Frequency of Communication (5 items,  $\alpha = .84$ ) asks respondents how often they have had different types of communication (e.g., phone, email, face-to-face) with personnel in the other agency. Items for this subscale used 9-point Likert-type scales (0 = *zero times during the past 6 months*, 1 = *1 time during the past 6 months*, 2 = *2 times, or about every 3 months*, 3 = *3 times, or about every 2 months*, 4 = *about every month, or 6 times*, 5 = *about every 2 weeks, or 12 times*, 6 = *about every week, or 24 times*, 7 = *about every 2-3 days*, 8 = *about every day*).

### Independent Measures

The independent variables included key staff and organizational characteristics known to influence the results of change efforts (e.g., Aarons et al., 2011; Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004; Lehman, Greener, & Simpson, 2002; Proctor et al., 2009). The Baseline Survey of Organizational Characteristics (BSOC), administered at baseline, provides a descriptive context for the organizational structure and climate of different agencies participating in the CJ-DATS studies. BSOC scales were derived from the Texas Christian University (TCU) Organizational Readiness for Change (ORC) and Survey of Organizational Functioning (SOF) instruments (Broome, Knight, Edwards, & Flynn, 2009; Lehman et al., 2002). The instrument includes 29 scales organized into five sections: (a) Needs/Pressures for Change, (b) Resources, (c) Staff Attributes, (d) Organizational Climate, and (e) Other (e.g., Support for EBPs). The scales from which the BSOC was derived have demonstrated good reliability and validity across multiple studies (see Broome et al., 2009; Garner, Knight, & Simpson, 2007; Lehman, Greener, Rowan-Szal, & Flynn, 2012; Lehman et al., 2002; Shortell et al., 2004; Taxman, Young, Wiersema, Rhodes, & Mitchell, 2007). Scores on the scales range from 10 to 50, and scores are generally calculated such that a higher score indicates a more positive appraisal of the construct. BSOC

scales, selected for analyses based on their relevance to prior research and theory, were separated into organizational and individual variables.

*Organizational variables.* Organizational climate variables are typically represented by aggregated ratings by staff of some characteristic of the unit or organization (e.g., “Staff members at your unit work together as a team”). The reference point here is the organization, not the individual respondent (Marsh et al., 2012). Prior to aggregating individual data to the site level, the degree to which individuals at a given site were substantially in agreement with one another was examined using the intraclass correlation (ICC; Hofmann, Griffin, & Gavin, 2000). The ICC is defined as the proportion of observed variance that can be explained by between-groups differences. Scales with small ICCs (e.g.,  $<.10$ ) suggest little consensus among respondents within a given site, whereas scales with higher ICCs suggest that staff ratings are more similar within a given site (Hofmann et al., 2000). Most ICCs were within acceptable ranges, although ICCs for treatment providers were often lower than ICCs for P/P (Table 1). Observed differences in ICCs across the two cohorts strongly suggest that the two samples should be analyzed separately using hierarchical linear models (HLM) techniques (Raudenbush, 1997; Spybrook & Raudenbush, 2009).

Staffing (five items,  $\alpha = .68$ ) assesses perceptions of staff resources (e.g., “Your unit has enough line staff to meet current client needs”). Leadership (six items,  $\alpha = .94$ ) taps perceptions of leadership behaviors (e.g., “Gets people to work together for the same goal”). Support (five items,  $\alpha = .80$ ), adapted from the Perceived Organizational Support Scale (Shortell et al., 2004), examines how organizational effectiveness is promoted (e.g., “Senior management in your organization strongly supports your work”). Autonomy (five items,  $\alpha = .60$ ) focuses on how much staff are allowed to exercise their own judgment when providing services to clients (e.g., “Line staff in your unit are given broad discretion in supervising their clients”). Communication (five items,  $\alpha = .80$ ) gauges perceptions of the communication climate of the organization (e.g., “Staff members always feel free to ask questions and express concerns in your unit”). The Support for Rehabilitation Scale (three items,  $\alpha = .82$ ) measures perceptions of correctional staff support for rehabilitation (Taxman, Young, et al., 2007; Young & Taxman, 2004). For example, one item states, “Correctional staff in this unit see the importance of the substance abuse treatment programs that staff provide to offenders under supervision.” Stress (four items,  $\alpha = .78$ ) estimates perceptions of pressures at the unit or facility where the respondent works (e.g., “The heavy staff workload reduces the effectiveness of your unit”). Equipment (six items,  $\alpha = .69$ ) asks about access to computers and quality of equipment at the unit or facility (e.g., “Equipment at your unit is mostly old and outdated”).

*Individual variables.* Individual variables asked participants to describe their own experiences within the organization. Efficacy (five items,  $\alpha = .68$ ) measures staff confidence in their own skills (e.g., “You are effective and confident in doing your job”). The Burnout Scale (six items,  $\alpha = .76$ ) assesses the degree to which an individual reports feelings of being depressed, tired, disillusioned, or overwhelmed by work (e.g., “You feel that it is a real effort to come into work”). Adaptability (four items,  $\alpha = .60$ ) measures one’s ability to adapt to a changing environment (e.g., “You are willing to try new ideas even if some staff members are reluctant”). Job Satisfaction (six items,  $\alpha = .78$ ) includes both broad assessments (e.g., “You are satisfied with your present job”) and satisfaction with specific job

**TABLE 1: Descriptive Statistics: Dependent and Independent Variables**

	IOR1 (Probation/Parole)					IOR2 (Treatment Providers)						
	<i>n</i>	<i>M</i>	<i>SD</i>	Minimum	Maximum	ICC	<i>n</i>	<i>M</i>	<i>SD</i>	Minimum	Maximum	ICC
Independent variables: Organizational												
<i>M</i> staffing	20	29.62	4.21	21.67	39.97	.27*	20	34.34	3.61	27.98	39.58	.12
<i>M</i> leadership	20	34.07	4.40	23.33	39.66	.11*	20	37.28	4.16	28.65	43.89	.10
<i>M</i> support	20	31.37	4.45	20.00	37.85	.15*	20	34.31	3.08	25.50	40.00	.13*
<i>M</i> autonomy	20	32.28	2.57	26.37	36.62	.14*	20	34.71	3.30	25.33	40.00	.06
<i>M</i> communication	20	30.95	3.49	22.56	37.08	.15*	20	33.33	3.41	26.20	39.20	.11
<i>M</i> support for rehabilitation	20	36.80	3.65	31.39	43.85	.16*	20	30.92	3.89	24.44	38.33	.06
<i>M</i> stress	20	35.55	3.73	28.40	41.25	.13*	20	29.85	4.21	20.62	39.27	.13
<i>M</i> equipment	20	34.57	4.09	21.93	39.34	.32*	20	34.30	4.56	19.22	39.66	.36*
Independent variables: Individual												
Race												
African American (0 = N, 1 = Y)	363	0.28	0.45	0.00	1.00		202	0.15	0.36	0.00	1.00	
White (0 = N, 1 = Y)	363	0.60	0.49	0.00	1.00		202	0.64	0.48	0.00	1.00	
Other (0 = N, 1 = Y)	363	0.12	0.33	0.00	1.00		202	0.21	0.41	0.00	1.00	
Hispanic (0 = N, 1 = Y)	352	0.17	0.37	0.00	1.00		198	0.21	0.41	0.00	1.00	
Gender (0 = F, 1 = M)	366	0.41	0.49	0.00	1.00		204	0.33	0.47	0.00	1.00	
Highest degree												
High school only (0 = N, 1 = Y)	306	0.06	0.24	0.00	1.00		181	0.09	0.29	0.00	1.00	
Bachelors/associates (0 = N, 1 = Y)	306	0.61	0.49	0.00	1.00		181	0.36	0.48	0.00	1.00	
Post graduate (0 = N, 1 = Y)	306	0.33	0.47	0.00	1.00		181	0.55	0.50	0.00	1.00	
Age												
Years in corrections/treatment	271	12.31	7.90	0.00	43.42		182	11.14	9.54	0.00	46.00	
Training needs	305	30.92	8.74	10.00	50.00		182	30.19	8.58	10.00	50.00	
Burnout	306	23.71	6.68	10.00	48.57		180	22.09	6.36	10.00	40.00	
Adaptability	306	39.90	5.30	20.00	50.00		182	39.91	5.02	22.50	50.00	
Satisfaction	306	38.76	6.72	16.67	50.00		182	40.02	6.41	21.67	50.00	
Efficacy	306	41.73	4.43	26.00	50.00		182	41.51	4.66	26.00	50.00	
Dependent variables												
Resource dependence	329	13.69	4.35	4.00	20.00		192	11.97	4.02	4.00	20.00	
Effectiveness of relationship	359	14.53	4.20	4.00	20.00		199	14.70	4.03	4.00	20.00	
Agency and personal awareness	358	9.59	3.33	3.00	15.00		198	8.79	3.14	3.00	15.00	
Quality of communication	355	10.60	3.00	3.00	15.00		197	10.55	2.57	4.00	15.00	
Frequency of communication	347	11.41	9.72	0.00	40.00		192	10.40	8.82	0.00	40.00	

Note. IOR = interorganizational relationships; ICC = intraclass correlation.

\**p* < .05.

elements (e.g., “You feel appreciated for the job you do”). Training Needs (seven items,  $\alpha = .87$ ) identifies job responsibilities for which more training would be helpful (e.g., professional licensure, basic computer skills). The demographic portion of the BSOC assessed both demographic (e.g., age, race, gender, education) and work-related (e.g., years of experience in corrections or treatment) factors (see Friedmann et al., 2013).

## ANALYSES

We hypothesized that key organizational and individual characteristics were significantly associated with five dimensions of IOR between P/P and community treatment providers: Resource Dependence, Perceived Effectiveness of Relationship, Agency and Personal Awareness, Quality of Communications, and Frequency of Communications. HLMs (SPSS v. 21 Generalized Linear Mixed Models) were used to examine the effects of individual and organizational characteristics on the five dependent variables. HLM techniques allow for estimation of random effects (e.g., between-site differences) and entry of covariates at both the individual (L1) and site (L2) levels of analysis. In addition, HLMs do not require a balanced design; that is, they do not assume an equal number of observed occasions for all participants, and allow the use of all available data when estimating the effects (Hedeker, Gibbons, & Flay, 1994; Raudenbush & Bryk, 2002).

Variables entered at the individual level (Level 1) included demographics (e.g., age, gender, race) and individual-level BSOC scales (e.g., Efficacy, Burnout). Organizational-level BSOC scales (e.g., Support, Leadership) were entered at Level 2. For each dependent variable, trimmed models were developed to reduce the total number of possible explanatory variables. A “backward removal” strategy was used for this purpose. All variables were entered in each model and then removed one variable at a time, beginning with the variable that had the highest  $p$  value (Cohen & Cohen, 1983; Tabachnick & Fidell, 2013), until only variables with  $p < .10$  remained.<sup>1</sup> Overall model fit was examined by inspecting observed versus predicted residuals and examining goodness of fit indices (e.g.,  $-2$  log likelihood, Akaike, Bayesian).

## RESULTS

Initial analyses examined descriptive statistics for both P/P and treatment providers at baseline (Table 1). For the P/P cohort ( $n = 366$ ), the majority of respondents (61%) had a BA or associates degree; an additional 33% reported having an MA or PhD. The average respondent had spent an average of 12.3 years in their field. For the treatment provider cohort ( $n = 204$ ), the majority of respondents (55%) had an MA or PhD; 36% reported a BA or associates degree. The average respondent had spent an average of 11.1 years in their field of work. For both cohorts, respondents reported relatively high (i.e.,  $>38$  on the 10-50 BSOC scales) levels of Adaptability, Satisfaction, and Efficacy. Site-level variables (e.g., Staffing, Support, and Autonomy) for both cohorts were mostly in the moderate range (30-34 on the 10-50 BSOC scales).

Table 2 reports results from the HLM, while Table 3 summarizes the statistically significant coefficients for each cohort and each dependent variable. For the P/P cohort, the strongest correlates of interagency relationships with treatment providers were Efficacy and Burnout. Higher levels of Efficacy (i.e., confidence in ability to do one’s job effectively) significantly and positively predicted Resource Dependence, Effectiveness of Relationship, and Agency

**TABLE 2: HLM Results: Effects of Organizational and Individual Variables on Perceptions of Interorganizational Relationships**

	Probation/Parole Ratings of Treatment Providers (IOR1)																			
	Resource Dependence				Effectiveness				Awareness				Quality				Frequency			
	b	SE	t	p	b	SE	t	p	b	SE	t	p	b	SE	t	p	b	SE	t	p
<b>Fixed effects</b>																				
Hispanic (1 = Y, 0 = N)	1.17	0.71	1.66	.099	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Race (1 = Black, 0 = Other)	—	—	—	—	—	—	—	—	—	—	—	—	1.00	0.46	2.17	.031*	—	—	—	—
Education (1 = HS, 0 = Other)	—	—	—	—	—	—	—	—	—	—	—	—	-2.24	0.76	-2.94	.004*	-4.64	2.28	-2.03	.043*
Education (1 = BA, 0 = Other)	—	—	—	—	—	—	—	—	—	—	—	—	-1.17	0.38	-3.03	.003*	—	—	—	—
Years in corrections/Tx	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.02	1.75	.082	—	—	—	—
Efficacy	0.17	0.06	3.09	.002*	0.24	0.06	4.20	.001*	0.12	0.04	3.10	.002*	—	—	—	—	—	—	—	—
Adaptability	—	—	—	—	-0.13	0.04	-2.89	.004*	—	—	—	—	—	—	—	—	-0.16	0.10	-1.69	.092
Burnout	—	—	—	—	-0.09	0.03	-3.06	.002*	-0.53	0.02	-2.16	.032*	-0.06	0.03	-2.17	.031*	—	—	—	—
Satisfaction	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.17	0.08	2.19	.029*
M staffing (L2)	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.10	2.42	.025*	0.64	0.30	2.10	.049*
M support (L2)	—	—	—	—	-0.46	0.25	-1.84	.073	—	—	—	—	—	—	—	—	—	—	—	—
M rehabilitation (L2)	—	—	—	—	0.44	0.22	1.99	.056	—	—	—	—	—	—	—	—	—	—	—	—
M equipment (L2)	—	—	—	—	0.33	0.16	2.02	.055	—	—	—	—	—	—	—	—	—	—	—	—
<b>Random effects</b>																				
Site (L2)	4.98	2.03	2.45	.014*	3.78	1.65	2.28	.022*	3.06	1.21	2.53	.011*	2.14	0.95	2.25	.024*	21.09	9.10	2.32	.021*
Residual	13.38	1.22	10.94	.001*	12.37	1.00	12.33	.001*	8.19	0.66	12.29	.001*	6.66	0.62	10.77	.001*	71.98	5.98	12.04	.001*
Within-subjects variable	.72				.77				.73				.76				.77			
Between-subjects Variable	.27				.23				.27				.24				.23			

(Continued)

**TABLE 2: (continued)**

Treatment Provider Ratings of Probation/Parole (IOR2)																			
	b	SE	t	p	b	SE	t	p	b	SE	t	p	b	SE	p				
<b>Fixed effects</b>																			
Hispanic (1 = Y, 0 = N)	—	—	—	—	1.66	0.95	1.74	.084	—	—	—	—	1.00	0.60	1.67	.099	—	—	—
Race (1 = White, 0 = Other)	-1.40	0.67	-2.09	.038*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Race (1 = Black, 0 = Other)	—	—	—	—	3.55	1.07	3.33	.002*	—	—	—	—	1.47	0.63	2.31	.026*	—	—	—
Gender (0 = F, 1 = M)	—	—	—	—	—	—	—	—	—	—	—	—	-0.71	0.39	-1.83	.069	2.61	1.19	2.19
Age	—	—	—	—	—	—	—	—	—	—	—	—	0.03	0.02	1.70	.091	—	—	—
Burnout	—	—	—	—	0.12	0.06	2.11	.037*	—	—	—	—	-0.07	0.03	-2.19	.030*	0.29	0.11	2.52
Adaptability	0.12	0.05	2.24	.026*	0.19	0.06	3.13	.002*	—	—	—	—	0.09	0.04	2.10	.037*	0.43	0.12	3.58
Satisfaction	—	—	—	—	0.16	0.06	2.87	.005*	—	—	—	—	—	—	—	—	0.24	0.11	2.18
M leadership (L2)	-0.35	0.18	-1.92	.068	-0.39	0.14	-2.67	.014*	—	—	—	—	—	—	—	—	-1.04	0.43	-2.39
M support (L2)	0.77	0.24	3.18	.005*	0.51	0.18	2.77	.011*	—	—	—	—	—	—	—	—	—	—	—
M rehabilitation (L2)	—	—	—	—	0.48	0.12	3.84	.002*	—	—	—	—	—	—	—	—	0.60	0.31	1.92
M communication (L2)	—	—	—	—	—	—	—	—	0.31	0.12	2.67	.017*	—	—	—	—	1.52	0.49	3.12
<b>Random effects</b>																			
Site (L2)	4.85	2.19	2.21	.027*	1.47	1.15	1.28	.201	2.34	1.00	2.34	.020*	0.57	0.44	1.30	.192	15.08	8.32	1.81
Residual	9.69	1.13	8.55	.001*	10.87	1.30	8.38	.001*	8.37	0.64	13.05	.001*	4.97	0.59	8.30	.001*	46.31	5.44	8.51
Within-subjects variable	.67				.88				.78				.90						
Between-subjects variable	.33				.12				.22				.10						

Note. HLM analyses were conducted with SPSS v. 21 Generalized Linear Mixed Models (GLMM). A "backward removal" strategy was used: All predictors were entered in each model, and then we removed one variable at a time, beginning with the predictor that had the highest *p* value. This process continued until only variables with *p* < .10 remained. HLM = hierarchical linear models; IOR = interorganizational relationships; HS = high school; L2 = Level 2 (site level).  
\**p* < .05.

**TABLE 3: Summary of Significant Correlates From HLM Analyses**

	Resource Dependence	Effectiveness of Relationship	Agency and Personal Awareness	Quality of Communication	Frequency of Communication
Probation/parole ratings of treatment providers (IOR1)					
Race (African American)				+	
Efficacy	+	+	+		
Adaptability		-			
Burnout		-	-	-	
Education (HS only)				-	-
Education (BA or associate)				-	
Satisfaction					+
M staffing (L2)				+	+
Treatment provider ratings of probation/parole (IOR2)					
Race (White)	-				
Race (African American)		+		+	
Gender (Male)					+
Satisfaction		+			+
Burnout		+		-	+
Adaptability	+	+		+	+
M leadership (L2)		-			-
M support (L2)	+	+			
M rehabilitation (L2)		+			
M communication (L2)			+		+

Note. All effects shown were statistically significant at  $p < .05$ . The “+” or “-” sign indicates the direction of effect. HLM = hierarchical linear models; L2 = Level 2 (site level); IOR = interorganizational relationships; HS = high school.

and Personal Awareness. Burnout negatively and significantly predicted Effectiveness of Relationship, Agency and Personal Awareness, and Quality of Communication. Higher satisfaction correlated significantly with frequency of communication, while lower levels of Education were associated with lower levels of perceived Quality and Frequency of Communication. Higher levels of mean Staffing were associated with higher levels of perceived Quality and Frequency of Communication with the treatment agency.

For the treatment provider cohort, the strongest correlates of interagency relationships with P/P were Adaptability and Burnout. Adaptability positively and significantly predicted Resource Dependence, Effectiveness of Relationship, Quality of Communication, and Frequency of Communication. Burnout positively and significantly predicted Resource Dependence and Frequency of Communication, but negatively predicted Quality of Communication. Other significant predictors included Satisfaction (which positively predicted Effectiveness of Relationship and Frequency of Communication), mean Leadership (which negatively predicted Effectiveness of Relationship and Frequency of Communication), mean Support (which positively predicted Resource Dependence and Effectiveness of Relationship), and mean Communication (which positively predicted Agency and Personal Awareness and Frequency of Communication). Race and gender also had some bearing on the results. White respondents were less likely to perceive high levels of Resource Dependence; Black respondents perceived higher levels of Effectiveness of Relationship and Quality of Communication. Males reported more frequent communication with P/P than females.

Across both cohorts, the individual-level variables accounted for greater percentages (67%-90%) of the explained variance in the HLMs than the organizational variables (12%-33%). The organizational variables were somewhat more likely to reach statistical significance for the treatment providers (seven significant coefficients) than for P/P (two significant coefficients), although organizational (L2) results for treatment providers should be treated with caution due to the somewhat lower ICCs reported in Table 1.

## DISCUSSION

The findings of this study contribute to a limited body of research on IOR between community correctional agencies (P/P) and community drug treatment providers. Although interagency coordination has been identified as a key factor influencing implementation of EBPs across health and justice agencies, little prior research has examined the factors that shape such relationships. The hypothesis that interorganizational service coordination between these agencies was associated with key organizational and individual factors was supported, although the results differed somewhat for the two cohorts.

For P/P officers, two key individual variables, Efficacy (+) and Burnout (-), were the strongest correlates of interagency coordination with treatment providers. Lower levels of Education were associated with lower Quality and Frequency of Communication, as was Mean Staffing—the only organizational-level variable that significantly predicted IOR for P/P officers. P/P officers may also desire more effective and timely communication with treatment providers about their clients (Welsh et al., 2015), although provider concerns about client confidentiality also need to be addressed (Petrilla, 2007).

Results of the present study are consistent with previous findings that the organizational cultures of correctional agencies are associated with their use of evidence-based treatment

practices ([Friedmann et al., 2007](#); [Henderson, Taxman, & Young, 2008](#); [Henderson, Young, Farrell, & Taxman, 2009](#)). Because the differing organizational cultures of treatment and P/P agencies are reinforced through structures of education, training, and socialization, professional role orientations of P/P officers may also be important influences on interagency coordination with treatment providers. Probation and parole officer professional orientation refers to attitudes toward offenders and interactions with offenders ([Whitehead & Lindquist, 1992](#)). Role conflict may emerge due to inconsistencies in three functions of offender supervision: (a) to enforce the legal requirements of supervision (the “law enforcement” role), (b) to assist the offender in successful community adjustment (the “social worker” role), and (c) to carry out the policies of the supervising agency (the “bureaucrat” role; [Clear & Latessa, 1993](#); [Hepburn & Albonetti, 1980](#)). Although some believe that role integration is possible, others believe that role conflict is inevitable ([Sigler, 1988](#)) and increases the likelihood of burnout, absenteeism, and turnover ([Whitehead, 1984](#)). Because agencies vary in their support for different role orientations, organizational culture is a key influence on professional role orientations ([Clear & Latessa, 1993](#)).

For treatment providers, the strongest individual correlate of IOR with P/P was Adaptability (+), which significantly predicted four of the five IOR dimensions. Burnout significantly predicted three of the IOR dimensions, but contrary to expectations, it was positively associated with two of them (Effectiveness of Relationship, and Frequency of Communication). This counterintuitive finding is consistent with results reported by [Smith and Mogro-Wilson \(2007\)](#), where interagency collaboration between child welfare and substance abuse treatment agencies was higher in agencies where staff reported higher levels of role overload and emotional exhaustion. Although the cross-sectional nature of the data from the present study cannot disentangle causal direction, it is likely that motivations for interagency communication differ for the two cohorts. Treatment providers who experience high levels of burnout may be more motivated to reach out to their P/P colleagues to help solve their clients’ problems. Another possibility is that treatment providers who persistently make efforts to promote collaboration with P/P staff become more burned out, partly as a result of those efforts.

For treatment providers, organizational variables were more influential than for P/P officers. Mean Support and mean Communication were each positively associated with two dimensions of IOR, and mean Leadership negatively predicted Effectiveness and Frequency. The negative findings for Leadership could be particular to the programs sampled in this study (mainly non-profit, community-based treatment providers), but it may also be the case that staff in treatment programs with poor leadership see an opportunity or perhaps even a necessity to collaborate with staff from other organizations as a way to leverage resources for their clients. The role of leadership certainly deserves further examination as an influence of interagency coordination between P/P and treatment providers.

In both cohorts, individual-level variables accounted for greater percentages of explained variance than organizational variables. Similarly, [Smith and Mogro-Wilson \(2007\)](#) found that most of the variation in interagency collaboration for child welfare–substance abuse treatment partnerships (74%) was accounted for by individual rather than by organizational variables, suggesting that successful interagency collaboration depends more heavily on individual characteristics than organizational climate. Organizational climate variables, however, explained significant variation in IOR above and beyond that afforded by individual-level variables, suggesting that “healthier” organizations (e.g., stronger intraorganizational support,

staffing, and communication) can definitely help facilitate interagency coordination between treatment providers and P/P agencies.

#### IMPLICATIONS FOR RESEARCH AND PRACTICE

Conceptual models of implementation (e.g., Aarons et al., 2011; [Damschroder et al., 2009](#); Proctor et al., 2009) argue that successful implementation of EBPs often requires a coordinated, interagency effort to address service gaps experienced by shared clients. Few studies to date, however, have explicitly identified the factors most likely to influence interagency coordination between P/P agencies and community-based treatment providers. Such factors may play key roles in the implementation of EBPs.

Results suggested that P/P officers' confidence in their own skills (i.e., Efficacy) was strongly associated with more positive perceptions of interagency collaboration with community treatment providers. Staff "burnout" is a characteristic that can hinder implementation of EBPs. Staff in P/P agencies often report being overwhelmed with their own job responsibilities, such as managing large caseloads. Asking staff under these conditions to take on yet another task (establishing interagency contacts and procedures for exchanging information) without demonstrating the expected benefits (e.g., more effective supervision and better client outcomes) may create resistance and ultimately serve as a barrier to interagency coordination and implementation of EBPs.

Identifying and targeting key variables that can strengthen service coordination between P/P and treatment providers is important. For example, higher ratings of burnout by treatment staff were associated with higher ratings of frequency of communication and effectiveness of relationships with P/P. These findings suggest that, despite their reported burnout, treatment staff were highly invested in their clients and strongly desired to get them the help they needed. Including personnel that are highly invested in successful client outcomes as active contributors to change efforts may be one key to the successful implementation of EBPs across health and justice sectors. Similarly, results suggested that Adaptability was positively and strongly associated with treatment provider perceptions of interagency communication with P/P. Community treatment agencies may benefit from identifying key staff that embrace change and actively engage them in the roll-out of EBPs that require interagency collaboration with CJ agencies.

To facilitate implementation of EBPs, stronger mechanisms to build and sustain ongoing relationships between P/P and community treatment agencies are needed (Welsh et al., 2015). Most P/P officers had experienced little direct contact with treatment providers, and mechanisms for facilitating more focused, ongoing dialogue between these agencies would be useful (e.g., [Salerno et al., 2011](#)). Trainings offered by the Substance Abuse and Mental Health Services Administration (SAMHSA; 2013) and the Bureau of Justice Assistance (Miller, 2013) could help address constraints to systems coordination across health and CJ sectors. The concept of Recovery-Oriented Systems of Care (ROSC) also offers common denominators (e.g., shared mission, guidelines, and performance measures) to help enhance interagency communication between health and justice agencies (SAMHSA, 2014; Sheedy & Whitter, 2009). A ROSC is a coordinated network of community-based services and supports that is person-centered and builds on the strengths and resilience of individuals, families, and communities to achieve abstinence and improved health, wellness, and quality of life for those with or at risk of alcohol and drug

problems. Principles of ROSCs relevant to interagency communication include systems of care anchored in the community, integrated services, continuity of care, and partnership-consultant relationships (i.e., a model that focuses more on collaboration and less on hierarchy; Center for Substance Abuse Treatment, 2007).

Partners for Recovery (PFR), a SAMHSA initiative, has developed several resource guides and presentations to disseminate information about ROSC to broad audiences. The PFR initiative encourages the adoption of a public health approach to recovery that relies on data and EBPs, emphasizes prevention and wellness, applies interdisciplinary methods, and promotes building partnerships (SAMHSA, 2014). ROSCs have also been emphasized as a means of improving service coordination for justice-involved clients with substance use disorders. ROSC's holistic, systems-oriented approach to recovery requires an effective collaboration between the criminal justice system and all services, systems, and agencies contributing to the client's recovery (National Reentry Resource Center, 2011). Improved interagency communication and case management are key components for reducing redundancies and gaps in services.

#### LIMITATIONS

Due to the relatively small number of sites ( $n = 20$ ) in the present study, statistical power in HLM analyses at Level 2 (site level) was somewhat limited (Raudenbush, 1997; Spybrook & Raudenbush, 2009). Due to a shortage of prior research linking individual and organizational characteristics to interagency relationships between P/P and community treatment providers, we used a backward removal strategy to reduce the number of explanatory variables and increase statistical power. Although statistical regression techniques such as backward removal are useful in exploratory research intended to help guide further research, they are less useful for hypothesis testing due to the possibility of capitalizing on chance correlations or error within a given sample (Cohen & Cohen, 1983; Tabachnick & Fidell, 2013). Similarly, due to the cross-sectional nature of the data, we cannot infer causality or rule out the possibility that other, unmeasured variables may have influenced the results.

Dyadic measures of IOR, such as those used in this study, allowed us to control for potentially important individual-level variations in perceptions within a given organization (Van de Ven & Ferry, 1980). Social network analyses (SNA), in contrast, typically sample only one or two key respondents who are asked about an agency's relationships with multiple organizations in the local environment (e.g., Varda, Chandra, Stern, & Lurie, 2008). However, SNA could permit assessment of IOR between a greater number of local agencies involved with the screening, assessment, referral, and treatment of drug-involved probationers. Future studies should carefully weigh the benefits and costs of using different types of measures to assess IOR, and should also make greater use of mixed methods approaches to explore interagency dynamics (e.g., Palinkas et al., 2011, 2013, 2014).

Although this study focused on key dimensions of IOR as implementation outcomes (e.g., Damschroder et al., 2009; Proctor et al., 2009), it did not assess client outcomes such as treatment completion, relapse, or recidivism. Future studies could benefit from examining relationships between implementation outcomes (e.g., penetration, feasibility, and acceptability of EBP), service outcomes (e.g., timeliness, efficiency, patient-centeredness) and client outcomes (e.g., relapse and recidivism), although the resource and logistical

challenges of measuring all three types of outcomes in the same study are substantial (Aarons et al., 2011; Proctor et al., 2009, 2011).

As noted in the introduction, key factors influencing IOR between P/P and treatment providers were the focus of this article. Other CJ-DATS articles are further examining different aspects of EBP implementation in more detail (Ducharme et al., 2013; Friedmann et al., 2013), including examination of the effectiveness of a structured 12-month intervention on changes in attitudes toward MAT (Friedmann et al., 2015), changes in interagency cooperation (Pankow, Yang, Knight, & Lehman, 2014; Welsh et al., 2015), the functioning of multiagency change teams (Melnick, McKendrick, & Lehman, 2015), and cross-site fidelity (Stein et al., 2015).

## CONCLUSION

Interagency collaboration is an important but under-studied influence on the implementation of EBPs in health and justice settings (Ducharme et al., 2013; Friedmann et al., 2007; Lehman et al., 2009; McCarty & Chandler, 2009; Welsh et al., 2015). Functional coordination between community corrections and treatment agencies is important for the comprehensive management of drug-involved individuals under community supervision. Stronger IORs were related to greater Efficacy and less Burnout among P/P officers and to greater Adaptability among treatment providers. At the organizational level, Staffing, Support, and Communication were also associated with stronger interagency coordination. The factors influencing willingness and capacity to engage in productive relationships across agencies, especially those with disparate cultures, appear to be complicated but worthy of future study. Our findings suggest that future efforts to identify and enhance key determinants of interagency relationships between health and justice agencies should formulate and test implementation strategies at multiple levels (e.g., individual, group, organization, interagency). Such an approach is consistent with emerging models of implementation science (Aarons et al., 2011; Proctor et al., 2009; Tabak, Khoong, Chambers, & Brownson, 2012). Future studies should further identify and target key organizational and individual variables that facilitate successful interagency coordination, implementation of EBPs, and improved client outcomes.

## NOTE

1. For statistical regression techniques such as backward removal, most statisticians (e.g., Tabachnick & Fidell, 2013) recommend a more liberal threshold for retention than  $p < .05$  (e.g.,  $p < .10$  or  $p < .15$ ). Variables at  $p < .10$  often contribute to the explained variance and model fit, even though they may be non-significant in a particular sample. We cannot, however, assume zero measurement or sampling error in any one sample (i.e., other samples might yield different distributions and results).

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