Factors Associated with Interorganizational Relationships among Outpatient Drug Treatment Organizations 1990–2000

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Objective. To identify the factors associated with drug abuse treatment center participation in interorganizational relationships (IORs).

Data Sources. Three nationally representative samples of outpatient drug abuse treatment units surveyed in 1990, 1995, and 1999/2000 as part of the National Drug Abuse Treatment System Survey (NDATSS), stratified by public/private status, treatment modality (methadone or nonmethadone), and organizational affiliation.

Study Design. Probit analyses on 647 lagged treatment center-year observations from the years 1990 to 1995 with outcomes in 1995 and 2000, respectively. Standard errors were adjusted for clustering of center-year observations within centers.

Principal Findings. Centers with greater motivation to form IORs (e.g., as a result of client diversity or government revenue) were more likely to do so, as were centers with greater opportunities to form IORs (e.g., centers whose directors participated in policy making).

Conclusions. Both motivating and enabling factors promoted the formation of IORs by drug abuse treatment centers. Managed care also played a distinct role, in this case appearing to undermine interorganizational cooperation. Because IORs can improve access to care and quality, policy makers should consider using both incentives and support such as management training to promote IOR formation.

Key Words. Organizational affiliation, models, organizational, organization and administration

Much of health care policy now revolves around decisions about when and how to foster competition and cooperation, understanding that care providers typically offer the best services at the lowest prices when there is a blend of both factors. The current study focuses on the cooperative aspect of this balance, specifically within the substance abuse treatment sector. Interorganizational cooperation offers great promise for improving care delivery, especially for clients with complex needs such as those with chemical dependence. At the

same time, relationships with other providers inevitably entail risk and take up substantial staff time. What factors facilitate such alliances, despite these costs?

Cooperative arrangements among health care organizations can lead to improved access, enhanced service quality, and reduced costs. Recent analyses indicated that people living in areas with more public health collaboration reported fewer problems with access to care (Hendryx et al. 2002). In addition, evidence from case studies showed benefits for access to care from interorganizational coordination (e.g., Lambrew, Ricketts, and Morrissey 1993). Partners in clinical collaborations have also reported reductions in morbidity and mortality (Lasker 1997; Boex and Cooksey 1998). Finally, although findings about financial effects of interorganizational cooperation have been mixed (cf., Bazzoli et al. 2000), higher levels of coordination have sometimes been associated with subsequent performance gains (Nauenberg et al. 1999). Many participants in collaborations between public health and medicine have also cited cost-effectiveness as an outcome (Lasker 1997), and some health partnerships have used their leverage to reduce costs for the underserved (Shortell et al. 2002).

In the current study, we examine the factors associated with the formation of interorganizational relationships (IORs) by a particular type of health care organization—outpatient drug abuse treatment organizations. In this context, cooperative arrangements may help relatively small organizations meet a variety of medical, mental health, and social client problems that necessitate substantial coordination. Such resource leveraging is especially vital for substance abuse treatment, given severe capacity constraints in this sector (SAMHSA 2003).

CONCEPTUAL APPROACH

Oliver defines IORs as “the relatively enduring transactions, flows, and linkages that occur among or between an organization and one or more

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organizations in its environment" (Oliver 1990, p. 241). Within this broad definition, we focus on voluntary relationships in which two or more otherwise independent organizations jointly pursue goals (Longest 1990). We argue that two factors must be present for IORs to occur: motivation and opportunity (Eisenhardt and Schoonhoven 1996). Within these categories, the current study identifies specific factors predicting IOR formation by drug abuse treatment centers and thus makes two distinct contributions to the literature.

First, this study empirically tests the effects of a range of factors on IOR formation; we use a large national sample of organizations rather than relying on anecdotal information about managerial motivations (cf., Zuckerman et al. 1995). Second, by focusing on drug abuse treatment centers, these analyses broaden the range of organizations examined relative to cooperative strategies. Among health care service providers, drug abuse treatment facilities are generally smaller than acute care facilities; treatment emphasizes care seekers' behavioral change rather than provider interventions; and the populations served are stigmatized. These factors make the generality of findings from, for instance, hospitals, uncertain. At the same time, the societal importance of drug abuse mitigation makes it vital for policy makers and managers to ascertain what factors promote treatment centers' ability to leverage resources cooperatively.

HYPOTHESES

Motivations to Cooperate

By cooperating, organizations seek to achieve common strategic and learning goals at reduced individual cost (Harrigan 1986; Kogut 1988; Mays, Halverson, and Kaluzny 1998). For example, cooperation could include a joint venture with another treatment center to provide a particular type of treatment, a partnership with a social service agency to address a specific addiction problem or client type (e.g., pregnant substance abusers), or an alliance of treatment providers that jointly lobby state and federal policy makers to enhance substance abuse benefit packages or seek increased funding for treatment programs, among other objectives.

In general, two types of motivations may promote IORs. First, such cooperative relationships may be necessary to increase the range of services offered or markets served, given limits to the resources available to any one organization. Second, given competition and payers' emphasis on cost-effectiveness, we expect centers to form cooperative relationships both to reduce costs in actuality and to maintain the appearance of doing so.

Meeting Diverse Client Needs. Previous research has found that as organizations expand their breadth of services, they will be more likely to form IORs to manage the resulting interdependencies (Aiken and Hage 1968; Whetten and Aldrich 1979; Powell and Brantley 1992). In addition, organizations may form relationships to acquire client-related knowledge not easily transferred through arms-length transactions (Berg and Friedman 1977).

In the drug treatment field, these findings imply that centers serving clients with more diverse backgrounds and addictions will form cooperative relationships to meet the range of these clients' needs. For example, treatment centers with expertise in chemical dependency may cooperate with organizations that focus on mental health services or those providing social or medical services. Likewise, variation in client demographic characteristics may necessitate a variety of treatment center competencies (Mohr 1995). We therefore expect that centers whose clients are more diverse in terms of either demographics or addictions will be more likely to engage in IORs to acquire the necessary breadth of treatment competencies.

H1: Drug abuse treatment centers with more diverse client populations will be more likely to engage in IORs.

Pressures for Cost-Effectiveness. Cost-containment pressures from competitors and payers may also motivate treatment centers to form IORs as a means of improving cost-effectiveness through economies of scale (Stuckey 1983; Contractor and Lorange 1988; Hergert and Morris 1988; Moxon, Roehl, and Truitt 1988; Miller et al. 1995). For example, coalitions and associations may negotiate group purchasing discounts or hire staff who support member organizations in areas such as information systems or planning and lobbying efforts. Joint ventures and other partnerships can similarly pay for specialized resources that participating facilities otherwise could not afford. There is support for this view from a variety of industries. For example, the Bureau of Primary Health Care cites cost competition as a major reason for the formation of community health center-led networks (Bureau of Primary Health Care 2002). Previous studies in other sectors have also found that cost competition spurs cooperative relationships (Eisenhardt and Schoonhoven 1996; Mays, Halverson, and Kaluzny 1998).

H2: Drug abuse treatment centers facing greater pressure to reduce costs will be more likely to engage in IORs.

In addition to actual cost reduction, IORs may help organizations comply with key external actors' norms of both efficiency and cooperation. Noting the high

dependence of social service providers on their environments, Benson (1975) argues that symbolic compliance with powerful actors' normative expectations becomes a critical strategy: "In many instances, ideology becomes a substitute for technology in appeals for funds and authority" (p. 237). This is particularly applicable in fields such as drug treatment in which the core technologies are uncertain and the outcomes are difficult to measure (Hasenfeld 1984). Similarly, a study on AIDS services found that cooperation became part of agencies' "vocabulary of structure" in interactions with funders (Dill 1994).

Two powerful actors in drug abuse treatment centers' environments are managed care companies and the government, as each may provide vital revenues and client referrals. Units participating in managed care must demonstrate efficiency and low costs (Alexander and Lemak 1997a; Lemak and Alexander 2001; Lemak, Alexander, and D'Aunno 2001). Managed care organizations also often seek providers that can offer or facilitate a wide range of treatment, including medical and social services. Finally, the original "health maintenance" concept implies that providers must coordinate services effectively on behalf of members.

H3: Drug abuse treatment centers that participate in managed care will be more likely to engage in IORs.

State and federal government agencies are also major sources of external support for drug abuse treatment centers. Within the U.S. government, two central agencies are the National Institute on Drug Abuse (NIDA) and the State Offices of Substance Abuse (D'Aunno, Sutton, and Price 1991). Both explicitly endorse interagency cooperation as a means of improving cost-effectiveness (NASADAD 2002; NIDA 2004). Thus, we expect that greater reliance on government revenue will be associated with higher likelihood of IOR formation.

H4: Drug abuse treatment centers with greater dependence on government payers will be more likely to engage in IORs.

Opportunities to Cooperate

The motivation to form IORs, however, is not sufficient. There must also be opportunity to find potential partners and develop sufficient mutual trust to form relationships with them (Gulati 1995). Eisenhardt and Schoonhoven (1996) refer to this precondition of IORs as a "social position" and find (as have others, e.g., Whetten and Aldrich 1979; Whetten and Leung 1979) that

personal status, reputation, and social relationships predict interorganizational links. In the current study, we consider how centers' relationships with external actors may affect IOR formation by offering opportunities to learn about potential partners. In addition, we suggest that facility and director legitimacy may promote IORs by providing assurance of credibility.

Organizational Affiliations. New IORs occur within the context of previous interorganizational commitments (Zeitzi 1980), ranging from purely voluntary arrangements to ownership or management of one entity by another. Cook (1977) argues that preexisting ties may constrain entrance into new relationships. We might also imagine, however, that networking may become more likely as organizations develop cooperative skills and become better at obtaining benefits from these ties.

In fact, the empirical evidence is mixed. In a study of manpower agencies, Whetten and Aldrich (1979) found that staff participation in interagency cooperating bodies was unrelated to these agencies' total number of IORs. Schermerhorn and Shirland (1981) found that previous cooperative activity predicted hospitals' development of shared medical, but not ancillary, services. In a multi-industry analysis, however, Gulati (1995) found that organizations' previous histories of alliances predicted their formation of additional alliances.

We suggest that the nature of specific preexisting affiliations plays an important role in the possible formation of subsequent IORs. Existing affiliations may reduce member autonomy to form additional cooperative relationships (e.g., ownership by an entity whose agenda precludes other ties). Some preexisting ties may also reduce the need for additional ties by providing necessary resources, technical complementarity, economies of scale, or legitimacy.

We argue that tighter forms of affiliations with other types of service providers, such as ownership or management by other providers, will be associated with fewer additional IORs. More specifically, we expect that drug abuse treatment centers affiliated with hospitals or mental health centers will be less likely to form IORs because these "parent" organizations may provide resources that obviate the need for drug abuse treatment centers to seek additional resources. Further, centers will need to expend resources to manage relationships with parent organizations, leaving fewer resources (e.g., managerial time) left to pursue other IORs.

H5: Drug abuse treatment centers affiliated with hospitals or mental health centers will be less likely to engage in IORs.

The situation is more ambiguous relative to existing looser cooperative relationships, such as membership in coalitions, associations, partnerships, or joint ventures. There are fewer factors in these cases that would constrain treatment centers from forming additional IORs, and skills acquired in previous relationships may make newer ties easier to form. At the same time, even purely voluntary IORs may reduce centers' incentives to form additional ties, as existing IORs may meet centers' needs for a variety of resources and complementary technologies. On balance, we rely here on the closest available previous research (i.e., Gulati 1995) to predict that the presence of IORs that do not entail ownership or management by another entity will be positively associated with subsequent similar IOR formation.

H6: Drug abuse treatment centers with preexisting voluntary IORs will be more likely to engage in additional IORs.

Director Affiliations/Networking Activities. Another factor that might affect IORs is the affiliation and networking activity of center directors. This may occur in two ways. First, directors' public activities may signal their professional legitimacy to potential partners, which in turn may convey organizational merit. In a social context in which every actor knows each other well, each can directly assess the other's behavior. When actors do not have direct knowledge of each other, they often rely upon the focal actor's patterns of relations with others as indicators of performance and trustworthiness (Podolny 1994). The nature of existing social networks signals an organization's compliance with professional norms and thus its legitimacy to others (Coleman 1990).

Second, center directors who engage more actively in professional activities are likely to develop the types of interpersonal relationships with other directors previously found to encourage the formation of IORs (e.g., Baxter et al. 2002). In particular, face-to-face interactions are critical to developing the level of interpersonal trust necessary for organizational cooperation (Kanter 1996). Previous empirical studies provide some support for the logic outlined above. Aiken and Hage (1968) found that agencies serving the mentally retarded formed more joint programs when their staff members were more active in professional organizations. Likewise, Schermerhorn and Shirland (1981) found that the perceived availability of cooperative partners predicted hospitals' arrangements for shared ancillary (although not medical) services. Finally, although Whetten and Aldrich (1979) did not find manpower agencies' staff professional activity to be

associated with IORs, staff memberships in local voluntary organizations did predict such ties. On balance, then, it appears that staff members' external activities can facilitate entry into IORs.

H7: Drug abuse treatment centers whose directors spend more time on external relations will be more likely to engage in IORs.

Organizational Legitimacy. Organizational legitimacy may also increase the likelihood of IORs by attracting more potential partners. Both accreditations and licenses signal organizations' regulative legitimacy (Scott 2001), demonstrating that treatment centers are conforming to widely held rule systems for service provision. In addition, accreditation is a public symbol of compliance with health care's normative emphasis on quality improvement. Both external "seals of approval" may be especially important in drug abuse treatment, given its traditionally stigmatized role in the health care system. In an exploratory study of health organizations, Levine and White (1961) found that organizations highest in prestige indeed had the most cooperative activities. As a result, we expect that both accreditation and licenses will be associated with more subsequent IORs.

H8: Drug abuse treatment centers with greater organizational legitimacy will be more likely to engage in IORs.

Director Legitimacy. Finally, we expect staff, as well as organization-level legitimacy, to facilitate IORs. In the service sector, where it is difficult to evaluate technical quality on the basis of outcomes (Van de Ven and Garud 1989; Ruef and Scott 1998), symbolic legitimacy assumes particular importance. In the drug abuse treatment industry, there has been a traditional emphasis on former addicts, rather than credentialed professionals, helping addicts overcome their problems (D'Aunno, Sutton, and Price 1991). Given the dominance of the medical model in the health care sector as a whole, however (Hafferty and Light 1995), one way drug abuse treatment centers may signal their legitimacy is to have directors who have advanced degrees. This individual attribute indicates compliance with the medical models emphasis on credentials, and such legitimacy may facilitate entry into cooperative relationships with other health care facilities.

Some studies have supported the view that the social status of agency staff will affect IORs (Paulson 1976; Eisenhardt and Schoonhoven 1996). In the previously cited study of manpower organizations, however, staff members' professional training was not associated with IORs (Whetten and Aldrich 1979). Whetten and Aldrich's study is arguably the most relevant to

drug abuse treatment centers because manpower agencies are also “people processing organizations” (p. 252) whose production function consists of changing people and then facilitating their placement within the community. Therefore, we predict that:

H9: The professional status of drug abuse treatment center directors will be unrelated to agencies’ likelihood of engaging in IORs.

METHODS

Data

This study uses data from three nationally representative samples of outpatient drug abuse treatment units surveyed in 1990, 1995, and 1999/2000 as part of the National Drug Abuse Treatment System Survey (NDATSS). The NDATSS is a longitudinal program of research into the organizational structure, operating characteristics, and treatment modalities of such units in the United States (D’Aunno 1996). In the NDATSS, an outpatient substance abuse treatment unit is defined as a physical facility with resources dedicated primarily (> 50 percent) to treating individuals with substance abuse problems (including alcohol and other drugs) on a nonresidential basis. The sample was specifically designed to represent the wide variety of organizations that comprise the nation’s complex outpatient treatment system (Heeringa 1996). In each wave, the sample is stratified by public/private status, treatment modality (methadone or nonmethadone), and organizational affiliation (hospital, mental health center, other).

In 1990, 481 drug abuse treatment centers participated as part of a previously formed NDATSS longitudinal survey panel, for an 88 percent response rate. In 1995, staff recontacted units from the 1990 study and selected a systematic random sample from the 1994–1995 National Frame of Substance Abuse Treatment Programs. After screening and nonresponse, the total number of organizations completing interviews in 1995 was 618 (including 387 panel units), for a combined response rate of 86 percent. Staff followed a similar sampling process in 1999/2000, and 745 organizations completed interviews (including 489 panel units), for a response rate of 89 percent. Thus, across the two lagged waves, the total number of facility-year observations was 876. To test for bias because of survival status, we ran the 1990 model predicting 1995 IORs on only those units that survived through 2000 and compared the pattern of results with those for the same model run on the sample including those that did not survive through 2000. The pattern of

results was the same, indicating lack of bias because of survival across waves (Little 1993, 1994). Of these 876 observations, dependent variable data were present for 850. Among the predictor variables, the proportion missing out of 850 then ranged from 0 to 11 percent, averaging only 2.7 percent. Listwise deletion in the final model yielded a sample of 647.

Several steps were taken during instrument development and data collection to promote data reliability and validity. Prior to the survey, staff conducted an extensive review of the managed care and substance abuse treatment research literatures, site visits to several treatment units, and two pretests with nationally representative samples of approximately 20 units each. During survey administration, staff conducted consistency checks based on interview responses, thus enabling interviewers to use frequent probes and follow-up questions. In addition, study staff conducted internal consistency checks of key numbers (e.g., numbers of clients) and, if necessary, called respondents back to clarify responses and address problems. In short, the study staff used telephone survey procedures, which extensive research indicates will produce highly reliable and valid data (Groves et al. 1988).

After the data were collected, extensive reliability checks were performed within each survey. Results were also compared between surveys to further confirm validity. These checks revealed very high levels of consistency in the NDATSS data (Batten et al. 1992).

ANALYSIS STRATEGY

We used a multiple probit model to estimate associations between each predictor factor and the likelihood of IOR formation, controlling for all other predictors. The probit model accommodated the categorical dependent variable and allowed further accommodation for clustering. This technique uses a robust estimator that approximates maximum likelihood without making any assumptions about the nature of interdependence across facility-years, which was not a substantive focus (Scribney 2002). Instead, using the cluster option within probit adjusts the standard errors by decreasing the sample size to the number of independent observations (centers, rather than center-years). The result is an appropriately conservative testing of coefficients' statistical significance. Sample stratification variables (methadone, for-profit status, and hospital and mental health center affiliation) accounted for probability of entry into the study and for nonresponse (Heeringa 1996; Adams and Heeringa 2001).

Measures

Dependent Variable. We measured IORs using one measure indicating participation in any of four related types of relationships with other treatment units: coalitions, associations, partnerships, and joint ventures. Coalitions and associations are formed among similar organizations to promote their collective interests, most notably relative to the government, as well as to foster learning and economies of scale (Oliver 1990). Joint ventures are a specific type of partnership in which two or more organizations form a separate entity to pursue a common goal. The broader term “partnership” has been used synonymously with “alliance” to refer to any major cooperative relationship between two or more organizations (Lewis 1990).

There is a continuum of commitment from potentially very minimal involvement in associations to substantial investment in joint ventures (Barringer and Harrison 2000). However, even joint ventures are subordinate to their independent owners. We therefore aggregated these four types of IORs because of their commonalities: they are all lateral, joining like organizations (Zuckerman et al. 1995). They all seek to achieve common strategic and learning goals at reduced individual cost (Harrigan 1986; Kogut 1988). Finally, these IORs are all formal but loose forms of integration that allow participating centers to retain autonomy (Longest 1990).

Thus, the dependent variable in this research is equal to one for those units that joined a coalition or association with another treatment unit, formed a partnership, or entered into a joint venture with other treatment unit groups or organizations during the past 5 years.

Independent Variables. We included 15 predictors and 6 control variables. Specifically, we measured client diversity using three dispersion indices (client substance abuse dependencies, client age, client race/ethnicity). Dispersion indices for clients' substance abuse dependencies, ages, and race/ethnicity were calculated as follows:

$$DI = - \sum P_i \log P_i$$

where P is the proportion of the sample in a particular category (i). Similar to the coefficient of variation one would use for continuous variables, a dispersion index yields a higher value the greater the diversity among a treatment center's clients on a given attribute (Taagepera and Ray 1977). The categories of client substance abuse were alcohol, heroin, barbituates/sedatives, cocaine (excluding crack), crack, amphetamines, prescription drugs, marijuana, and

hallucinogens. This is a standard list of categories of substance abuse conditions used by federal government that captures the great majority of all patient problems. The client age categories used were <20, 20–29, 30–39, 40–49, 50–64, and 65+. The race/ethnicity categories used were black/not Hispanic, Hispanic/Latino, other nonwhite (including Native American), and white.

Pressures to reduce costs were measured using the director's perceptions of cost-related competition. We indicated managed care involvement for those organizations with clients in HMOs or PPOs. Reliance on government funding was operationalized as the proportion of unit revenues from federal, state, and local government sources. Medicaid pressures were measured as the percentage of total clients covered by Medicaid. Organizational affiliations were measured by a variable equal to one if the facility had either an affiliation with or was owned by a hospital or mental health center; the previous formation of the same more purely voluntary IORs reflected by the dependent variable—coalitions, associations, partnerships, and joint ventures—was collectively included as an additional predictor. Director networking was measured by indicators of director time spent with professional associations and in state and local policy making. Organizational legitimacy was measured as whether or not the unit had JCAHO accreditation and the number of licenses held. Director legitimacy was measured by an indicator of the director's professional status. We also included the following control variables: organizational size (number of clients), age (years since founding), private for-profit and private not-for-profit ownership status, percent of clients with multiple drug problems, and whether or not the unit provided methadone treatment services.

RESULTS

Descriptive Results

Summary descriptive statistics are presented in Table 1. In our sample, on average 70 percent of all drug treatment centers entered into IORs during the periods 1995–2000. For those variables with bivariate correlations above 0.40, we conducted further analyses of tolerance levels and found them to be acceptable (all above 0.2).

Regression Results

Model results are displayed in Table 2 and summarized below. We found some evidence that drug abuse treatment centers with more diverse client

Table 1: Descriptive Statistics*

	<i>Mean</i>	<i>SD</i>	<i>Minimum</i>	<i>Maximum</i>
Interorganizational relationship†	0.70	0.46	0.00	1.00
Diversity client drug problems‡	1.49	0.36	0.00	2.10
Diversity client ages‡	1.30	0.30	0.00	1.78
Diversity client race/ethnicity‡	0.55	0.33	0.00	1.10
Cost competition	12.07	4.46	3.00	25.00
Participation†	0.75	0.43	0.00	1.00
Government revenue (log)	11.07	4.11	0.00	16.25
% clients covered by Medicaid	22.90	29.05	0.00	100.00
Hospital affiliation§	0.17	0.38	0.00	1.00
Mental health center affiliation§	0.23	0.42	0.00	1.00
Existing IORs	0.62	0.48	0.00	1.00
Director hours spent w/professional associations (log)	0.92	0.58	0.00	3.71
Director hours spent on local/state policy making (log)	0.92	0.70	0.00	3.26
JCAHO accreditation†	0.23	0.42	0.00	1.00
Number of licenses	1.72	1.04	0.00	5.00
Director is a professional†	0.72	0.45	0.00	1.00
Size—number of clients (log)	6.18	0.97	2.40	9.21
Age—years since founding	14.11	8.82	0.00	54.00
Private for-profit ownership¶	0.09	0.28	0.00	1.00
Private not-for-profit ownership¶	0.64	0.48	0.00	1.00
% clients with multiple drug problems	68.01	29.34	0.00	100.00
Methadone unit†	0.28	0.45	0.00	1.00

Notes:

* $n = 647$.

†Yes = 1, No = 0.

‡Dispersion index.

§Dummy coding—freestanding or other affiliation is the referent category.

¶Dummy coding—public ownership is the referent category.

IOR, interorganizational relationship.

populations were more likely to engage in IORs (**H1**). Specifically, units serving more racially diverse client populations were more likely to form IORs ($p < .05$). There was no significant relationship between the diversity of client drug problems or client ages and the likelihood to engage in IORs.

We did not find support for our hypothesis (**H2**) that drug abuse treatment units facing more pressures to reduce costs would be more likely to engage in IORs.

There was some evidence that drug abuse treatment facilities used IORs to respond to proefficiency expectations of payers. Contrary to our hypothesis (**H3**), managed care participation was negatively associated with the probability of forming new IORs ($p < .05$). Our hypothesis (**H4**) suggesting that drug

Table 2. Probit Model Predicting Interorganizational Relationships among OSAT Units 1990–2000†

	<i>Coefficient</i>	<i>SE</i>	<i>Significance</i>	<i>95% Confidence Interval</i>	
H1: Diversity client drug problems‡	0.037	0.170		– 0.296	0.369
H1: Diversity client ages‡	0.019	0.189		– 0.351	0.389
H1: Diversity client race/ethnicity‡	0.341	0.170	*	0.008	0.675
H2: Cost competition	0.006	0.013		– 0.019	0.032
H3: Managed care participation§	– 0.275	0.131	*	– 0.531	– 0.018
H4: Government revenue (log)	0.058	0.016	***	0.026	0.089
H4: % Clients covered by Medicaid	0.001	0.002		– 0.003	0.005
H5: Hospital affiliation¶	0.208	0.213		– 0.210	0.626
H5: Mental health center affiliation¶	– 0.407	0.134	**	– 0.670	– 0.143
H6: Existing IORs	0.235	0.120		0.000	0.471
H7: Director hours spent with professional associations (log)	– 0.223	0.094	*	– 0.407	– 0.038
H7: Director hours spent on local/state policy making (log)	0.202	0.080	*	0.046	0.359
H8: JCAHO accreditation§	– 0.138	0.183		– 0.497	0.220
H8: Number of licenses	0.168	0.100		– 0.028	0.365
H9: Director is a professional§	0.058	0.129		– 0.194	0.311
Control variables					
Size—number of clients (log)	0.004	0.065		– 0.124	0.131
Age—years since founding	0.009	0.008		– 0.007	0.026
Private for-profit ownership	– 0.394	0.266		– 0.915	0.127
Private not-for-profit ownership	– 0.059	0.135		– 0.324	0.206
% clients with multiple drug problems	– 0.002	0.002		– 0.006	0.002
Methodone unit§	– 0.067	0.227		– 0.512	0.377
Constant	– 0.522	0.515		– 1.532	0.488

Notes:

† $n = 647$, Wald $\chi^2 = 86.78$, Pseudo $R^2 = 0.106$;

*** $p < .001$; ** $p < .01$; * $p < .05$.

‡Dispersion index.

§Yes = 1, No = 0.

¶Dummy coding—freestanding or other affiliation is the referent category.

||Dummy coding—public ownership is the referent category.

IOR, interorganizational relationship.

abuse treatment units with greater dependencies on government funding would be more likely to engage in IORs was partially supported. Specifically, there was a significant, positive relationship between government revenues and IOR activity ($p < .001$). There was no relationship, however, between percent of clients covered by Medicaid and IORs.

We found some support for our prediction that units affiliated with hospitals or mental health centers would be less likely to engage in IORs (H5). Specifically, drug treatment centers affiliated with mental health centers were less likely to become involved in IORs ($p < .01$). There was no relationship between hospital affiliation and IOR activity. H6, that previous experience with similar IORs would be positively associated with IOR formation, was not supported at a statistically significant level.

There was inconsistent evidence across two dimensions for our prediction that drug treatment centers whose directors more actively networked would be more likely to engage in IORs (H7). The number of hours that the director spent on professional association activities was negatively associated with IORs ($p < .05$), while director involvement in local and state policy making was positively associated with IOR formation ($p < .05$).

There was no support for our prediction that organizational legitimacy would affect IOR activity in this sector (H8). Neither JCAHO accreditation nor the number of licenses held by drug treatment units was associated with the likelihood that units engaged in IORs. Similarly, in this case as we had predicted, there was no relationship between the professional status of drug abuse treatment center directors and the likelihood that the center would engage in IORs (H9).

DISCUSSION

As drug abuse continues to affect individuals, families, and communities, the need for treatment will remain urgent. At the same time, current federal and state financial trends portend continued and perhaps even increasingly scarce resources. Because of the promise of interorganizational cooperation for improving access, quality, and cost-effectiveness of care (Miller et al. 1995; Zuckerman et al. 1995; Lasker, Weiss, and Miller 2001; Shortell et al. 2002), understanding what factors lead to such relationships within the drug abuse treatment sector may thus have vital implications for policy makers and managers.

Overall, we find support for the argument that both motivation and opportunity promote the formation of IORs. Treatment centers serving more racially diverse client populations were significantly more likely to form cooperative IORs than were other treatment centers. At the same time, diversity in client drug-related problems and age were not related to IOR formation. Why did race matter when the nature of the addictions did not? One might

speculate that in this analysis, racial diversity served as a marker for urbanicity, given the disproportionate presence of nonwhite populations in cities in the United States. However, when a variable indicating the level of urbanicity was included in the analysis, it was nonsignificant, while client racial diversity remained strongly significant. Thus, it appears that something about the racial/ethnic composition of center clients in and of itself was associated with the propensity to form IORs. Perhaps more racially diverse client populations necessitate more varied support services, which treatment centers seek to access through IORs.

Cost-based competition was not related to IOR formation. Competition introduces strategic uncertainty into the organizational environment, to which we predicted drug abuse treatment centers would respond similarly to for-profit firms, by forming relationships that might buffer them (Pfeffer and Salancik 1978). On the other hand, competition was not negatively associated with the rate of IOR formation either. This implies that procompetitive public policies in the drug abuse treatment sector would not undermine system coordination.

Interestingly, managed care, which tends to be associated with cost-based competition, was itself negatively associated with the formation of cooperative ties. Perhaps managed care creates increased administrative burden for already understaffed treatment centers, leaving them with less time for longer term planning such as that involved in IOR formation firms (Alexander and Lemak 1997b; Galanter et al. 2001).

Conversely, greater levels of government revenues were positively associated with the probability of IOR formation. Moreover, it was the level of government revenue as a whole, and not the proportion accounted for by Medicaid, that predicted IORs. This may indicate an overall government procooperation norm that is not found exclusively in programs for the poor. Greater levels of government funding may also provide more stable revenue streams that support the staff time necessary to build relationships with other organizations.

We had noted that preexisting IORs could be either positively or negatively associated with the probability of forming additional IORs. Drug abuse treatment centers that had existing affiliations with mental health centers were less likely than other treatment facilities to form additional relationships. This may indicate that some form of constraint occurs because of such ties or that existing IORs meet strategic needs for economies of scale or complementary resources. The presence of looser forms of IORs, including participation in coalitions, associations, partnerships, and joint ventures, was not significantly

associated with the addition of more of the same types of IORs. Together, these results provide more support for our argument that previous IORs may constrain treatment centers than for our prediction that cooperative skills thus gained would facilitate additional relationships.

Some types of interpersonal ties may facilitate IORs. In this study, director time devoted to professional associations was negatively related to IOR formation, whereas time spent on state or local policy making was positively associated with IORs. This implies that director visibility in regulative activities (through contributions to state and local policies) may be important as a predecessor to IOR development. Perhaps, treatment facility directors who are active in policy making are more aware of trends in substance abuse that make cooperation important. We are not sure, however, why professional association activity would actually be negatively associated with such relationships. Perhaps one-to-one relationships enable directors to coordinate informally with each other and thus substitute for formal IORs.

Finally, no indicators of legitimacy were associated with entry into IORs. Perhaps, personal ties matter more in this sector than do formal credentials. The nonsignificance of directors' professional status may also reflect the Alcoholics Anonymous model that predominates in substance abuse treatment, which validates personal experience with substance abuse and de-emphasizes academic credentials (D'Aunno, Sutton, and Price 1991).

Taken together, this study's results yield three important implications for policy makers in the drug abuse treatment sector. First, and perhaps most importantly, these results indicate that treatment centers that depend more heavily on government funding are more likely to participate in IORs. Policy makers may therefore be able to use the power that comes from funding treatment centers to promote collaborative interorganizational activity. For example, state agencies might require centers to engage in collaborative IORs in exchange for financial support. Licensing or accreditation could also be a mechanism to set standards for collaboration. The significant relationship between government funding and IOR formation may indicate that some policy makers are already following these approaches. More generally, policy makers may need to adopt a more systematic approach to promoting effective practices in the management of drug abuse treatment centers, including their use of IORs.

Second, the significant relationship between center directors' involvement with state and local policy making and IOR formation implies that policy makers can use their contacts with directors to promote IORs. As suggested above, center directors who are involved in policy making may be

more aware of the benefits of collaboration than directors who are not thus engaged. To the extent that this is true, policy makers may use their contacts with center directors to promote collaborative IORs. Perhaps, these efforts can start with management training and education programs aimed at the more politically involved treatment centers. At the same time, this pattern may indicate that more isolated or marginalized facilities may be further disadvantaged by having fewer opportunities to learn of IOR options through government connections. Policy makers might therefore want to take additional steps to involve these centers' directors in state and local initiatives. For instance, in the hospital sector, state hospital associations are particularly important to small facilities as conduits to the public policy process. Perhaps, government agencies might facilitate similar mechanisms in the substance abuse treatment sector.

Third, as noted above, policy makers need to monitor carefully the negative effects that managed care may have on centers' involvement in interorganizational collaboration. Policies to promote the integration of services in this sector may be needed to counteract the fragmentation that managed care seems to cause. For example, it might be useful to focus training and support for IORs in markets as managed care penetration increases.

These findings indicate that there are limits to generality across health sectors. Previous research indicates that the range of services that organizations provide affect the levels of cooperative activity (Aiken and Hage 1968; Molnar 1978; Powell and Brantley 1992). In this study, we found little evidence that such task complexity motivated IOR formation. This may be because drug abuse treatment centers tend to have relatively simple service lines despite the breadth of the problems they address. At this lower end of organizational complexity, increments may not have as much of an effect on IOR formation as we find for more complex organizations.

At the same time, the effects of government revenues indicate that pressures to improve effectiveness and efficiency have the same consequences in the drug abuse treatment sector as in other human services (Miller et al. 1995), international business (Contractor and Lorange 1988), and even the aluminum industry (Stuckey 1983). In health care, such procooperative pressures may be reinforced by additional normative influences such as private funders (Dill 1994), but may also be undermined by managed care.

In general, we need more rigorous empirical studies to test and refine the largely normative literature on interorganizational cooperation. The current study contributed toward this end by isolating a number of motivating and enabling factors related to IORs by drug abuse treatment centers. There were,

however, limitations to this study that future research should address. Using a lagged dependent variable strengthened our ability to make causal inferences. However, we must note that reverse causation is still possible. For instance, our data did not preclude the possibility that there was an enduring pattern in which centers with more IORs attracted clients with more diverse needs instead of, or in addition to, diverse client needs having precipitated IORs. Further, the dichotomous dependent variable did not distinguish between formation of single and multiple IORs. Our analyses may therefore have failed to capture differences in which factors lead drug abuse treatment centers to form a smaller versus larger number of IORs. For instance, it is possible that treatment centers tend to form single IORs to achieve symbolic compliance with expectations of powerful external actors (such as government payers), but initiate greater numbers of IORs for operational reasons (such as those related to client diversity). This study also did not address important related issues such as why agencies may exit IORs. Given the high failure rate of IORs (Weiner and Alexander 1998; Kalmbach and Roussel 1999), this is a significant omission. The analyses presented here examine IOR inception, but not the endurance of ties that may be necessary to improve service delivery. Future studies addressing these limitations can support better policies facilitating access to cost-effective drug treatment for all who need it.

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