INTERDEPENDENCE AND SIMILARITY: A DYADIC ANALYSIS OF RELATIONSHIPS BETWEEN SOCIAL SERVICE AGENCIES

Thesis for the Degree of M. A.
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ABSTRACT

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SOCIAL SERVICE AGENCIES

By

Kerry McBride

Increasingly the attention of students of organizations is shifting from intra-organizational phenomena to the dynamics and causes of inter-organizational relations. This paper takes a direct approach to the study of these relationships, using as the unit of analysis each pair of organizations. Data on 33 social service agencies (528 pairs of agencies) are analyzed.

Drawing on theory, concepts and methods from a number of areas--including the organizational literature, the Exchange perspective, and Sociometry--propositions are developed about interaction and cooperation between agencies. It is suggested that both similarity of agencies (in auspices, type of services offered, and age and social class of clients) and functional interdependence (agencies' need for each other's services to help their clients) are sources of interaction and cooperation between agencies. Interaction and cooperation are measured by sociometric-choice questions obtained in interviews with the head of each agency.

The results of the investigation support the propositions

that inter-agency interaction and cooperation are associated with similarity and functional interdependence. From these results, implications are drawn with respect to three theoretical areas: inter-organizational relations, the Exchange perspective, and the roles of similarity and interdependence in social interaction.

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By

Kerry McBride

A THESIS

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TABLE OF CONTENTS

1. DI

2. INT
INT

3. FUN

4. INT
AUS

5. INT
IN

6. FUN
OFF

7. INT
OFF

8. INT
OFF
DEP

9. FUNC
CLAS

10. INTE
CLAS

11. INTE
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LIST OF TABLES

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INTRODUCTION

The current interest in inter-organizational relations is the result of a combination of developments. The shift to an open-systems approach to organizations drew attention to the importance of the organization's environment, of which other organizations are a significant part (Emery and Trist, 1965). Meanwhile, the increasing specialization of social service agencies heightened the need for cooperation among agencies. Administrators began to receive demands from all sides--funding sources, parent bodies, and client groups--to improve the effectiveness of their programs by coordinating services. Thus, due to both theoretical and practical problems, many studies of inter-organizational relations focus on the conditions which either facilitate or hamper inter-organizational cooperation and coordination.

Theoretical Background

The problem, then, is to account for cooperation between social service agencies. Explanations of cooperation have been formulated in terms of standard organizational variables (Aiken and Hage, 1968), organizations' goals and philosophies (Miller, 1958), types of linkages

(Litwak and Hylton, 1972), set theory (Evan, 1965) and exchange of resources (Levine and White, 1961; White, Levine and Vlasak, 1971). The last, the Exchange perspective, is the most pertinent to this study.

Levine, White and Vlasak view cooperation as consisting of the exchange and re-distribution of resources. Organizations are interdependent in that each needs some resource(s) held by other organizations. These resources--which for social service agencies include clients, labor services, funds, equipment and information--are complementary. Each organization obtains the resource(s) it needs to complete its programs by bartering or exchanging with other organizations. Thus, interdependence is the cause of cooperation, and exchange is the process or mechanism through which it occurs (Levine and White, 1961; White, Levine and Vlasak, 1971).

Many writers (e.g., Evan, 1965; Thompson, 1967; Levine and White, 1961; Litwak and Hylton, 1970) view interdependence as a prime factor in inter-organizational cooperation. Others (Miller, 1958; Aiken and Hage, 1968; Baty, Evan and Rothermel, 1971) stress some sort of similarity between organizations as the important factor.

Which type of explanation is more appropriate for the study of relationships between social agencies? Interdependence (including the Exchange approach) assumes that the behavior of individuals and groups is primarily rational or calculating; that is, it is based on an economic model. Since social agencies are goal-oriented formal organizations, and are interdependent in terms of their services and

resources, one might expect them to operate in terms of such a model. However, since agencies are also social groups, an explanation in terms of social factors is equally appropriate. The auspices of an agency, the type of services it offers, and the type of clients it serves--all are sources of similarity or dis-similarity between two agencies. These similarities or dis-similarities may affect the degree to which agencies interact and cooperate with each other. Whereas most studies emphasize either similarity or interdependence as sources of cooperation between agencies, both factors will be considered herein.

Perhaps moving outside of the organizational literature will elucidate the association between these two explanatory factors and inter-agency interaction and cooperation. At least three major bodies of literature deal with the relative importance of similarity and interdependence. At the micro level, is the area of interpersonal attraction, particularly the study of dating and married couples. At the macro level, are Durkheim's concepts of mechanical and organic solidarity, and Hawley's ecological perspective.

At the level of interpersonal attraction the issue is whether it is similarities or differences which attract and hold people to each other. One way of resolving this issue is that people are drawn to others of similar social backgrounds but different personalities. For instance, studies of married couples show that the two people tend to have similar backgrounds (in religion, education and socio-economic

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position) but complementary psychological traits (Blood and Wolfe, 1960; Burgess and Wallin, 1953; Goode, 1963). So here we find that similarity is important for one kind of factor (background) and interdependence is important for another kind (personality).

In The Division of Labor (1949) Durkheim distinguishes between mechanical and organic solidarity. In mechanical solidarity, social cohesion results from similarity--individuals are alike, undifferentiated. Solidarity in such societies is "mechanical" and hence needs no explanation. In organic solidarity, on the other hand, individuals are differentiated and hence interdependent. Just as biological organisms are able to exist through the interdependence of organs with different functions, societies cohere through the interdependence of socially differentiated individuals. Durkheim considers these two types of "solidarity" basic principles of social organization, with one or the other predominating in different types of societies or groups.[1]

Hawley (1950) also devotes considerable attention to similarity and interdependence in his work on an ecological view of social organization and communities. He distinguished between commensalistic and symbiotic relationships. These terms have specialized meanings in ecology. Commensalistic organisms, which are usually of the same species, share food

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[1]Toennies' concepts of Gemeinschaft and Gesellschaft are similar to Durkheim's types of solidarity, with the emphasis on rural-urban differences (Toennies, 1940).

and other resources; they do not compete for resources within the group. Symbiotic organisms, typically of different species, depend on a common food source and compete with each other for it (e.g., different species of birds compete for the same worms). The interaction of symbiotic organisms can be attributed to their interdependence. The interaction of commensalistic organisms, however, can be attributed only to the fact that they are similar; they have common needs and do not compete with each other.

What can one conclude about the twin factors of similarity and interdependence in general? In marriage dyads both factors operate simultaneously; interaction is unlikely to occur unless the members of the dyad are both similar and interdependent. In Durkheim's theory of the types of societies one factor is the basis of solidarity at one point in time, while the other factor predominates at another time. Both factors are simultaneously important only at a temporary, intermediate stage in the historical process or within different sub-groups. In ecology, similarity is responsible for interaction within species but interdependence is responsible for interaction between species. Thus the two factors are operative in different contexts and only one of them is necessary for interaction to occur.

The type of interaction and cooperation that occurs between organizations seems to be intermediate between the intimacy of the marriage relationship and the competition

and cooperation of species and of societies, as described by Durkheim and Hawley. That is, organizations are at an intermediate level between these micro and macro levels. Hence the first question is whether interaction and cooperation between organizations occur only when both similarity and interdependence are present (as at the micro level) or when only one factor is present (as at the macro level). Propositions based on this question will be presented after the unit of analysis and concepts have been defined in greater detail.

Unit of Analysis

The relationships between any two entities, whether at the micro or macro level, can be viewed as the core of social interaction--the basic building blocks of social structures. Looked at in this way, social groupings are aggregates not just of individuals but also of pairs (that is, of the relationship of each pair). Since it is a basic unit of social structure, use of the pair or dyad as the unit of analysis in the study of social interaction should be fruitful. This paper will look at the interaction or transactions that occur between the members of each pair of social service agencies.

This approach draws on methods from three fields: sociometry, network analysis, and studies of marriage dyads. Most of this work focuses on relations between individuals, not between groups or collectivities (that is, relations at

the micro level). Moreover, studies of dyads (e.g., Blood and Wolfe, 1960) and sociometry usually emphasize psychological or socio-psychological variables such as happiness and popularity. This study, in contrast, deals with sociological variables at an intermediate level of analysis.

A number of techniques and ideas from the micro level are utilized in this investigation. Matrix methods come from the sociometric school (e.g., Moreno, 1956) and insights about the association between exchange and networks from Mitchell (1969). Of particular note are Coleman (1961) and Davis (1968) for methods which specifically treat pairs as the unit of analysis.

In the area of inter-organizational relations, Evan (1965) proposed a method for looking at inter-organizational relations in terms of sets or cliques of organizations. This method was employed in a study of faculty recruitment by Baty, Evan and Rothermel (1971). White, Levine and Vlasak (1971) discuss viewing inter-agency relations as exchanges or transactions between the two agencies in a dyad; but this work is theoretical, not empirical.

In short, the application of methods of dyadic analysis to inter-organizational relations and other macro level phenomena is a relatively new approach, and one that seems to offer considerable promise, although little empirical work has been done on it as yet.

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Definition of Concepts

Dependent Variables

Interaction. As the term is used in this study, interaction does not necessarily mean direct, face-to-face contact or activity between agencies. For example, interaction includes not only overt actions such as running joint programs, but also indirect interaction, such as being influenced by another agency or receiving funds from a common source. It means, basically, that the pair of agencies has a relationship. Since interaction is measured by sociometric choices, an agency must be aware of its connection with the other agency. Interaction without awareness is not measured.

Since a prime purpose of this analysis is to focus on the relationships between agencies, measures of three dimensions of these relationships were devised. The first, scope, measures the extensiveness of the relationship of each pair (for example, the number of different types of resources exchanged). The second, reciprocity, measures whether the relationship is mutual (for example, whether the members of a pair exchange the same resources, such as clients, with each other). The third, complementarity, indicates whether the members of a pair complete their own sets of resources by exchanging one type of resource for another (for instance an agency might exchange use of its staff for use of the facilities of another agency).

Cooperation. In this study two types of cooperation are considered. The first type, resource exchanges, involves the transfer of resources (clients, facilities, information and ideas, staff) between the agencies in each pair. The second type, joint efforts, involves activities (serving on boards, running programs, planning). A separate index is used for each type of cooperation.

Previous studies of inter-organizational cooperation use a variety of measures. In the Exchange approach, the focus is on resource exchanges rather than joint efforts; Levine and White (1961) refer to the exchange of clients, labor services, funds, equipment and information (all but funds are in the resource exchanges index used herein); White, Levine and Vlasak (1971) discuss primarily client referrals. Other writers, including Aiken and Hage (1968) and Reid (1970), include more extensive or intensive forms of cooperation, such as joint planning and joint programs (which are included in the second index, joint efforts). Thus, one reason for differentiating between the two types of cooperation is to facilitate comparison with other studies and to test aspects of the Exchange perspective.

Differentiation between the two types of cooperation is based mostly on the degree of "difficulty" they involve. The great difficulty of joint efforts, and the corresponding greater frequency of client referrals and information exchanges, is often mentioned in the literature (e.g.,

Aiken and Hage, 1968). The difficulty of joint efforts is probably due to the need for formal arrangements and long-term commitments.

The three dimensions of inter-agency relationships described for interaction--scope, reciprocity and complementarity--will also be measured for cooperation.

Independent Variables

Interdependence. A number of writers mention interdependence as one of the sources of interaction and cooperation between social agencies. In the Exchange approach (Levine and White, 1961) interdependence means simply the need for resources of any kind. Litwak and Hylton (1972) emphasize the dependence of agencies on each other and on the local community for funding. In both of these views, interdependence is based on the scarcity of resources.

In this paper, interdependence will be limited to functional interdependence, which is based not so much on scarcity as on specialization. Since agencies increasingly specialize in a few specific services, they are dependent on other agencies to meet their clients' needs. Functional interdependence, therefore, can exist even when resources are not scarce. William Evan (1965) uses a similar concept; so does Thompson with his three types of interdependence (serial, pooled and reciprocal). The

concept is also implicit in Durkheim's The Division of Labor (1949) in that functional interdependence is a result of social differentiation and the division of labor.

Functional interdependence will be measured by dividing the pairs of agencies into those in which each member of a pair needs a service offered by the other agency (full interdependence), pairs in which only one agency needs a service offered by the other (partial interdependence), and pairs in which neither agency needs a service offered by the other (no interdependence).

Similarity. It is often assumed that agencies which are alike in some way are more likely to cooperate with each other. Miller (1958) looks at the similarity of agencies' goals and philosophies; Aiken and Hage (1968) discuss similarity of intra-organizational structures; and Baty, Evan and Rothermel (1971) look at several kinds of similarities of schools of business which exchange faculty.

Four types of inter-agency similarity are analyzed in this paper: private versus public auspices, type of services offered, social class of clients served, and age of clients served. Similarity will be referred to in two ways, depending on whether the reference is to the agency-members of a pair (which are similar or dis-similar) or to the pairs (which are homogeneous or heterogeneous). Thus

agencies are similar (or pairs homogeneous) when (1) both agencies are public or both are private; (2) both agencies offer the same type of services; (3) both agencies serve primarily lower class clients or both serve primarily middle class clients; or (4) both agencies serve primarily youth or both serve primarily adults. Agencies are dissimilar (or pairs heterogeneous) when the two members of a pair differ on any of the above characteristics: one agency is private and the other is public; each agency offers a different type of services; each agency serves a different type of clients.

Propositions

This paper, therefore, will analyze relationships of social service agencies, with the pair of agencies as the unit of analysis. The dependent variables, interaction and cooperation, are characteristics of the pairs of agencies; the independent variables, similarity and interdependence, are characteristics of the individual agencies which make up each pair. Thus, similarity of agencies and agencies' need for each other's services are viewed as the sources of interaction and cooperation between pairs. Scope, reciprocity and complementarity are dimensions (or characteristics) of the relationships of each pair; they can also be described as aspects of interaction and cooperation (the dependent variables).

The following propositions are based on the literature and concepts discussed above.

Proposition 1

> Functionally interdependent pairs are more likely to have a high degree of interaction and cooperation than non-interdependent pairs.

The assumption here, drawn primarily from Thompson (1967), is that one function of inter-agency interaction and cooperation is to put back together again a process or system (in this case a program of services to clients) that has been broken down into its component parts by specialization. In other words, specialization leads to interdependence, which in turn makes necessary cooperation to reintegrate services to clients.

Proposition 2

> Similar agencies (homogeneous pairs) are more likely to have a high degree of interaction and cooperation than dis-similar agencies (heterogeneous pairs).

This is based on the idea, found in all three fields consulted (marriage dyads, Durkheim and human ecology) that entities which are similar are more likely to interact than those which are dis-similar.

Proposition 3

> Similar agencies (homogeneous pairs) are more likely to have a high degree of interaction and cooperation than dis-similar agencies (heterogeneous pairs) even in the absence of functional interdependence (when neither agency needs a service offered by the other).

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controlling for interdependence. The results are presented only for non-interdependent pairs; results for interdependent pairs are not presented because the base N's are too small to be meaningful. This is a crucial test since the two causal factors, similarity and interdependence, are considered concurrently. In this way, it is possible to see whether similarity affects interaction and cooperation in the predicted manner when functional interdependence is held constant.

Testing these propositions will make possible some tentative answers to the questions raised earlier in this paper: are both similarity and interdependence sources of interaction and cooperation between social service agencies? and, does similarity operate even in the absence of interdependence?

METHODS

The analysis reported in this paper is part of an ongoing study of social service agencies in Lansing, Michigan, a medium-sized Midwestern city which is the state capitol. The city is dominated by the automobile industry, a large state university and the state government. The study originated with a request by United Way of America for a study of its affiliated agencies and was later extended to public agencies. Every agency in the city which met the criteria described below was included.

Two kinds of data were collected: structured interviews with the head and staff of each agency (the staff interviews were not available in time for inclusion in this analysis); and information on budgets, clients, and services from agency records. This investigation draws on both kinds of data.[1]

Description of Agencies

Most of what has been written on organizations deals with business and industrial organizations. Compared to

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[1]The data collection instruments, some of the coding schemes and the criteria for agency inclusion were developed by Dr. Philip Marcus and Ann W. Sheldon. Local planning professionals were also consulted.

them, organizations which provide social services tend to be small, to have flat hierarchies and to employ relatively high proportions of professionals; moreover their goals are not profit but the good of the client. Hence they are not typical organizations and generalizations to them from studies of other types of organizations, or vice versa, should be undertaken with caution.

The first and definitive criterion for inclusion of an agency in the overall study was that it offer a social service, as defined by United Way, directly to clients. This excludes purely administrative units. The term social services as used in social work and related fields includes financial assistance, counseling and mental health, rehabilitation, recreation, and subsidiary medical services such as home nursing; it excludes education, law enforcement, and most medical services.

Within the group of agencies offering social services the following additional criteria were employed. The agency must have a paid, full-time equivalent staff of five persons, an annual budget of at least $10,000 and its own independent policy-making body (board, commission, council or committee). To ensure that only independent, autonomous agencies were included, it was also required that: (1) the director and/or policy-making body have the power to hire and fire top staff and determine the allocation of funds; (2) the policy-making body be composed of representatives

from more than one organization or be elected from some governmental jurisdiction by a formal process (thus agencies with board members from one source, e.g. a church, were excluded). Four programs which administratively are components of other agencies but which met all the above criteria were included because of their visibility as agencies in the community (for instance a component agency of Model Cities).

The resulting group of thirty-three agencies is composed of fourteen public agencies and nineteen private agencies; all but one of the latter are affiliated with the United Way. Private and public agencies differ in a number of ways. For instance, private agencies tend to be smaller and to offer different types of services than public agencies. Because of these differences, the type of auspices under which an agency operates (private or public) is an important variable in this analysis.

Since the universe of all agencies in the city which met the above criteria are included in the study, no tests of significance will be used in this paper.

Measures of Dependent Variables

Items and Indices

Measures of interaction and cooperation were developed from 18 sociometric-choice questions taken from interviews with the head of each agency (see following

page for the complete list of items).

The questions cover a wide range of phenomena pertinent to interaction and cooperation. Each respondent agency could name up to five agencies (from a list provided by the interviewer) for each question. Thus the largest number of choices possible--either given or received--is 165 per question (33 agencies x 5 choices). The actual number of choices per question ranges from 29 for joint planning to 130 for referring clients. The number of choices also varies by agency with some agencies having no referrals; the average number of referrals per agency is 4 (130/33).

Interaction. Interaction between social service agencies is measured by all eighteen questions. It covers a variety of different ways in which agencies must take each other into account. There are questions on cooperation, competition for funds, and obtaining funds from the same sources. The presence of a choice on one of the items measuring interaction indicates that a relationship exists for that pair of agencies.

Since the same coding and scoring procedures were used to develop the final measures of cooperation and of interaction, further details of these procedures will follow description of the cooperation indices.

Questionnaire items for interaction and cooperation measures.

(18 sociometric questions; respondent could name up to five agencies from a list provided by interviewer).

1. To which of these agencies do you refer most of these (unserved) clients? (130)*
2. Which agencies provide services that are similar to those provided by your agency? (91)
3. Now, please tell me the agencies upon which you rely to provide services that help you deliver your own programs to clients. (85)
4. Which agencies make referrals to your agency? (129)
5. Which agencies provide you with cooperation and support for your programs? (101)
6. Which agencies compete with you for the resources in this community? (53)
7. With which of these agencies do you do joint planning? (29)
8. With which agencies do you exchange opinions, information, and ideas? (85)
9. With which agencies do you share facilities for serving your clients? (94)
10. Which agencies do you run programs for? (46)
11. With which agencies do you jointly seek funds? (41)
12. Which agencies' good opinion of your work is important to you? (36)
13. Which agencies have influence over what goes on in your agency? (98)
14. Which of these agencies serve with you on community committees? (47)
15. With which of these agencies do you share staff? (76)
16. With which of these agencies do you run programs? (34)

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*figures in parentheses are the numbers of choices received by all 33 agencies combined, on each item

17. Which of these agencies are most likely to get money from the same sources as you do? (55)

18. Are there any agencies on the list with board members also on your Board or Commission? (51)

Cooperation. Ten of the 18 items were selected to measure cooperation. On the basis of criteria described below, each item was placed in one of two indices: resource exchanges or joint efforts. Within each index the items are ordered by N, the number of choices received by all agencies on that item. (The starred items were dropped for reasons explained below. The numbers in parentheses indicate the order in which the complete questions can be found in the list of all 18 questions.)

Resource Exchanges Index	N
refer clients to (1)	130
* receive clients from (4)	129
share facilities with (9)	94
exchange opinions, information and ideas (8)	85
share staff (15)	76
Joint Efforts Index	
have common board members (18)	51
* serve on same committees (14)	47
run programs for (10)	46
run joint programs (16)	34
do joint planning (7)	29

The items in the two indices differentiate themselves into two levels of difficulty: the most common joint efforts item (have common board members) is separated by twenty-five choices from the least common resource exchanges item (share staff). It is assumed that this lower frequency of occurrence is indicative of a more difficult type of cooperation. As previously mentioned, transfer of resources is more likely to occur on an ad hoc basis, whereas joint efforts tend to involve formal arrangements and long-term commitments.

Inter-item correlations were obtained to see if resource exchanges and joint efforts are distinct empirically. (See Figure 1.) Each item was dichotomized at the median and Yule's Q's computed for the correlation measures. The two items with the lowest correlations (starred in list of indices items) were dropped from the indices and thus are not included in Figure 1. The following are the average correlations for each index and for the cross-index items, obtained from Figure 1:

Resource exchanges index	.47
Joint efforts index	.30
Cross-index items	.28

Thus, aside from the differences in the number of choices received per item (described above), there is little empirical evidence that the two groups of items should be differentiated from each other.

Despite this, it was decided that conceptual and theoretical considerations warranted separating the items into two indices. As noted previously, the greater difficulty of joint efforts, compared to resource exchanges, is often mentioned in the literature; it is also indicated by the differences in frequency of occurrence described above. Use of two separate indices to measure cooperation also facilitates comparison with previous studies, most of which use either resource exchanges or joint efforts, but not both, to measure cooperation.

	Resource Exchanges				Joint Efforts		
	refer clients to	exchange ideas and information	share facilities	share staff	do joint planning	run programs for	run joint programs
exchange ideas and information	.18						
share facilities	.96	.55					
share staff	.30	.23	.59				
do joint planning	-.51	-.16	-.24	.16			
run programs for	.51	.16	.67	.55	-.02		
run joint programs	-.05	.73	.26	.39	.67	.24	
common board members	.29	.60	.78	.30	.19	.29	.42

Figure 1. Inter-item correlations of eight items used for indices of resource exchanges and joint efforts, using Yule's Q (N = 33 agencies).

Coding and Scoring Procedures

Coding pairs. As in sociometric studies, a choice matrix was set up for each of the eighteen questions, with ego or choosing agencies listed down the left-hand side of the page and alter or chosen agencies listed across the top. Each of the 528 pairs has two cells in the square matrix since each agency is both chooser and chosen.

Figure 2 illustrates the method used. It is the choice matrix for the first question, "To which of these agencies do you refer these (unserved) clients?" Equivalent matrices were used for the other seventeen questions. From these matrices each pair was coded, for each question, as having one of the following kinds of linkages:

(1) reciprocal (both agencies choose each other); the cells with entries of "1" in Figure 2

(2) ego-chooses-alter (one-way choice); cells with an entry of "2" in Figure 2, reading across the rows

(3) alter-chooses-ego (one-way choice); cells with an entry of "2" in Figure 2, reading down the columns

(4) no relationship (no choice); empty cells in Figure 2

The first agency of each pair, or the agency with the letter closest to A in Figure 2, is called "ego," and the second agency, "alter." The codes for each pair were then aggregated to create the relational dimensions described below.

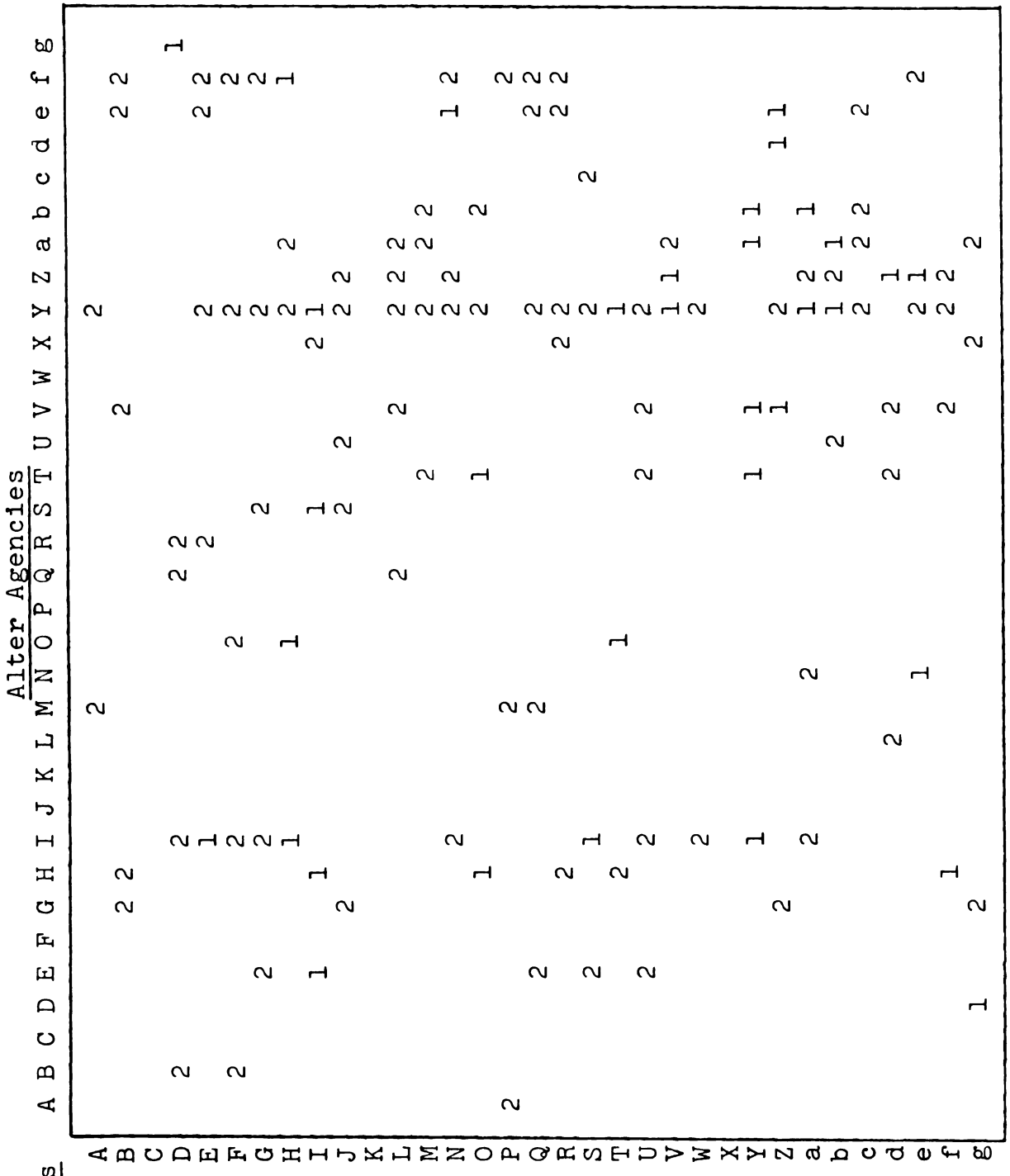

Figure 2. Choice matrix for first question, "To which of these agencies do you refer most of these (unserved) clients?". Each letter represents one agency. An entry of 1 indicates a mutual (reciprocal) choice and an entry of 2 a one-way choice. Each entry of 2 was coded as a choice made by an ego agency and as a choice received by an alter agency.

Dimensions of inter-agency relationships. By summing the scores for the appropriate questions, three dimensions of inter-agency relationships were devised: scope, reciprocity and complementarity. Each dimension was computed separately for interaction, for resource exchanges, and for joint efforts. The dimensions are:

(1) scope. The number of questions on which there is a choice of any kind (reciprocal or one-way) for each pair. For example, if there was one mutual choice, three choices of alter by ego, and four choices of ego by alter, the score of the pair on scope would be 8 (1 + 3 + 4).

(2) reciprocity. The number of questions on which there is a mutual choice on the same question, for each pair. For example, each member of a pair says it refers clients to the other.

(3) complementarity. The presence of at least one non-reciprocal choice in each direction on different questions (one ego-chooses-alter choice and one alter-chooses-ego choice). For instance, if ego refers clients to alter (but alter does not refer clients to ego) and alter shares its staff with ego (but ego does not share its staff with alter), then the pair has a complementary relationship. It is exchanging one type of resource or effort for another, namely clients for staff.[1]

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[1]This measure was done a bit differently in that presence of a complementary relationship--rather than number of complementary linkages--was measured for each pair; but in practice this makes no difference since the highly skewed distributions would have resulted in a dichotomous split between pairs with one or more complementary linkages and pairs with none, whichever measure was used.

Dichotomization of dependent variables. Because many pairs had few or no choices, the distributions on all the measures of interaction and cooperation were highly skewed. For this reason the variables were dichotomized into "high" and "low" at the median rather than at the mean. The following are the cutting points and ranges for each measure. (*Figures indicate the number of questionnaire items with a choice):

	Dichotomization	
	Lo	Hi
Scope of Interaction	0-2*	3-17
Cooperation		
Resource exchanges	0	1-4
Joint efforts	0	1-4
Reciprocity of Interaction	0	1-10
Cooperation		
Resource exchanges	0	1-3
Joint efforts	0	1-2
Complementarity of Interaction	0	1
Cooperation		
Resource exchanges	0	1
Joint efforts	0	1

Measures of Independent Variables

Functional Interdependence

This measure indicates whether the member-agencies of a pair need each other's services. It is based on the juncture of a service offered by one agency and needed by

another agency. The questions asked were:

(1) "What are the major services offered by this agency?"

(2) "What other services do clients coming to your agency require that you cannot provide?"

Each agency could name up to five services for each question. The responses were coded into the functional service categories used by United Way (since most agencies are familiar with these categories they tended to respond in terms of them).

The measure was then developed by listing next to each agency: first, the services it needs and second, the other agencies which offer those services. For example:

agency	service needed	other agencies offering this service
A	adoption	B, C
B	counseling	A
C	day care	D

In this hypothetical example agencies A and B each need a service offered by the other, so pair A-B have mutual need of each other's services; agency A needs a service offered by C, but C does not need a service offered by A, so one-way need exists for pair A-C. The coding was done by plotting this information on a matrix, similar to Figure 2. The resulting categories are:

(1) mutual need. Each agency member of a pair needs the services (one or more) offered by the other.

(2) one-way need. Only one member of a pair needs a service offered by the other.

(3) no need. Neither member of a pair needs any service offered by the other.

An important feature of this measure is that agency interdependence is based strictly on specific services offered and needed by each agency. It bypasses the possibility that an agency would say it needs services offered by Agency X or that it does not need services offered by Agency Y because one agency is better known or more prestigious, or through ignorance of what services are offered by other agencies. In this respect it differs from interaction and cooperation, for which respondents were asked to name specific agencies.

This measure probably over-estimates the interdependence for pairs of agencies since each agency may need to interact with only one of several agencies offering a service it needs. This problem does not exist, however, for the no-need category--which is used as a control on the association between similarity, and interaction and cooperation.

Similarity

Four measures of similarity were developed: private versus public auspices, major type of services offered, social class of clients served, and age of clients served. Indicators for each variable are described below.

Private versus public auspices. Agencies were considered to be private or public in the usual sense, irrespective of the sources of their funding (e.g., some private agencies receive funds from public sources). Public agencies at all levels (local, state and federal) are included.

Types of services offered. Each agency was placed into one of eight categories on the basis of the major type of service it offers. The criteria used to categorize them were the specific "functional services" offered (as defined by United Way), budget information, and reputation. The categories are as follows:

(1) short-term concrete services (assistance in emergencies and disasters)

(2) long-term concrete assistance (e.g., welfare, employment services)

(3) medical services (e.g., home nursing)

(4) rehabilitation (e.g. of alcoholics and drug addicts)

(5) mental health services

(6) professional services, except mental health and concrete aid (e.g., adoption, foster care and legal aid)

(7) recreation and group work (e.g., Scouts)

(8) multiple services (neighborhood service centers and three agencies with too wide a range of services to fit into any of the above categories)

Using these categories the pairs of agencies were then recoded into two groups: homogeneous pairs in which both agencies offer the same type of services (e.g., both offer counseling, both offer recreation); and heterogeneous pairs

in which each agency offers a different type of service (e.g., one member of a pair offers counseling and the other offers recreation).

Social class of clients served. Clients were classified in two ways: by social class and by age. Both refer to the main target population of the agency, not to the backgrounds of individual clients. For instance, welfare services, and to a lesser extent legal aid, are geared primarily to the poor and minorities; recreation agencies, on the other hand, are typically geared to middle class people.

In classifying agencies according to the social class of their clients two factors were considered: whether services were restricted on a financial basis (e.g., the means test in welfare); and commonly accepted ideas about class differences in either the orientation of a particular agency or in the type of services it offers. Fourteen of the thirty-three agencies were classified as serving primarily lower class clients and nineteen as serving primarily middle class clients.

Age of clients served. Agencies were also classified according to the age of the clients in their target population. Seven agencies serve primarily youth and the rest serve primarily adults. (Only one agency offers a service specifically for the aged and this service is not its major focus.)

Tabulation Methods

The method used to analyze the results involves a comparison between the numbers of pairs which actually choose each other and the number of pairs theoretically possible, that is, the number of pairs which would exist if every agency chose every other agency. Thus, the percentages in the tables in the next section represent the number of pairs of a given type which choose each other on that measure divided by the number of possible pairs of that type.

The formula for calculating the number of possible pairs of N agencies is N(N-1)/2, or for 33 agencies, 33(32)/2 = 528. If every agency included in the study chose every other agency there would be 528 agency-pairs which interact. The number of pairs in the homogeneous and heterogeneous sub-groups for each measure of similarity is obtained in the same way. For instance, since there are nineteen private and fourteen public agencies, the theoretically possible number of pairs of each type is:

private-private . . .	19(18)/2	= 171 pairs
public-public	14(13)/2	= 91 pairs
private-public . . .	19(14)	= 266 pairs
Total		= 528 pairs

Note that these are the base numbers in Tables 3 and 4.

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Limitations

Three sorts of limitations in this study should be kept in mind. First, the measures used are exploratory rather than definitive in nature. Second, there are some gaps in the analysis due to problems with the data. Third, there are inherent limitations in the dyadic approach.

The questionnaire items were geared primarily to covering all factors which might possibly be relevant to inter-agency interaction and cooperation. Thus, they are exploratory and not appropriate for rigorous scaling techniques. Also, as described above, the indices used to measure resource exchanges and joint efforts cannot be justified on the standard empirical grounds (i.e., inter-item correlations); instead, they are based primarily on conceptual and theoretical grounds.

Some of the analyses that would otherwise have been included could not be because of the small sizes of the base N's (less than 20). This applies primarily to the third proposition, concerning interaction and cooperation in the absence of interdependence. There were 293 non-interdependent pairs but only 49 mutually interdependent and 186 partially interdependent pairs. As a result little analysis was possible of the mutual and partially interdependent pairs or of the reciprocity or complementarity dimensions of their relationships. The section on client's age is weak for the same reasons: only 21 pairs exist in which both agencies serve primarily youth (the very strong

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relationships on this measure of similarity partly outweigh this weakness).

A final set of limitations is involved in the method of pair analysis itself. As indicated previously, this approach has some important advantages. However, some aspects of inter-agency interaction are neglected by staying at the dyadic level of analysis. For instance, patterns of dominance and hierarchy within and between sets of agencies can best be seen by looking at sets or networks as wholes, and are obscured by the pair approach.

FINDINGS

The evidence will be presented in the following sequence. Table 1 gives some overall results on differences between the three dimensions of inter-agency relationships (scope, reciprocity and complementarity). Table 2 demonstrates the association between functional interdependence and interaction and cooperation (the evidence for the first proposition, that interdependent agency-pairs interact and cooperate more than non-interdependent pairs). Tables 3 through 14 present the results on the association between inter-agency similarity and interaction and cooperation (that is, the evidence for the second and third propositions, that homogeneous pairs of agencies interact and cooperate more than heterogeneous pairs, both overall and in the absence of interdependence).

In addition to the findings on the three formal propositions, other differences, such as between resource exchanges and joint efforts, will be noted where pertinent.

Dimensions of Inter-agency Relationships

Table 1 presents a breakdown of inter-agency pair relationships into three dimensions--scope, reciprocity and complementarity--for interaction and both kinds of

TABLE 1

DIMENSIONS OF INTER-AGENCY RELATIONSHIPS

(Per Cent of Pairs which Choose Each Other at Least Once[a]; N = 528 Pairs of Agencies)

Dimensions of Inter-Agency Relationships	
Scope of Interaction (1+)[a]	50%
Cooperation	
Resource exchanges (1+)	34
Joint efforts (1+)	19
Reciprocity of Interaction (1+)	14
Cooperation	
Resource exchanges (1+)	6
Joint efforts (1+)	3
Complementarity of Interaction (1+)	15
Cooperation	
Resource exchanges (1+)	4
Joint efforts (1+)	2
BASE N	528

[a]Figures in parentheses are number of choices; note that all other tables are based on dichotomies, whereas this one is based on presence or absence of a choice.

cooperation (resource exchanges and joint efforts). It shows that half of the 528 possible interaction pairs exist, that is have a choice on at least one item; the other half have no measurable relationship. (Note that Table 1 gives the percentages of pairs which interact at all whereas succeeding tables give the percentages of pairs with high interaction and cooperation, i.e. high number of items receiving a choice, dichotomized at the median.)

Resource exchanges are shown to be more frequent than joint efforts on all three dimensions. This is as expected, since joint efforts require greater commitments from agencies, as discussed earlier in this paper. It is also noteworthy that reciprocal and complementary pairs occur with about the same frequency (14 to 15 per cent interact). The significance of these results will be discussed in a later section.

Functional Interdependence

Table 2 presents the results for the first proposition, that the greater the interdependence of agency-pairs the higher their interaction and cooperation. The results are quite consistent. Interaction and cooperation are most prevalent under conditions of mutual interdependence (when each agency in a pair needs a service offered by the other agency), intermediate when there is partial interdependence (one-way need), and least prevalent

TABLE 2

INTERACTION AND COOPERATION BY FUNCTIONAL INTERDEPENDENCE

(Per Cent of Pairs Scoring High[a] on Interaction and Cooperation; N = 528 Pairs of Agencies)

Dimensions of Inter-Agency Relationships	Interdependence[b]		
	Mutual Need	One-way Need	No Need
Scope of Interaction (3+)[a]	45%	29	20
Cooperation			
Resource exchanges(1+)	55	38	28
Joint efforts (1+)	29	17	11
Reciprocity of Interaction (1+)	31	13	11
Cooperation			
Resource exchanges(1+)	22	5	4
Joint efforts (1+)	4	1	3
Complementarity of Interaction (1+)	27	16	13
Cooperation			
Resource exchanges(1+)	4	5	3
Joint efforts (1+)	4	2	1
BASE N	49	186	293

[a]Figures in parentheses are number of items required for designation of "high" on each index of interaction and cooperation (dichotomized at median); this information applies to all the tables which follow.

[b]Agencies' need for each other's services to meet their clients' needs.

when there is no interdependence (no need). The differences between mutual and one-way need are substantial (at least 10 per cent) for all three dimensions of interaction, for scope and reciprocity of resource exchanges and for scope of joint efforts. Between one-way need and no need the differences are substantial only for scope of interaction and resource exchanges. They disappear entirely for scope of joint efforts and for reciprocity and complementarity. Thus, the first proposition, that functional interdependence is associated with interaction and cooperation, is strongly supported.

Also, the percentage differences between mutual need and one-way need are greater than those between one-way need and no need. From this one can conclude that mutual need produces a greater increase in the extent of interaction and cooperation (compared to one-way need) than one-way need produces (compared to no need).

Similarity

A series of three tables is presented for each measure of similarity: private versus public auspices, type of services offered, social class of agencies' clients, and age of agencies' clients. For each measure of similarity, evidence will be presented: first, to see whether homogeneous agency-pairs are more interdependent than heterogeneous agency-pairs; second, to see whether they

interact and cooperate more; and third, to see whether they interact and cooperate more even in the absence of functional interdependence.

Since the propositions have to do with the differences between homogeneous and heterogeneous pairs the analysis will focus on these differences. Except for type of services offered, there are two types of homogeneous pairs for each measure of similarity (for example, private-private and public-public pairs are both homogeneous). Differences between the two homogeneous pair-types will be discussed only if they seem pertinent.

One way of gauging the degree of support for the propositions, which is used in the following discussion, is the number of substantial percentage differences (10 per cent or more) between homogeneous and heterogeneous pairs. On the tables which have two kinds of homogeneous pairs (i.e., all except type of services offered) this involves comparing each type of homogeneous pair with the heterogeneous pair, on each measure. In Table 4, for instance, there are 18 comparisons of interest--nine comparisons between homogeneous private-private pairs and heterogeneous private-public pairs, and nine comparisons between homogeneous public-public pairs and heterogeneous private-public pairs.

Private versus Public Auspices

The first measure of similarity to be considered is auspices. For each similarity variable three tables will

be presented, showing differences between homogeneous and heterogeneous pairs of agencies in degree of functional interdependence, interaction and cooperation, and interaction and cooperation when functional interdependence is controlled. The three types of pairs are: homogeneous, both private; homogeneous, both public; and heterogeneous, private-public (one agency is private and the other is public).

Interdependence. The first step is to see whether or not there are differences between the three types of pairs in functional interdependence. Table 3 shows that most pairs in which both agencies are private (79 per cent) have no need of each other's services, compared to only a quarter of pairs in which both agencies are public. Heterogeneous (private-public) pairs are intermediate in interdependence with half of the pairs expressing no need for each other's services. Private agencies need services offered by public agencies much more than public agencies need services offered by private agencies (33 versus 8 per cent; see note to Table 3). Homogeneous public pairs have a much higher degree of mutual need than either of the other pair-types (23 versus 4 and 8 per cent).

In sum, public agencies need each other's services, and private agencies have a high need for the services offered by public agencies but little need for the services offered by other private agencies. The proposition that homogeneous pairs interact and cooperate more than

TABLE 3

FUNCTIONAL INTERDEPENDENCE BY TYPE OF AUSPICES

(N = 528 Pairs of Agencies)

Interdependence	Homogeneous Pairs		Heterogeneous Pairs
	Both Private	Both Public	Private-Public
Mutual need	4%	23	8
Ego needs alter's services[a]	7	36	33
Alter needs ego's services[a]	11	15	8
No need	79	25	51
BASE N	171	91	266

[a]For heterogeneous pairs "ego" indicates private agencies and "alter" public agencies; for homogeneous pairs these two lines are indistinguishable and should be read as "one-way need."

heterogeneous pairs is supported only for public-public pairs, not for private-private pairs.

Interaction and cooperation. Table 4 provides the first test of the proposition that homogeneous agency-pairs interact and cooperate more than heterogeneous agency-pairs.

On all dimensions of inter-agency relationships on which there is a difference, a higher proportion of homogeneous public pairs than of homogeneous private pairs score high on interaction and resource exchanges. Fewer heterogeneous pairs engage in joint efforts than either

TABLE 4

INTERACTION AND COOPERATION BY TYPE OF AUSPICES

(Per Cent of Pairs Scoring High on Interaction and Cooperation; N = 528 Pairs of Agencies)

Dimensions of Inter-Agency Relationships	Homogeneous Pairs		Heterogeneous Pairs
	Both Private	Both Public	Private-public
Scope of Interaction	21%	39	24
Cooperation			
Resource exchanges	31	46	32
Joint efforts	23	26	13
Reciprocity of Interaction	12	28	10
Cooperation			
Resource exchanges	8	13	3
Joint efforts	4	4	1
Complementarity of Interaction	16	23	12
Cooperation			
Resource exchanges	4	8	2
Joint efforts	1	3	2
BASE N	171	91	266

type of homogeneous pair.

Thus, the proposition that homogeneous agency-pairs interact and cooperate more than heterogeneous agency-pairs receives substantial support for public-public pairs but only on joint efforts for private-private pairs.

Interaction and cooperation in the absence of functional interdependence. The final step is to see whether pairs of agencies interact and cooperate on the basis of similarity even when they have no need for each other's services. Table 5 looks at only the 293 pairs which Table 3 indicated have no need of each other's services.

A high percentage of homogeneous public pairs score high on scope of interaction and resource exchanges, compared to homogeneous private pairs (with differences of 20 per cent or more). There is again no difference between homogeneous private and homogeneous public pairs in the scope of their joint efforts.

The proportion of private-public pairs with high scope of interaction and resource exchanges is about the same as the proportion of homogeneous private pairs and substantially lower than that of homogeneous public pairs. On scope of joint efforts, the proportion of heterogeneous pairs cooperating is lower than that of either type of homogeneous pair.

Thus, the proposition that homogeneous pairs interact and cooperate more than heterogeneous pairs, in the absence of interdependence, is supported for public-

TABLE 5

INTERACTION AND COOPERATION BY TYPE OF AUSPICES, IN THE ABSENCE OF FUNCTIONAL INTERDEPENDENCE

(Per Cent of Non-interdependent[a] Pairs Scoring High on Interaction and Cooperation; N = 528 Pairs of Agencies)

Dimensions of Inter-Agency Relationships	Homogeneous Pairs		Heterogeneous Pairs
	Both Private	Both Public	Private-public
Scope of Interaction	17%	44	20
Cooperation			
Resource exchanges	27	48	26
Joint efforts	24	26	11
BASE N	135	23	135

[a]Only the sub-sample of agency-pairs which have no need for each other's services is included (N = 293 pairs); mutual and one-way need are not included because the base N's are too small to be meaningful.

public pairs but only on joint efforts for private-private pairs. On joint efforts, the proposition is supported for both types of homogeneous pairs.

Type of Services Offered

The next measure of similarity is whether or not each member of the pair offers the same type of services to clients. For instance, if both agencies offer a medical service the pair is homogeneous; if one agency offers medical services and the other offers recreational services the pair is heterogeneous. Twelve per cent of the pairs are homogeneous and 88 per cent are heterogeneous.

As with type of auspices three tables will be presented--concerning interdependence, interaction and cooperation, and interaction and cooperation in the absence of interdependence.

Interdependence. The first question is whether homogeneous and heterogeneous pairs are equally interdependent. Table 6 indicates that there is no measurable difference between pairs offering the same types of services and pairs offering different types of services. The largest difference, between homogeneous and heterogeneous pairs which have no need of each other's services, is only 6 per cent.

Interaction and cooperation. Table 7 shows great differences between homogeneous and heterogeneous pair-types in the extent of their interaction and cooperation. On

TABLE 6

FUNCTIONAL INTERDEPENDENCE BY TYPE OF SERVICES OFFERED

(N = 528 Pairs of Agencies)

Interdependence	Homogeneous Pairs Offer Same Type Services	Heterogeneous Pairs Offer Different Types of Services
Mutual need	11%	9
One-way need	39	35
No need	50	56
BASE N	62	466

every dimension, and on interaction and both kinds of co-operation, pairs in which both agencies offer the same type of services are more likely to interact and cooperate with each other than are pairs in which each agency offers a different type of services. All the differences are substantial, except for reciprocity and complementarity of joint efforts. Three of the differences are 30 per cent or more.

Thus the proposition that homogeneous pairs interact and cooperate more than heterogeneous pairs is strongly supported when the measure of similarity is the type of services each agency offers.

TABLE 7

INTERACTION AND COOPERATION BY TYPE OF SERVICES OFFERED

(Per Cent of Pairs Scoring High on Interaction and Cooperation; N = 528 Pairs of Agencies)

Dimensions of Inter-Agency Relationships	Homogeneous Pairs Offer Same Type Services	Heterogeneous Pairs Offer Different Types of Services
Scope of Interaction	65%	20
Cooperation		
Resource exchanges	71	29
Joint efforts	42	16
Reciprocity of Interaction	45	9
Cooperation		
Resource exchanges	24	4
Joint efforts	10	2
Complementarity of Interaction	36	12
Cooperation		
Resource exchanges	13	3
Joint efforts	7	1
BASE N	62	466

Interaction and cooperation in the absence of functional interdependence. Table 8 shows that when there is no functional interdependence, the large differences found in Table 7 between homogeneous and heterogeneous pairs are maintained for scope of interaction and resource exchanges, but completely disappear for joint efforts.

TABLE 8

INTERACTION AND COOPERATION BY TYPE OF SERVICES OFFERED IN THE ABSENCE OF FUNCTIONAL INTERDEPENDENCE

(Per Cent of Non-interdependent[a] Pairs Scoring High on Interaction and Cooperation; N = 528 Pairs of Agencies)

Dimensions of Inter-Agency Relationships	Homogeneous Pairs Offer Same Type Services	Heterogeneous Pairs Offer Different Types of Services
Scope of Interaction	65%	15
Cooperation		
Resource exchanges	68	24
Joint efforts	14	14
BASE N	31	262

[a]See note to Table 5.

Thus, the proposition that homogeneous pairs interact and cooperate more than heterogeneous pairs is supported except for joint efforts. The fact that the differences between homogeneous and heterogeneous pairs disappear for

joint efforts but not for resource exchanges seems significant and will be discussed in the concluding section of this paper.

Social Class of Agencies' Clients

Tables 9, 10 and 11 give the results on the differences between homogeneous and heterogeneous agency-pairs--in interdependence, interaction and cooperation, and interaction and cooperation in the absence of interdependence. The three types of pairs are: homogeneous (both agencies serve primarily lower class clients), homogeneous (both agencies serve primarily middle class clients), and heterogeneous (one agency serves lower class clients and the other serves middle class clients). Forty-two percent of all the agencies serve primarily lower class (or "poor" and minority) clients; the other 58 per cent serve primarily middle class clients.

Interdependence. Table 9 shows that pairs in which both agencies serve lower class clients have less need for each other's services than either homogeneous pairs which serve primarily middle class clients or heterogeneous pairs. There is no difference between these three types of pairs in the proportion of pairs with mutual need of each other's services, but pairs serving the middle class have higher one-way need than either of the other types of pairs.

TABLE 9

FUNCTIONAL INTERDEPENDENCE BY CLIENTS' SOCIAL CLASS

(N = 528 Pairs of Agencies)

Interdependence	Homogeneous Pairs: Serve Lower Class	Homogeneous Pairs: Serve Middle Class	Heterogeneous Pairs
Mutual need	7%	9	11
One-way need	23	44	34
No need	70	48	56
BASE N	91	171	266

Interaction and cooperation. As shown in Table 10, the proportion of pairs in which both agencies serve the same type of clients--which have a high degree of interaction and cooperation--is greater than the proportion of pairs in which each agency serves a different type of clients. These differences between homogeneous and heterogeneous types of pairs are substantial on scope of both interaction and cooperation, for pairs serving lower class clients, and on scope of resource exchanges, for pairs serving middle class clients. Although only four of the 18 differences are substantial, all but two of the remaining differences (of less than 10 per cent) are in the predicted direction.

Thus, this measure of similarity provides some support for the proposition that homogeneous pairs interact

TABLE 10

INTERACTION AND COOPERATION BY CLIENTS' SOCIAL CLASS

(Per Cent of Pairs Scoring High on Interaction and Cooperation; N = 528 Pairs of Agencies)

Dimensions of Inter-Agency Relationships	Homogeneous Pairs: Serve Lower Class	Homogeneous Pairs: Serve Middle Class	Heterogeneous Pairs
Scope of Interaction	39%	27	20
Cooperation			
Resource exchanges	41	40	30
Joint efforts	27	20	15
Reciprocity of Interaction	18	16	11
Cooperation			
Resource exchanges	4	9	5
Joint efforts	7	2	2
Complementarity of Interaction	20	19	11
Cooperation			
Resource exchanges	4	6	3
Joint efforts	6	2	0
BASE N	91	171	266

and cooperate more than heterogeneous pairs, although the percentage differences are not very large.

Interaction and cooperation in the absence of functional interdependence. Table 11 presents the results for the association between the social class of clients served by an agency and the interaction and cooperation that occur between pairs of homogeneous and heterogeneous agency-pairs, when there is no functional interdependence (that is, for the pairs with no interdependence). All of the differences between heterogeneous and homogeneous pairs are in the predicted direction, but only two of the six differences are substantial. A higher proportion of the homogeneous pairs serving lower class clients than of heterogeneous pairs, scores high on interaction and joint efforts. The substantial differences found in Table 10 for resource exchanges disappear.

A moderate level of support for the proposition that homogeneous pairs interact and cooperate more than heterogeneous pairs is provided by the results on Tables 10 and 11.

Age of Agencies' Clients

The final measure of similarity to be considered is the age of the clients served by each agency. Twenty-one per cent of the agencies serve primarily youth and the rest, 79 per cent, serve primarily adults. The three

TABLE 11

INTERACTION AND COOPERATION BY CLIENTS' SOCIAL CLASS IN THE ABSENCE OF FUNCTIONAL INTERDEPENDENCE

(Per Cent of Non-interdependent[a] Pairs Scoring High on Interaction and Cooperation; N = 528 Pairs of Agencies)

Dimensions of Inter-Agency Relationships	Homogeneous Pairs: Serve Lower Class	Homogeneous Pairs: Serve Middle Class	Heterogeneous Pairs
Scope of Interaction	33%	22	14
Cooperation			
Resource exchanges	33	27	27
Joint efforts	25	21	14
BASE N	63	82	148

[a]See note to Table 5.

types of pairs to be discussed are: homogeneous (both agencies serve youth), homogeneous (both agencies serve adults), and heterogeneous (one agency serves youth and the other serves adults). As with the other measures of similarity, there will be three tables, covering differences between homogeneous and heterogeneous pairs in interdependence, interaction and cooperation, and interaction and cooperation in the absence of interdependence.

Interdependence. Table 12 demonstrates that pairs in which both agencies serve youth are least interdependent and pairs in which both serve adults most interdependent;

heterogeneous pairs occupy an intermediate position between the two types of homogeneous pairs.

TABLE 12

FUNCTIONAL INTERDEPENDENCE BY CLIENTS' AGE

(N = 528 Pairs of Agencies)

Interdependence	Homogeneous Pairs		Heterogeneous Pairs
	Serve Youth	Serve Adults	
Mutual need	5%	12	4
One-way need	9	42	25
No need	86	45	70
BASE N	21	325	182

Interaction and cooperation. Table 13 indicates that the scope and reciprocity of interaction and cooperation are higher for homogeneous than for heterogeneous pairs of agencies. The differences in the percentages of homogeneous and heterogeneous pairs are substantial in 12 of the 18 instances; six of them exceed 20 per cent. There are no differences between pairs serving clients of the same age and pairs serving clients of different ages in the degree of their joint efforts.

Thus there is strong support for the proposition that homogeneous pairs interact and cooperate more than heterogeneous pairs, when the measure of similarity is age of agencies' clients.

TABLE 13

INTERACTION AND COOPERATION BY CLIENTS' AGE

(Per Cent of Pairs Scoring High on Interaction and Cooperation; N = 528 Pairs of Agencies)

Dimensions of Inter-Agency Relationships	Homogeneous Pairs		Heterogeneous Pairs
	Serve Youth	Serve Adults	
Scope of Interaction	64%	31	12
Cooperation			
Resource exchanges	64	41	17
Joint efforts	59	19	13
Reciprocity of Interaction	46	16	5
Cooperation			
Resource exchanges	37	8	0
Joint efforts	18	2	3
Complementarity of Interaction	6	8	7
Cooperation			
Resource exchanges	4	5	1
Joint efforts	5	2	1
BASE N	21	325	182

Interaction and cooperation in the absence of functional interdependence. Table 14 shows that interdependence affects cooperation more than it affects interaction. On interaction and resource exchanges, homogeneous pairs are more likely to score high than are heterogeneous pairs. However the 40 per cent difference between homogeneous pairs which serve youth and heterogeneous pairs (in Table 13) disappears when there is no functional interdependence (Table 14).

TABLE 14

INTERACTION AND COOPERATION BY CLIENTS' AGE, IN THE ABSENCE OF FUNCTIONAL INTERDEPENDENCE

(Per Cent of Non-interdependent[a] Pairs Scoring High on Interaction and Cooperation; N = 528 Pairs of Agencies)

Dimensions of Inter-Agency Relationships	Homogeneous Pairs		Heterogeneous Pairs
	Serve Youth	Serve Adults	
Scope of Interaction	63%	23	11
Cooperation			
Resource exchanges	68	66	43
Joint efforts	16	17	13
BASE N	19	147	127

[a]See note to Table 5.

These results provide support for the propositions that homogeneous pairs of agencies interact and cooperate more than heterogeneous pairs--both in the presence and in the absence of functional interdependence.

DISCUSSION AND CONCLUSIONS

This final section summarizes the findings and presents some theoretical implications. The degree of support for each of the propositions is discussed, as well as other noteworthy results, such as the differences between resource exchanges and joint efforts. Finally, the contributions and limitations of the study are described.

Discussion of Findings

Dimensions of Inter-agency Relationships

The most surprising finding from the first table is that complementary linkages (in which the members of an agency-pair exchange one type of resource or effort for another) make up such a small proportion of possible linkages between agencies. The proportion for complementarity is the same as that for reciprocity, which is not what seems most likely in terms of an Exchange approach. Since a fundamental argument of the Exchange perspective is that cooperation occurs so that organizations can "complete" the stock of resources needed to function, it was assumed that complementary linkages would be more common than reciprocal linkages. For instance, an agency with plenty of staff but lacking facilities would cooperate with another agency lacking staff but with plenty of facilities.

Reciprocal linkages, which involve exchanging staff for staff, or facilities for facilities, seem less likely. (One would expect an agency lacking facilities not to have facilities to lend out, unless there are different types of facilities, or the exchanges occur at different points in time.)

Another finding is that resource exchanges are much more common than joint efforts on all dimensions. This accords with the argument previously made that joint efforts are more "difficult" than resource exchanges.

Functional Interdependence

As predicted, interdependent agency-pairs are more likely to interact and cooperate than non-interdependent pairs. Also, the differences in the percentages of pairs interacting and cooperating are much higher for mutual versus one-way need than for one-way versus no need (Table 2). Perhaps this is because, where there is a choice, agencies prefer to obtain needed services from agencies which also need a service they offer. In this way they avoid being too dependent on another agency. Thus power differences affect the exchange process. This accords with Blau's analysis of the association between exchange and power (Blau, 1967).

Inter-agency Similarity

The results on the association between similarity and interaction and cooperation are reported below, separately for each measure of similarity: auspices, type of services

offered, social class of agencies' clients, and age of agencies' clients. Results are for interaction and cooperation (Proposition 2) and interaction and cooperation in the absence of functional interdependence (Proposition 3).

Private versus public auspices. Private-public (heterogeneous) pairs fall in between private-private and public-public (both homogeneous) pairs in degree of interaction and cooperation. This higher degree of interaction and cooperation between dis-similar agencies (higher compared to private-private pairs) is not in accord with the proposition that similar agencies interact and cooperate more than dis-similar ones; nor is it explicable entirely in terms of functional interdependence, since the pattern remains when there is no interdependence.

Yet the high degree of interaction and cooperation between dis-similar private and public agencies is not surprising in view of the strong position of most public agencies. Public agencies offer more services than private agencies (their respective means are 4.2 and 3.5 services per agency) and often more critical services as well (e.g., food and jobs are more critical than recreation). Moreover, the findings in Table 3 show that private agencies are much more likely to report needing a service offered by a public agency than public agencies are to report needing a service offered by a private agency.

The reason for the continued high interaction and cooperation between private and public agencies in the

complete absence of functional interdependence is not quite so apparent. The probable explanation is similar however. Inspection of the agency-level data (not reported herein) demonstrates clearly that public agencies tend to be larger and to have greater resources (e.g., funds, staff) than private agencies. Thus it seems that private agencies are impelled to interact and cooperate more with public agencies than with each other (in both the presence and absence of functional interdependence) because they are dependent on them, both for services needed by their clients and for other resources.

One of the most interesting results is that the pattern described above does not hold for joint efforts. Regardless of interdependence, private-private pairs engage in joint efforts as much as public-public pairs (and both homogeneous pair-types engage in joint efforts more than heterogeneous pairs). On every other measure, as mentioned above, private-private pairs interact and cooperate less than private-public pairs. It is hypothesized that this is because private agencies form coalitions to avoid their dependence on public agencies by pooling their resources in joint programs, rather than exchanging them.

Type of services offered. Homogeneous pairs (in which both agencies offer the same type of services, e.g., recreation) are no more interdependent than heterogeneous pairs (in which each agency offers a different type of services).

Despite this, homogeneous pairs interact and cooperate much more than heterogeneous pairs regardless of interdependence. The only exception is joint efforts when there is no functional interdependence, in which case the extent of interaction and cooperation is no higher for homogeneous than for heterogeneous pairs. The results strongly confirm the propositions that similar agencies interact and cooperate more than dis-similar agencies.

The lack of association between similarity and joint efforts in the absence of interdependence seems to support the argument made in this paper that joint efforts are more "difficult" than other types of cooperation and interaction. Since joint efforts require significant investments of time and resources by the agencies which engage in them, they tend to occur only in the more compelling circumstances of functional interdependence. Thus, when there is no interdependence, similar agencies continue to exchange resources more than dis-similar agencies, but they do not engage in joint efforts any more than dis-similar agencies.

Social class of clients served. Homogeneous pairs (serving the same type of clients) interact and engage in joint efforts somewhat more than heterogeneous pairs (serving different types of clients); the differences are substantial (10 per cent) for homogeneous pairs in which both agencies serve lower class clients but not for pairs in which both serve middle class clients. Homogeneous pairs do not exchange

resources measurably more than heterogeneous pairs when there is no need for each other's services.

Since most of the percentage differences are small, the results on this measure of similarity provide only weak support for the propositions that homogeneous pairs interact and cooperate more than heterogeneous pairs.

Age of clients served. Homogeneous pairs (in which both agencies serve the same age clients) interact and cooperate much more than heterogeneous pairs (in which one agency serves youth and the other serves adults). The percentage differences (for each type of homogeneous pair compared with heterogeneous pairs) are much greater for the homogeneous pairs which serve youth than for the homogeneous pairs which serve adults. The results strongly confirm the proposition that homogeneous pairs are more likely to interact and cooperate than heterogeneous pairs.

Also, the difference between homogeneous and heterogeneous pairs on joint efforts disappears when interdependence is controlled (that is, when the agencies in a pair have no need of each others' services). This is the same as the result found for type of services offered. The explanation proposed there applies here also, namely that the high investment required for joint efforts negates the effect of similarity when there is no functional interdependence.

Summary of Findings

The first proposition, that interdependent agency-pairs are more likely to interact and cooperate than non-interdependent pairs, is strongly supported.

The second proposition, that similar agencies (or homogeneous pairs) are more likely to interact and cooperate than dis-similar agencies (or heterogeneous pairs) also receives substantial support, but with some exceptions. It holds for public-public (but not private-private) homogeneous pairs, type of services offered, social class of agencies' clients, and age of agencies' clients. The percentage differences between homogeneous and heterogeneous pairs are largest for type of services offered and age of agencies' clients.

The third proposition, that similar agencies (homogeneous pairs) are more likely to interact and cooperate than dis-similar agencies (heterogeneous pairs) even in the absence of functional interdependence, is strongly confirmed. Most of the results are very close to those found for the second proposition (with no control for interdependence).

There are also variations for resource exchanges and joint efforts. These are of particular interest because of their theoretical implications, which will be discussed in the following section.

Theoretical Implications

Some theoretical implications of this study of inter-agency relationships are discussed below. They concern inter-organizational relations, the Exchange perspective, and the operation of the factors of similarity and interdependence at different levels of analysis.

Inter-organizational Relations

The principle contributions of this study to the understanding of relations between formal organizations are a test of the effects of interdependence on inter-agency relationships, and clarification of the concept of cooperation.

As described above, many writers have suggested interdependence as a factor in inter-agency cooperation. These include Evan (1965), Litwak and Hylton (1972), Thompson (1967), and Levine and White (1961). In this study, functional interdependence was found to be associated strongly with interaction and cooperation between agencies. These results, therefore, confirm earlier studies of the effects of interdependence on cooperation.

In addition, it was suggested in this paper that two types or levels of cooperation be used: resource exchanges and joint efforts. Differentiation between these two types of cooperation facilitates comparison with previous studies, most of which consider one or the other type of cooperation (resource exchanges or joint efforts) but not both. The

assumption made in this paper that joint efforts are more difficult, and therefore less common, than resource exchanges, is supported by the following findings: (1) Joint efforts occur less frequently than resource exchanges overall. (2) In the absence of interdependence, the association between joint efforts and similarity (as measured by type of services and clients' age) disappears.

The results also show clearly that private-private agency-pairs engage in joint efforts relatively more than they exchange resources. Given the greater difficulty of joint efforts, it seems surprising that agencies sometimes engage in joint efforts more than they exchange resources. However, as noted above, private agencies are highly dependent on public agencies, due to their low command of crucial resources. Therefore, although they frequently must exchange with public agencies to obtain the resources they need, they also form coalitions with other private agencies--through joint efforts. By so combining they apparently pool their limited resources, thereby reducing their dependence on the more powerful public agencies.

These differences between resource exchanges and joint efforts as types of cooperation seem significant enough to warrant further study. Additional implications concerning the Exchange perspective will be discussed below.

The Exchange Perspective

The above-mentioned tendency of private agencies to be dependent on public agencies, and to form coalitions

against them, underlines the importance of power differences in inter-agency relationships. Private agencies seem to pool their resources in reaction to their dependence on public agencies. Similarly, the finding that interaction and cooperation are much higher under conditions of mutual interdependence than under those of one-way interdependence shows the close association between power and the exchange process. (A condition of one-way interdependence indicates that one agency is in a weak position vis à vis the other agency; under mutual interdependence, neither agency in the pair seems to be more powerful, since each needs a service of the other.) Thus, both findings support Blau's argument (1967) that control of and access to resources affects the types of relationships that occur between organizations.

A second implication of the private-public differences concerns the role of resources in the exchange process. Aiken and Hage (1968) and Levine and White (1961) argue that the lack of resources is what produces cooperation. Litwak and Rothman (1970), on the other hand, argue that possession of resources is a pre-requisite of cooperation, in support of which view they cite a study showing that schools cooperated more when they were given extra resources. The evidence presented herein seems to indicate that the amount of resources an agency has may be related not so much to the degree of cooperation as to the type of cooperation (resource exchanges or joint efforts) engaged in. Public agencies,

which typically have more resources, exchange resources more; whereas private agencies, with fewer resources, engage in relatively more joint efforts. Thus, there is some evidence that lack of resources tends to lead to joint efforts, whereas possession of resources tends to facilitate resource exchanges. Therefore it is suggested that students of the role of resources in the exchange process consider under what conditions lack of resources leads to cooperation, and under what conditions possession of resources leads to cooperation.

A final implication for the Exchange perspective comes from comparison of reciprocity and complementarity. As described above, it was assumed at the outset of this investigation that complementary linkages would occur with greater frequency than reciprocal linkages, since cooperation functions to re-distribute essential resources. Yet the results show that reciprocal linkages are just as frequent as complementary linkages.

Perhaps the "primitive barter" character of relations between social agencies, as described by White, Levine, and Vlasak (1971) accounts for this. They suggest that, due to the infrequent use of payment for services (and other needed resources) among social agencies, both agencies needs must typically be met simultaneously. It may be that this requirement of simultaneity makes it more difficult to exchange different types of resources (complementarity) than to exchange the same type of resource (reciprocity). This would probably

be the case, since the value of different types of resources is difficult to calculate and therefore an equal exchange transaction would be more difficult to arrange for different types of resources.

One way to test the above argument would be to compare different types of agencies--for instance, those using some cash payments with those limited entirely to exchanges--to see whether complementarity is more common in one case than in another.

Similarity and Interdependence

A tentative step is taken in this paper to tie together explanations of social interaction at different levels of analysis: between individuals, between groups (including formal organizations) and between communities and societies. Literature was consulted from the micro level (married and dating couples) and the macro level (Durkheim's types of solidarity and Hawley's human ecology) for ideas about the operation of similarity and interdependence in general.

Consideration of the operation of similarity and interdependence in these other fields yielded two main areas of difference. The first has to do with time, the second with context.

For marriage dyads the two factors are both present simultaneously; for Durkheim and Hawley the two factors operate separately, in terms of either time or context.

Durkheim describes organic and mechanical solidarity as characteristic of societies at different stages of development (i.e., at different times), and to a lesser extent as operating within different types of groups in a society (e.g., traditional versus modern groups). Hawley, on the other hand, sees similarity as operating entirely within groups (within species), and interdependence as operating between groups (between species).

To which of these cases is inter-organizational relations most similar? The first question, to which a partial answer has been attempted in this paper, is whether both similarity and interdependence are related to interaction and cooperation, and if so whether they operate simultaneously. With some exceptions, the findings show that both factors are operative, and that similarity operates even when there is no interdependence. From this result, it is concluded that it is not necessary to have both factors present concurrently in order to have interaction and cooperation between social service agencies. In this sense, therefore, relations between organizations are more comparable to macro level relations than to micro level relations.

The second question involves the context of the interaction, for instance in what situations, or in what types of societies or groups, are the factors of similarity and interdependence operative? The major contextual variables for organizations are the size and type of city or

region in which the organizations are located. No evidence on this question was provided in this paper.

It is suggested that further attention to generalizing from one level of analysis to another could contribute to our understanding both of inter-organizational relations in particular and of social interaction in general.

Conclusion

The original aim of this study was to expand understanding of cooperation between formal organizations, particularly social service agencies. To this end the following sources were consulted and utilized: the inter-organizational literature for conceptual ideas; the Exchange perspective for theoretical background; Sociometry and other dyadic studies for methodological techniques; and Durkheim, human ecology, and studies of married couples for the relative importance of similarity and interdependence at different levels of analysis.

Based on this background it was proposed that both similarity and interdependence are sources of interaction and cooperation between agencies. The findings provide considerable support for all of the propositions, and also for the argument that there are two types of cooperation: resource exchanges and joint efforts. Implications of the findings were considered with respect to three theoretical areas: inter-organizational relations, the Exchange perspective, and generalization between different levels of

analysis.

This study has some limitations, however. As described previously, both the measures of the concepts and the pair methods are exploratory. Definitive conclusions for some questions were not possible because of the small base N's for percentaging. There was insufficient empirical evidence, although considerable conceptual and theoretical grounds, for the distinction made between resource exchanges and joint efforts. Finally, there are limitations as well as advantages to the pair or dyadic method itself. For instance, such phenomena as leadership, dominance and hierarchy are better studied with a set or sociometric approach.

Thus, due to the exploratory character of the measures and methods used, and to the limited nature of the data and universe studied, all of the conclusions and implications drawn in this paper are highly tentative. Inter-agency relationships involve much else besides cooperation, and inter-organizational relations covers many other different types of organizations. Nevertheless, it is hoped that, by attempting to clarify some of the questions and issues needing study, this analysis contributes to the understanding of inter-organizational relations.

APPENDIX

List of Social Service Agencies

Private agencies

American Red Cross
Big Brothers/Big Sisters
Boy Scouts
Boy's Club
Catholic Social Services
Community Nursery
Credit Counseling Centers
Cristo Rey Community Center
Family and Child Services
Legal Aid Bureau
Urban League
Girl Scouts
Rehabilitation Industries
Salvation Army
Tri-County Council on Alcoholism and Drug Addiction
Visiting Nurses Association
Volunteers of America
YMCA
YWCA

Public agencies

Beekman Center (CMHB)
City Housing Commission
Community Mental Health Board
County Mental Health Center
Department of Social Services
Department of Veterans Affairs
Department of Vocational Rehabilitation
Employment Security Commission
Ingham County Health Department
Model Cities
Office of Economic Opportunity
St. Lawrence Community Mental Health Center
Social Security Administration
Youth Development Corporation (Model Cities)

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