



Influencers and Connectors in Community Prevention of Drug Abuse: Balance between Multi-site Consistency and Local Community Fit in Program Implementation

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A B S T R A C T

The simultaneous implementation of a program in multiple sites poses a challenge for the adequate coordination and internal consistency of an intervention. The operation of the network of program facilitators can be critical for effectiveness and community adjustment of such interventions. In this paper, we conducted a case study of a community prevention program for drug addiction applied in a large group of cities in Andalusia, in southern Spain. The aim was to explore how integrated planning and local adaptation are combined in community prevention, through the collaboration network between program facilitators. For this aim, we analyze and describe two types of relevant roles of local facilitators: those that have a central coordinating role, versus peripheral “connectors”, which have a bridge role between different geographical areas. The network of the “Cities against Drugs” program in the province of Seville ($n = 45$) showed a core-periphery structure, with coordination patterns clearly influenced by the geographical location of facilitators. The capital and its metropolitan area not only have greater geographic centrality but also a central role in the social network. On the other hand, the role of “connectors” seems to be functional to avoid the fragmentation of the remotest regional nuclei. Finally, we discuss the tension between central coordination of the program and the adaptation to peculiarities of each local context.

Los papeles influyente y conector en la prevención comunitaria del abuso de drogas: la tensión entre la coordinación y el ajuste local en la implementación de programas

R E S U M E N

La implementación de un programa en múltiples lugares simultáneamente supone un reto para la coordinación adecuada y la consistencia interna de la intervención. El funcionamiento de la red de facilitadores del programa puede ser decisiva para la efectividad y el ajuste comunitario de tales intervenciones. En este artículo realizamos un estudio de casos de un programa de prevención comunitaria de drogodependencias que se aplica en un amplio conjunto de ciudades de Andalucía, en el sur de España. Analizamos y describimos dos tipos de posiciones relevantes de los facilitadores locales: aquellos que tienen un papel central de coordinación para el conjunto de aplicadores del programa, frente a los “conectores” periféricos, que tienen un papel de puente entre áreas geográficas diferenciadas. La red del programa Ciudades ante las Drogas ($n = 45$) en la provincia de Sevilla mostró una estructura centro-periferia, con patrones de coordinación claramente influidos por la ubicación geográfica de los facilitadores. La capital y su área metropolitana no solo tienen mayor centralidad geográfica sino un papel central en la red social. Por su parte, el papel de los “conectores” parece ser funcional para evitar la fragmentación de los núcleos comarcales más alejados. Finalmente, discutimos la tensión entre la coordinación central del programa y la adaptación a las peculiaridades de cada contexto local.

“Cities against Drugs” program is a major community prevention program that is applied in the cities of Andalusia, in southern Spain. The central component of the intervention consists of the

development of awareness, training, and dissemination of health messages, with the aim of reducing the prevalence of drug abuse. Most common strategies include selective prevention of abusive

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alcohol consumption among high-risk adolescents and community awareness campaigns of a universal nature. Coordination activities are also introduced in schools, social services, and health centers in each town where the program is applied. "Cities against Drugs" has been implemented uninterruptedly for more than 20 years. In addition, it has a wide coverage, with more than 400 municipalities adhered to the program. According to the government of Andalucía, "86 percent of the Andalusian population resides in municipalities that have activities within the program" (*Consejería de Igualdad y Políticas Sociales, 2016*).

The program is implemented in a decentralized manner. The regional government defines the objectives of the program and establishes general intervention guidelines. However, each participating municipality determines priorities, population, and intervention contexts that best suit local needs. Although the type of educational, family, and community prevention activities eligible are a priori defined for the group of cities, each municipality has autonomy to design the specific projects that will be implemented in town. This structure is reflected in the co-financing model on which the program is based, with the economic contribution of both the Andalusian government and each participating municipality.

Consequently, the intervention is organized into prevention sub-units at the local level, where there is a person in charge (a "local coordinator"), who is the professional responsible for its design, implementation, and justification. Therefore, we can understand the implementation of "Cities against Drugs" program as a collaborative network between local community prevention coordinators. This structure entails an implicit tension between the integration efforts of the group of participating cities and the needs of local community adjustment.

In line with the above, in this article we carried out a descriptive analysis of the collaboration network among the local coordinators of the "Cities against Drugs" program, with the objective of exploring how the principles of integrated planning and local adjustment are combined in community prevention. A brief summary of the program is available in [Appendix](#).

An Inductive Case Study on the Relationships between Program Facilitators

This research is an inductive case study that arises in the context of the evaluation of "Cities against Drugs" program in the province of Seville. During the formative evaluation of the program, we verified that the "network work" (sic) format among facilitators was not only an organizational peculiarity, but it also had a fundamental role in how the activities of the program were developed in practice and, consequently, it could partly explain the results obtained with the intervention (*Holgado & Maya-Jariego, 2010; Maya-Jariego & Holgado, 2006a*). This observation coincides with some evidence that shows that the interaction that takes place between the people involved in a program (whether the participants themselves, the facilitators of the intervention, or other stakeholders) directly affects the implementation of the program and may even have an impact on the effectiveness of the intervention (*Gesell et al., 2013; Valente, 2012; Valente & Pumpuang, 2007*).

Focusing on professionals who carry out the activities of the program, collaboration between facilitators has normally been understood as a way of guaranteeing a homogeneous implementation, respecting the original design as far as possible. Potentially, the continued interaction between facilitators could in practice be related to the fidelity of the implementation, the intensity of the intervention, and the consistency of activities between contexts. However, although it has been rare to take it into consideration, coordination between facilitators could also have a role in adapting the program to each specific context. For example, it is possible to

think that innovations, best practices, or modifications introduced in a program are spread word-of-mouth in networks of contacts between professionals.

In this context, social network analysis offers the opportunity to formalize the interactions that occur during the implementation process (*Valente, 2012*). Thus, the systematic study of the structure of exchanges between facilitators allows the emergence of a series of factors and dynamics that until now were hidden in the "black box" of the implementation process. That is what we intend to develop with the present case study. We assume that a better understanding of the exchange networks between program facilitators helps to understand the implementation process. Among other factors, the position of certain individuals in the network, the existence of clusters, or the topology of the network as a whole could be associated with the fact that facilitators work in tune, or with the degree of flexibility they have to incorporate changes in the intervention.

In the sections that follow, we conduct a brief review of the literature, which provides context to our case study. In the first place, we review two dimensions of the implementation of programs that are in permanent tension in those interventions that, as with "Cities against Drugs", are developed in different contexts simultaneously: homogeneous application of planned activities, in contrast to adaptation to specific local contexts. Secondly, we review studies that have resorted to social network analysis to describe or evaluate the implementation process, paying special attention to those cases in which it has been related to the homogeneous application of activities or to adaptation to the local context.

Implementation as Coordination between Stakeholders

The implementation of programs consists of the execution of previously planned actions. Both the fidelity to the original design and the quality and intensity of activities development mediate the results obtained with this intervention. Experience shows that implementation is variable depending on the operators and the contexts of application (*Durlak, 1998*). That is why it is necessary to take it into account both in evaluation and improvement of programs. With the case study of "Cities against Drugs" program, we will examine a typical case of implementation, paying attention to a specific element that is frequently overlooked: interaction between facilitators.

The evaluative research carried out during the last decade has demonstrated the relevance of implementation in the effectiveness of interventions (e.g., *García-Poole et al., 2019; Meyers et al., 2012; Orte et al., 2016*). Even when we start from evidence-based practices, the results obtained are often below our expectations. On the one hand, selected programs do not always have the greatest empirical support. On the other hand, selected programs are sometimes applied inappropriately, with limited intensity or without implementing the core components of the intervention. Hence the design of effective programs is "necessary but not sufficient" to obtain positive results (*Maya-Jariego, 2010*).

In this context, organizational capabilities seem critical in the implementation process. One of the dimensions that conditions the results consists of the coordination of stakeholders in the intervention (*Brinkerhoff, 1996*) or, more specifically, collaboration in work teams (*Harris et al., 2006*). In the same vein, the formation of community coalitions in general improves the capacities of intervention, contributes to the development of shared norms, and allows a more efficient use of resources (*Butterfoss et al., 1993; Durlak & DuPre, 2008; Feinberg et al., 2005; Goodman et al., 1996*). In general, the coordination improves the consistency of the program and facilitates the implementation with fidelity in different contexts with different populations. For example, coordination among program's facilitators has been key in educational interventions,

since it allows acting in a comparable way in classes and schools that can be very different from each other (Forman et al., 2009; Rodrigo, 2016; Rosenblum et al., 1995).

Implementation as Local Community Adjustment

In the previous section we have shown how coordination helps to implement programs in an equivalent way in different contexts. However, in addition to being consistently applied in different recipient systems, it is important to make programs sensitive to peculiarities of each context. That is why it has been indicated that there is a tension between fidelity and adaptation to the context in the implementation of programs (González et al., 2004). Requirements to carry out the program as planned may contradict the necessity to adapt it to the needs and peculiarities of a specific group, or of a specific community, especially when there are cultural, ethnic, or language differences. In practice, this has resulted in a differentiation of central components of the intervention, which is necessary to maintain, and secondary components, which can be modified to achieve positive results depending on the characteristics of the community. "Translation" implies being sensitive to local peculiarities to guarantee the impact of the intervention. The introduction of elements of community adjustment has proven effective in the prevention of drug abuse and delinquency (Fagan et al., 2009; Hawkins et al., 2009), reduction of obesity (Akers et al., 2010), development of socio-emotional skills (Jones et al., 2011), and prevention of diabetes (Whittemore, 2011), among others.

Network Analysis for Program Implementation

Social network analysis has recently been used to describe, evaluate, and monitor program implementation process (Maya-Jariego, 2016; Maya-Jariego & Holgado, 2015b; Valente, 2012; Valente et al., 2015). It is a structural approach, which emphasizes the processes of social interaction (Wellman, 1988). Specifically, it is a useful tool to analyze the exchanges that take place between intervention agents, between program participants, or any other stakeholders involved in the intervention. First, the information and exchange networks "among the professionals who deliver the program" are fundamental in the translation of evidence-based practices into effective actions in concrete community contexts. Network analysis techniques can also be used to select community leaders (or community members) who will collaborate in the effective implementation of program activities (Valente & Pumpuang, 2007). Second, the counseling and social support networks "among program participants" have a mediating effect on the impact of the intervention (Gesell et al., 2013). In fact, the interaction that takes place within the program can be crucial in prevention actions (Shin et al., 2014). Third, collaboration "between organizations and key community agents" is part of the process of adopting and disseminating innovations. For example, individuals (or institutions) that act as intermediaries between researchers and education professionals form chains of science-practice transfer that determine which models and educational materials are used in practice (Neal et al., 2015).

With regard to the implementation of programs with fidelity, it is usually intended that interventions designed in experimental contexts maintain their essential characteristics when applied in real contexts. The information exchange networks between the intervention agents influence the way in which the program is put into practice. In this context, Neal and Neal (2019) have shown that adoption of evidence-based practices depends on control mechanisms and social pressure from peers, while fidelity in the implementation process could be influenced by the access to information and resources through intermediaries. Therefore,

bonding and bridging social capital can have a differential impact on the implementation process.

This Study

The infrastructure to disseminate programs in large settings is a crucial element to guarantee both quality and long-term sustainability. However, according to the previous literature, it is not clear what the key elements in this process are, nor what the role of facilitators is in this regard. In this study, we describe the implementation of "Cities against Drugs" community prevention program, through the social network of professional exchanges among local coordinators in the province of Seville (Andalusia, Spain). The main objective was to describe how coordination is combined among multiple local contexts in which the program is applied, with the adaptation to particularities of each community. For this, we explore the diversity of roles that facilitators play in the collaboration network during the implementation of the program.

In this case, social network analysis is used to identify program facilitators who have a key role in professional collaboration relationships within the program. Secondly, with the qualitative information obtained throughout formative evaluation, we characterize functions that they fulfilled in the implementation of the program.

Method

Participants

We interviewed 45 local coordinators of "Cities against Drugs" program in the province of Seville, from a total of 52 cities participating in the province. This means 86.5% of the participating cities in the province and 11% of all participating cities in Andalusia. For their majority, the program coordinators are professionals specialized in prevention and social intervention, with studies in psychology and social education. They usually have a previous link with community social services of the municipality. The participants had been an average of 38.24 months in charge of the program, with a great variability among municipalities ($SD = 27.74$). In most cases, coordinators are responsible for both the design and implementation of program activities. In other cases, especially in larger municipalities, they are supervisors of implementation, coordinating a team of technicians and volunteers within the services of the municipality. The nine counties that make up the province of Seville were represented among participants.

In this article, we focus only on one of the eight Andalusian provinces in which the program is applied, through a case study of the province of Seville. Provincial level is the preferred area of coordination, so that participating cities show a certain unity of action. The regional government organizes periodic meetings between the applicants of the program in each province. In these meetings, local coordinators exchange experiences and educational materials, discuss operational difficulties, receive guidance on financing and the justification of the program, and agree on some strategies to improve coordination. In addition, although less frequently, regional follow-up meetings are organized and there is an online platform to share information.

Instruments

Data we examined in this study are part of a larger research in which a formative evaluation of the program was carried out, following an evaluation model based on empowerment (Fetterman & Wandersman, 2005; Holgado & Maya-Jariego, 2010; Maya-Jariego & Holgado, 2006b). To collect information, semi-structured interviews

were conducted with local coordinators, information was collected on the relationships between coordinators, and some meetings were held to monitor the program.

Brief questionnaire about the activities implemented and semi-structured interview. Through personal interviews, information was obtained on the roles played by local coordinators, as well as on the areas of application of the program in each town. Specifically, in each case they provided data on populations served, intervention contexts (namely, schools, health system, and/or community), type of activities implemented, and prevention models used. First, respondents filled in a short questionnaire informing of the list of eligible activities of the program that were implemented in their town over the last year. In this section there were questions about levels of intervention (individual, families, schools, and communities), as well as on the existence of collaboration with other local prevention services. They also reported on type and frequency of activities carried out in the two main areas of intervention (community and educational). Secondly, they provided information on the number of months working for the program. After completing the questionnaire, we conducted a qualitative interview in which respondents described the implementation process, identified main barriers and resources, reflected on their experience of application of the program, and summarized lessons learned. To carry out interviews, a member of the research team traveled to each municipality and met with the coordinator and the team responsible for the implementation of the program. The interviews lasted approximately 90 minutes, during which information was obtained on the areas of intervention, activities applied, population served, actions carried out, and results obtained. To support this information, documentation on the application of the program was requested and in some cases the researcher observed in situ the implementation of activities.

Analysis of local coordinators' social networks. After completing the semi-structured interview, each respondent answered questions about professional and personal relationships among local coordinators of the province. For this, a list with the 52 local coordinators of the province of Seville was presented to respondents, specifying name and city of reference in each case. For each of them, they were asked to indicate the intensity of (a) the personal relationship and (b) the professional relationship. In this way, two square matrices of 45 actors were generated, with weighted relationships, referring to the personal and professional sphere. Both were completed according to a scale of 0 to 3, where 0 corresponds to *we have no relationship*; 1, *we have coincided in some joint meeting*; 2, *we maintain some exchange of materials or occasional informal contact*; and 3, *we have a permanent professional contact*. In this study, we only used the professional relationships' matrix, as far as we were specifically interested in describing the patterns of collaboration among facilitators during the process of implementation. A similar application of this name generator can be found in a study on professional relationships in fishing ports (Maya-Jariego et al., 2016).

Although this information was collected again 12 months later, following a longitudinal evaluation design (Holgado & Maya-Jariego, 2010), in this case we only focus on data obtained in the first observation. Information from first observation was useful enough to describe the interaction of facilitators during the implementation of the program, as well as to identify key facilitators along this process.

Data Analysis and Procedure

Relationship matrices were processed with UCINET 6.626 (Borgatti et al., 2002), and visually represented with VISON 2.8 (Brandes & Wagner, 2004). We followed an inductive-descriptive procedure, oriented to detect the existence of key facilitators as well as to differentiate the main roles during the process of implementation.

In the first phase, an exploratory visual analysis of data was carried out, combining the representation of centrality and geographical location of local coordinators of the program (Holgado, 2018). Next, descriptive analyses of core-periphery structure were carried out (Borgatti & Everett, 2000) and a meta-representation of data was elaborated using the clustered graph technique (Brandes et al., 2008). This technique allows us to simplify a social network based on several categories of belonging of actors, and their relationships among themselves. In our case, we examine specifically intra- and inter-county relations. The province is divided in subareas called *comarcas*, which we refer here as "counties". Although there are nine *comarcas* in total, for the elaboration of meta-representations we group them in only six categories, because in some cases we had very few municipalities in the county in question. Specifically, we use Sierra Norte, Sierra Sur, Aljarafe, Bajo Guadalquivir, La Campiña (which includes the areas of Carmona, Moron, Marchena and Ecija) and the Metropolitan Area (which includes Vega del Guadalquivir) as categories.

In a second phase, we proceeded to calculate the indicators on the role of "influencers" and "connectors" following the distinction of Angst et al. (2018). In that study, two types of intermediation roles that may be functional in environmental governance networks were identified. Central "coordinators" connect a large number of actors and have a central position, while peripheral "connectors" act as a bridge between periphery and network core (Angst et al., 2018). The first role facilitates coordinated action. The second role avoids fragmentation of the network and allow us to access new information, thus facilitating innovation. In our case study, we assume that both types of roles could also appear in the program implementation process. However, henceforth we will refer to both roles as "influencers" and "connectors", respectively, in order to avoid confusion of the former with the very own facilitators of "Cities against Drugs" program, usually named "local coordinators". In our case, we calculate nodal betweenness centrality to evaluate the coordination role and calculate the number of components in which the network is fragmented by eliminating the node in question, to determine its role of connection with periphery. In the first case we used the index provided by UCINET (Borgatti & Everett, 2006), and in the second case we performed calculation manually, eliminating each node in the graph and then doing calculation of the number of resulting components, being inspired by the "edge-wise deletion" procedure (Angst et al., 2018; Valente & Fujimoto, 2010).

However, when networks are very cohesive, as in our case study, it is more difficult to detect a clearly differentiated "connector" role. Therefore, in addition, we calculate the clique overlap centrality indicator (Everett & Borgatti, 1998) for each local coordinator, counting the number of cliques to which an actor belongs. This allows us to indirectly assess the role of each coordinator in the relationship between different sub-graphs of the network. Calculations were repeated successively for relationship levels greater than 0, 1, and 2 (as indicated in the "Analysis of local coordinators' social networks" section) to more accurately detect the role played by each local coordinator.

In Table 1 we summarize the three indicators that were calculated to determine the roles of coordination in the program. In all cases, it is quite likely that they are individuals with high degree centrality. The basic distinction that we intend to reflect corresponds to nodes that have an intermediation role for the whole network ("influencers"), compared to those that more specifically connect differentiated groups, prevent the fragmentation of the network into subcomponents and are a bridge with isolated individuals or, in general, with the periphery of the network ("connectors"). In any case, as we will show in the Results section, finally these indicators were combined with attributes of the actors (specifically geographical position and experience in the application of the program), to be more precise in the identification of differentiated roles.

Table 1. Indicators Used to Evaluate the Roles of Coordinators

Role	Indicators	Definition	Interpretation
"Influencers"	Nodal betweenness centrality	It is the number of shortest paths between nodes that pass through a specific node.	The individuals that act as intermediaries have an important role in the operation of the network as a whole, since they are essential nodes in the dissemination of information and the flow of resources in the network.
"Connectors"	Number of components after deletion of the node	Number of components (subgraphs and/or isolated nodes) in which the network is fragmented when we remove a node from it.	The individuals that act as a bridge (because they are cut-off points between different parts of the network) connect the nucleus with the periphery. They are a fundamental contact so that the individuals and groups of the periphery are not disconnected from the core of the network.
"Connectors"	Clique overlap centrality	Number of cliques to which a node belongs.	The individual who is part of many different cliques puts different groups in contact with each other. It establishes a bridge with the periphery, as well as with "isolates", "pendants", etc.

As a third phase, results were discussed with a psychologist who had participated in the program and contributed to validating the interpretation of data.

Regarding interviews' qualitative information, after being summarized and analyzed by the two researchers, in this specific case study it was used to facilitate interpretation of network data. Qualitative description of program implementation in each city helped to interpret the role of each coordinator, while providing a context to understand connection between collaboration networks and development of the program itself.

This research was carried out with the support of the regional government. Participants voluntarily responded to the interview and were assured of the responsible use of information, together with the commitment to return the results through a report and/or in specific follow-up sessions of the program. Data was used in organizational development sessions, so that participants previously agreed that the identity of each local coordinator would be represented on the network.

Results

Implementation of the "Cities against Drugs" Program

Implementation of the program usually consists of the application of universal prevention activities in educational (100% of the municipalities), family (82.9% of cases), and community (51.2%) fields. Coordinators participate mainly in the development of psycho-educational activities in schools, in the organization of family schools for the improvement of parental skills and in the organization of information campaigns in local media. They also carry out community awareness activities on the effects of drug use. The choice of program activities in each municipality depends both on available resources, time of application of the program in the town, coordinator's experience, and possible overlap with other programs. In more than half of the municipalities (54.5%), the program was integrated into the Municipal Plan for Drug Addiction: this usually reflects a more institutionalized intervention, with greater stability of responsible staff and a greater availability of resources.

Exploratory Visual Analysis

A core-periphery structure with territorial base. Local coordinators' social network forms a core-periphery structure, clearly influenced by the geographical position of participating cities. First, the network of professional contacts among program facilitators is divided between a small nucleus of densely connected actors and a majority with comparatively few connections, although it is directly or indirectly linked to the core of the network (Figure 1, above). This

structure represents the exchange of information and educational materials, which are often produced through coordination meetings between program facilitators. In this case, the nucleus is composed by less than a quarter of the total number of stakeholders interviewed, while the remaining three quarters form part of periphery. A continuous indicator of "coreness" of .108 was obtained. The network shows a very clearly marked core-periphery structure, with a core density of .789 and a density within the periphery of .086.

Second, actors' connectivity is related to the geographical distribution of the program. On the one hand, the nucleus of the network is composed for the most part by coordinators of municipalities closest to the capital: Seville and its metropolitan area, and the Aljarafe region. These are usually municipalities with the highest population density. On the other hand, as we move away from the capital, there are small regional groups. For example, some conglomerates are observed among local coordinators of Ecija, Sierra Sur, and Bajo Guadalquivir countryside (Figure 1, above). The E-I index for the set of actors was .120. By groups, homophily was lower in the regions of Sierra Norte (E-I = .692), Aljarafe (E-I = .586), and Bajo Guadalquivir (E-I = .429), in comparison with the highest levels of La Campiña and Ecija (E-I = .341), Sierra Sur (E-I = .111), and Metropolitan Area (E-I = .086).

Therefore, a first exploratory approach shows that the network of facilitators is partly conditioned by the hierarchy of population centers and the geographical proximity between participating municipalities. This is confirmed when we elaborate a meta-representation with the technique of clustered graphs. As shown in Figure 1, below, the central axis of communication between program facilitators is formed by Seville metropolitan area and Aljarafe region. They are the two closest and most integrated zones with the capital and both show a high density of internal relations, within each county, and a strong connection between them. However, in regions that are the farthest from the capital, mutual visits and exchanges of information are less frequent. In some cases, these are semi-rural contexts, with more dispersed population centers and worse communication channels.

Distance to the capital and facilitators' experience in the program. Geographic distance to the capital and permanence in the program seem to be reflected indirectly in centrality of local facilitators. As we have seen in the exploratory visual analysis, municipalities of the geographical periphery have a comparatively secondary role in the social network. In addition, actors who are at the core of the network have been working in the program for a longer time than actors in the periphery ($t = 3.986, p < .01$). In line with this, time that each local coordinator has been working in the program correlates positively to "betweenness" ($r = .701, p < .01$) and with the number of cliques in which it participates ($r = .767, p < .01$). Same happens with "indegree" ($r = .545, p < .01$) and "outdegree" ($r = .680, p < .01$). Finally, the budget available to the program in each

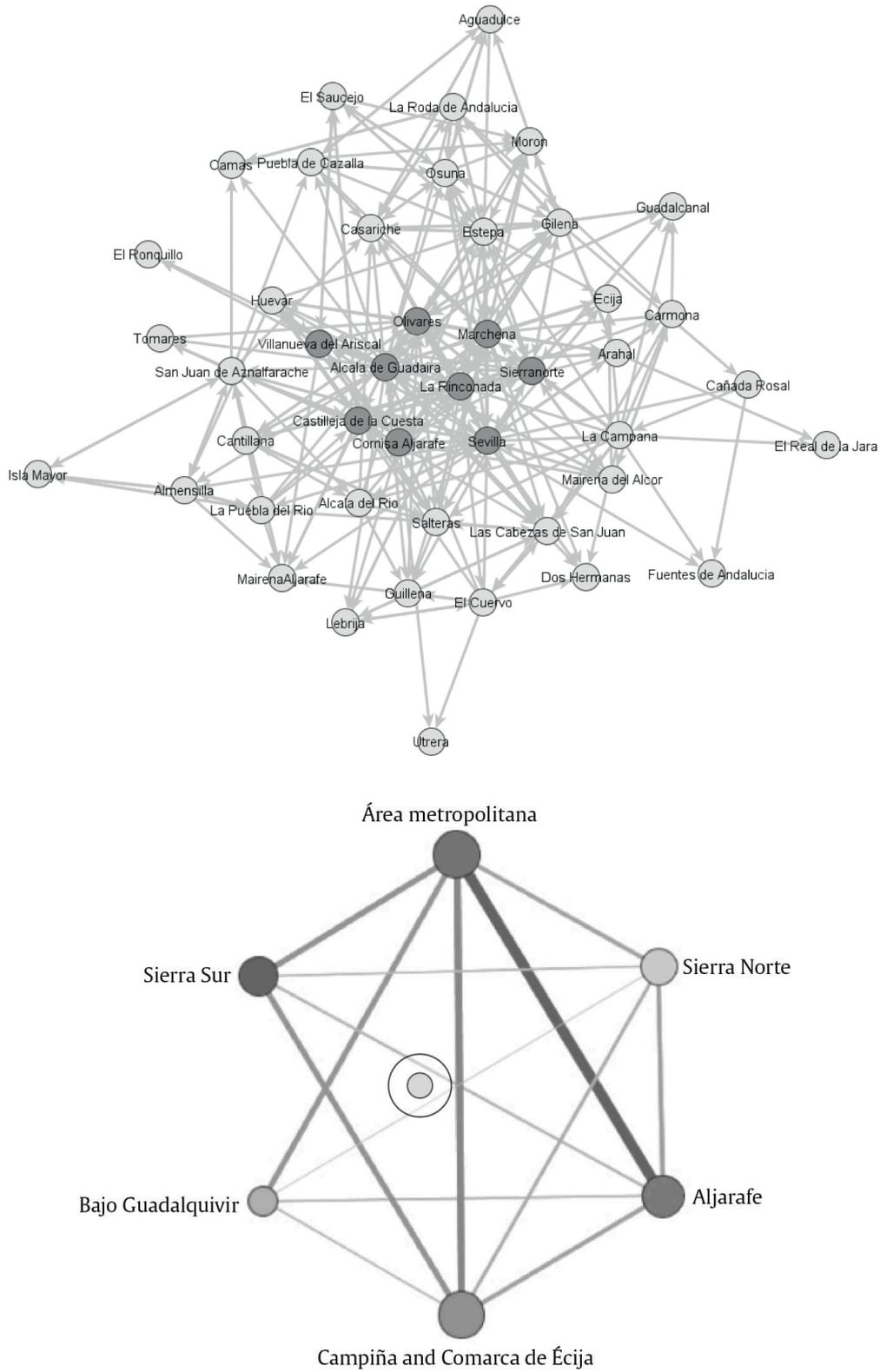


Figure 1. Network of Professional Exchange between the Facilitators of “Cities against Drugs” Program. The figure above represents the network of professional exchanges between the local coordinators of each municipality participating in the program. The dark gray nodes represent the core of the network and the rest make up the periphery. The figure below is the meta-representation of the relationships between the districts of the province of Seville. Gradation of grays represents the density within each geographical area. The thickness of the line represents the density of the relationships between districts.

Table 2. Experience in the Application of the Program, Distance to the Capital and Position in the Social Network of the Local Coordinators of the “Cities against Drugs” Program

	Experience	Distance	Cut-off point = 0		Cut-off point = 1		Cut-off point = 2	
			Between	Cliques	Between	Cliques	Between	Cliques
Sevilla	110	0	15.20	45	3.47	4	0	0
Alcala de Guadaira	108	17	11.77	43	12.24	10	0	1
Estepa	53	110	8.42	21	3.11	12	1.32	1
San Juan Aznalfarache	42	8	6.67	11	0	0	0	0
Olivares	96	26	6.66	23	0	2	0	0
Marchena	82	61	6.47	31	1.00	3	0	0
Cornisa Aljarafe	43	8	5.27	16	0	1	0	0
La Rinconada	60	14	5.01	19	8.17	7	1.53	0
El Cuervo	42	76	3.07	8	0.92	0	0	0
Gilena	12	106	2.95	6	9.01	9	0	0
Sierra Norte	94	37	2.65	18	0.44	0	0	0
La Campana	18	58	2.56	13	1.58	1	0	0
Salteras	47	47	2.51	15	7.82	8	0.37	0
Arahal	48	44	2.33	4	0	0	0	0
Osuna	38	87	2.26	10	0	3	0	0
La Puebla del Río	36	19	2.00	4	0	0	0	0
Casariche	64	123	1.92	12	5.11	7	0.40	3
Castilleja de la Cuesta	30	11	1.79	7	1.87	1	0	0
Villanueva Ariscal	42	22	1.66	7	3.63	5	0	2
Moron de la Frontera	42	63	1.65	4	0	0	0	0
Mairena del Alcor	12	24	1.61	3	1.45	2	0	0
La Roda de Andalucía	15	127	1.27	2	2.32	2	0.05	0
Las Cabezas	24	55	1.15	9	0.24	2	0	1
Almensilla	42	19	0.94	4	17.90	14	0.26	0
Huevar	17	42	0.67	6	2.96	6	1.66	3
Alcala del Río	15	18	0.62	6	0	0	0	0
Carmona	8	35	0.54	5	0	1	0	0
El Saucejo	15	107	0.49	1	4.73	5	0	0
Guadalcanal	60	108	0.41	3	0.51	1	0.53	1
Cantillana	72	35	0.37	3	1.97	3	0.63	1
Puebla de Cazalla	42	69	0.36	3	0.56	1	0	0
Camas	20	9	0.30	2	5.97	3	0.32	0
Lebrija	6	66	0.28	2	0	1	0	0
Cañada Rosal	24	80	0.26	1	3.47	7	0	0
Mairena del Aljarafe	19	11	0.21	6	0.17	1	0	0
Tomares	45	9	0.04	2	3.54	2	0	0
Aguadulce	13	98	0.03	2	2.00	1	0	1
Dos Hermanas	60	60	0	4	0	2	0	0
Guillena	12	21	0	4	0	1	0	0
El Ronquillo	40	48	0	1	0	0	0	0
Ecija	9	86	0	3	0.05	2	0	2
Isla Mayor	15	42	0	1	0	0	0	0
Utrera	42	30	0	0	0.29	1	0	0
El Real de la Jara	6	78	0	0	0	1	0	0
Fuentes de Andalucía	15	65	0	1	0.83	1	0.05	0

Note. In the first column, the experience of each coordinator is reported, evaluated through the number of months he/she has worked in the Cities program. The second column shows the distance of each municipality to the capital (Seville), expressed in kilometers. Between columns 3 and 8, the degree of nodal betweenness and clique overlaps centrality of each coordinator are provided, for three binary networks with three different cut points in the intensity of the relationship (according to the scale of 0 to 3 described in section 2.2.2).

municipality correlates to “betweenness” ($r = .400, p < .05$) and the number of cliques in which it participates ($r = .402, p < .01$).

Local coordinators tend to rotate quite frequently, especially in smaller municipalities, where the program is less institutionalized and has less stability in funding. However, in medium-sized cities and large urban centers, coordinators are more commonly professionals with extensive experience in the prevention of abusive drug use. These are facilitators who have been at the forefront of the program for a long time, and who can serve as a model and support for those who have joined more recently.

“Influencers” and “Connectors” in Program Facilitator Network

Table 2 summarizes basic data of local coordinators in each participating municipality. Taking nodal betweenness centrality as reference, there are eight actors (17.78%) that more than double the average intermediation centrality level ($M = 2.275, SD = 3.250$). These are Seville (betweenness = 15.2), Alcala de Guadaira (11.77), Estepa (8.42), San Juan de Aznalfarache (6.67), Olivares (6.66), Marchena (6.47), Cornisa Aljarafe (5.27), and La Rinconada (5.01). Almost all

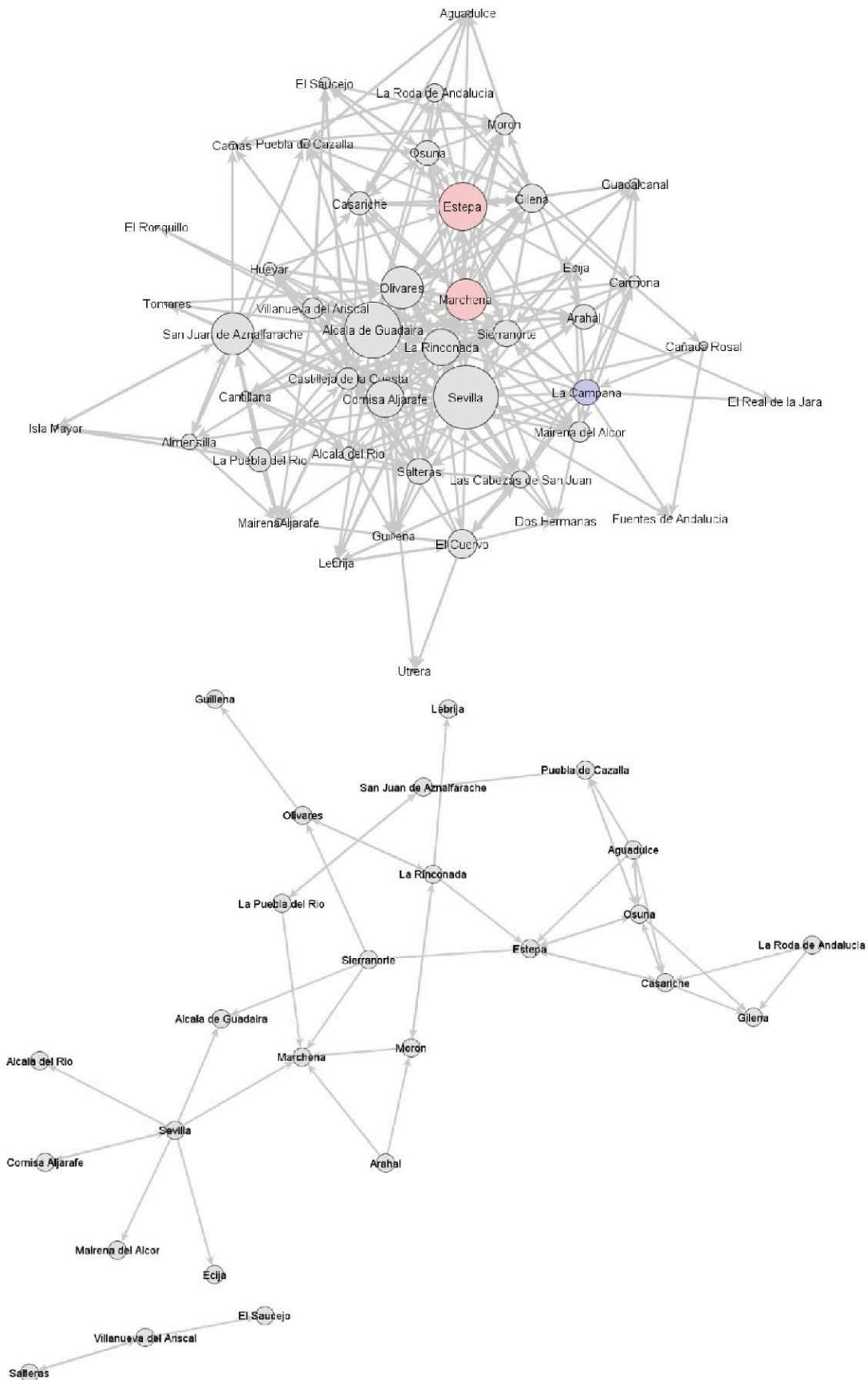


Figure 2. Detection of “Influencers” and “Connectors” in the Implementation of the Program. The figure above represents the network of professional exchanges between the local coordinators of each municipality participating in the program. The size of the nodes represents the betweenness centrality. La Campana was identified as “connector” by the component fragmentation procedure. Estepa and Marchena were identified as “connectors” by the count of clique overlap. The figure below represents the network of strong relationships (with a cut-off point greater than 2).

of these municipalities, with the exception of Estepa and Marchena, are less than 26 kilometers from the capital. All of them are part of the cohesive core of the network, and in general they maintain a relative prominent position in networks with cut-off points greater than 1 and greater than 2. According to criteria specified above, we can assign them a role of “influencers”.

The picture is more variable when we try to assign the role of “connectors”. If we follow the criteria established by [Angst et al. \(2018\)](#), this role could correspond to La Campana (in the network with a cut-off point greater than 1), or to Villanueva del Ariscal and Seville (in the network with a cut-off point greater than 2), since each of the coordinators increases network structure in two components or more when they are eliminated. However, with the indicator of clique overlap centrality, Estepa and Marchena (in the network with a cut-off point greater than 1), or Osuna and Casariche (in the network with a cut-off point greater than 2) would stand out as connectors (see [Table 2](#)). In fact, these last four municipalities correspond to the same socio-geographical environment, connected by the highway that lays between Seville with Malaga. Of the four, Estepa and Osuna stand out, since they maintain a high level of intermediation even when we focus on relationships of greater intensity among facilitators of the program ([Figure 2](#), below).

Estepa’s coordinator illustrates very well the “connector” role. On the one hand, he acts as a bridge between his county of provenience and network core. On the other hand, he has a central role in exchanges that take place in his immediate area (or *comarca*). He is a professional with extensive experience in the program, who also shows a very participative attitude in all types of prevention activities. That is why he has become a reference professional, providing support and guidelines for action to coordinators of nearby towns. His leadership capacity is reflected in the exchange and collaboration dynamics observed in the application of the program in the county.

As we have previously verified, with the new indicators generated, the importance of geographical location is confirmed. In the network with a cut-off point greater than 2, geographical distance to the capital correlates positively with number of cliques ($r = .583$, $p < .01$), reflecting the existence of strong linkages among coordinators that are found further away from the capital. For example, in Sierra Sur there are four municipalities strongly connected to each other: Estepa, Osuna, Casariche, and Gilena.

Table 3. Types of Local Coordinators in “Cities against Drugs” Program

	Cluster 1 ($n = 4$) “Influencers”	Cluster 2 ($n = 4$) “Connectors”	Cluster 3 ($n = 15$)	Cluster 4 ($n = 22$)
Distance	20.00	100.50	81.40	26.18
Experience	102.00	64.75	21.40	34.86
Betweenness	9.07	4.31	1.09	1.48
Clique overlaps	32.25	16.75	4.33	5.91

To contrast the previous analyzes, we performed a cluster analysis with the Quick Cluster procedure, using geographic distance to the capital, time they worked for the program, and indicators of betweenness and centrality of clique overlap as criterion variables. The results are summarized in [Table 3](#). The first cluster allows the identification of four actors who are in the geographical center of the province, near the capital and are among the most experienced facilitators in the program: Sierra Norte, Alcala de Guadaira, Olivares, and Seville. The second conglomerate identifies four actors that are further away from the capital, although they are above average in terms of the degree of experience in the program: Guadalcanal, Casariche, Marchena, and Estepa. As we can see, most of the actors in both conglomerates were identified as “influencers” and “connectors” in previous analyses. The other two groups (clusters 3 and 4) are larger and have comparatively less experience and a less prominent role in the social network. Members of cluster

3 are facilitators located at a great distance from the capital, while in cluster 4, they are those who are located in the nearest cities.

Two Emerging Ways of Coordination

Interaction networks that we have described do not derive directly from the hierarchical structure of the organization but represent networks of informal exchanges between program coordinators. In fact, all interviewees occupy the same formal position in the organization, so the roles of “influencer” or “connector” are not previously planned but emerge from contacts that this group of professionals maintain with each other.

According to the qualitative description obtained from the validation interview, the most consistent components of the intervention were training modules on social skills, attitude change, and information on consequences of drug abuse that were applied in schools. Among other activities, the best connected facilitators usually shared educational materials, disseminated good practices, and offered examples of activities to other coordinators that are especially motivating for students. Those who play the role of “influencers” also encouraged the rest of facilitators to actively implement the program, as well as provided guidance and support to less experienced facilitators.

“In the province of Seville, the work was very conditioned by the facilitator with more experience in the program. He provided educational activities for other facilitators to implement in the primary and secondary schools of their town. He also put us in touch with companies that organized the ‘Alcohol Free Day’ or with theater groups that had some prevention content in their repertoire. Once we started this kind of activities, then we agreed between several municipalities to carry out the same activity and reduce costs”. (Qualitative validation interview).

“For example, the Alcala de Guadaira’s coordinator had experience in the involvement of kids so that they themselves were promoters of preventive activities. He taught other facilitators from other cities to carry out such interventions with ‘health agents’”. (Qualitative validation interview).

On the other hand, activities with families and with the community showed greater variability in different contexts where the program was implemented. “Connectors” introduced changes in activities to improve their adaptation to the peculiarities of semi-rural contexts and were responsible for identifying and systematizing the needs that were not being covered by the original program and guidelines.

“In general, those that appear as ‘connectors’ on the periphery were facilitators with the capacity to innovate, design their own activities and get other colleagues to apply them as well. I think that was their way of responding to the needs they detected in the environment. This is the case of the Marchena’s coordinator, who created a board game called ‘Vital Zone’. It was a game similar to the Trivial Pursuit, with questions and answers about the risks of drug addictions. They ended up doing even a regional television contest, which served to sensitize the community. It was very well accepted in the villages of the region, near Marchena”. (Qualitative validation interview).

“In schools, only educational materials previously approved by the regional government were used, so the activities were very similar. However, family interventions were more heterogeneous: it depended on each facilitator, who used different boarding models ... Some organized parent schools, others promoted the exchange of emotional support, and so on ...” (Qualitative validation interview).

The implementation of programs is partly a social process. Most experienced facilitators introduce newcomers to the mechanisms of the program, act as a role model to less experienced facilitators and

Table 4. Characteristics of the Network of Facilitators of the Program “Cities against Drugs” ($n = 45$)

Structural aspects	Description
Core-periphery structure in the network of professional exchanges	The core of the network is made up of the coordinators of Seville and the metropolitan area, and the closest districts. The periphery is composed of three quarters of the municipalities that apply the program in the province
Geographical proximity increases the likelihood of being connected	The actors are grouped according to the region of belonging Closeness improves accessibility among coordinators and is related to the intensity and frequency of interpersonal contacts.
Distance to the capital and the time of permanence in the program are reflected in the centrality	The municipalities with more population and closer to the capital have more centrality in the social network of the program’s facilitators. In turn, more experienced facilitators have greater social prominence among their colleagues
Influencers and connectors bridge the implementation of the program	The medium and large municipalities, in which the program is more institutionalized, have facilitators who are central in the exchange of good practices and in the establishment of intervention models. In the geographical periphery, experienced facilitators are emerging leaders and dissemination agents, who act as a bridge between the different geographical areas in which the program is implemented.

promote the use of certain educational materials. Similarly, facilitators exchange social support with each other and develop social norms on the type of activities that are desirable to implement and those that are not. In fact, peer pressure can influence certain educational materials to stop being used. The cohesive group defines which intervention practices are acceptable, while innovations (sometimes with the interest of adapting the program to specific circumstances) seem more likely to arise on the periphery of the group of facilitators. The existence of individuals with less experience, or less connected, is an opportunity for the program to change, or to be more versatile depending on the context. We have summarized main characteristics of the network of facilitators in [Table 4](#), while the two main roles of “influencers” and “connectors” are described in [Table 5](#).

With the validation interview, the interpretations of the network of facilitators previously described were confirmed. According to the informant, the networks provided overall a valid description of the operation of the program.

Table 5. Two Roles in the Implementation of Community Prevention in Multiple Sites

Roles	Description
Central “Influencers”	Experienced facilitators In municipalities near the capital They provide work models and give operational support. They exchange good intervention practices
Peripheral “Connectors”	Experienced facilitators In remote municipalities of the capital They give operational support to isolated municipalities. They disseminate good intervention practices Propose local needs

Discussion

Cities against Drugs program is an example of community prevention that combines integrated central planning (at the regional level) with the adaptation of intervention (at local level) to community setting. It is a program with a great geographic dispersion, which forces to adapt the contents to the peculiarities of each population and each community context. However, there is a common backbone consisting of the application of educational activities to prevent the consumption of alcohol and other drugs, with adolescents in the school context. On the one hand, the program generates a community of practice in which local coordinators exchange their experiences, disseminate good intervention practices, and coordinate at an operational level. On the other hand, the program is diversified in each application context, depending on the population and the characteristics of the community.

This is reflected in a social network of exchange between coordinators with a core-periphery structure, with a clear influence of geographical location. The core of the network is formed by a small number of facilitators who have more experience in the program and work in municipalities with a larger population, close to the capital and its metropolitan area. In the periphery there are several groups of facilitators, of a regional nature, who connect with the nucleus through connectors that act as a bridge.

The nucleus of experienced facilitators seems fundamental for the continuity of the program, for the use of lessons learned and for the establishment of coordinated operating guidelines. In the periphery, the need to adapt the operation of the program to local needs is more important, so that it seems more open to the incorporation of innovations. In this context, peripheral connectors act as a bridge between continuity elements of the program and contexts in which diversity, novelties, and divergent actions are most likely to arise. Because of their position in the network, they could play a significant role in spreading innovation and detecting new prevention needs. That is to say, dynamics of bonding social capital and bridging social capital converge in the same network of professionals, with different functions throughout the implementation process ([Neal & Neal, 2019](#)).

“Cities against Drugs” program corresponds to a top-down institutional planning process. However, implementation through networks of facilitators introduces some elements of self-organization that contribute both to coordination ([Folke et al., 2005](#)) and to local adjustment of activities. In a way, preventing fragmentation of the program improves opportunities for collaboration. Consequently, fidelity in implementation is finally combined with adaptation to local community contexts ([González et al., 2004](#)).

In our case study, the clique overlap centrality was more sensitive to discriminate the role of “connector” than fragmentation into components. However, the analyses showed that a single indicator is not enough to describe the role that actors play in the network. For example, combination of geographic location with experience in the application of the program and inter-professional connections provides a clearer differentiation of profiles of local coordinators in the implementation process.

To sum up, two main mechanisms seem to converge in the relationships among program facilitators. On the one hand, there are processes of social influence that condition the adoption of certain evidence-based practices. The most influential facilitators could influence perceived acceptability and adequacy of evidence-based practices and, consequently, the intention to adopt them ([Proctor et al. 2011](#)). On the other hand, access to diverse information and resources is related to the adaptation of programs to specific intervention contexts. In more peripheral locations, there are facilitators with a broker role, who adapt evidence-based practices

to the characteristics of particular settings. They are responsible for modulating fidelity, introduce community fit strategies, and contribute to the viability of the intervention.

Theoretical and Practical Implications

From a theoretical point of view, we have shown that coordination among facilitators is a relevant process both for the integration of the program (as a whole) and the adaptation of the program to the different settings where it is implemented. Leadership and collaboration among members of the staff, as well as other organizational factors, seem to be at the core of the implementation process. This is consistent with previous evidences on the key role of organizational factors (Durlak & DuPre, 2008). Nevertheless, our case study revealed that they are especially important in multi-site programs, when facilitators need to respond to the challenges of adapting the intervention to different settings. On the other hand, network analysis can be particularly useful to describe these processes.

From a methodological point of view, we observed that the combination of indicators (for example, through cluster analysis) allows a more nuanced examination of roles than the use of individual indicators. This is consistent with the utility of combining multiple indicators in the development of personal network typologies (Maya-Jariego, 2002; Maya-Jariego & Holgado, 2015a). In our case study, centrality measures were more informative when used together with data on the attributes of local coordinators.

From a practical point of view, we observed the mediational role of staff management in the effectiveness of interventions. In this type of multi-site programs, selection of models and strategies is done very often at regional level, while implementation takes place at local level. The emergent (unplanned) coordination among facilitators was instrumental in top-down dissemination of educational activities and materials, as well as in bottom-up recognition of local needs and peculiarities. Thus, adequate management strategies allow the operative differentiation of core components and secondary aspects of a program. Therefore, it is an alternative strategy for local adaptation of interventions, comparable to those that have been developed in other cases through participatory selection of evidence-based practices (Oesterle et al., 2015; Worton et al., 2014).

This means that administrators and central managers of a program must combine “hard” coordination strategies, with regard to central components of the intervention, with acceptance and flexible incorporation of innovations that arise at local level. For example, in “Cities against Drugs” case, part of the job of a manager of the program is to ensure that a social skills training module for adolescents to resist peer social pressure is applied in all participating cities. However, they also have to be receptive to changes that are introduced locally, because it is a way of adapting them to the population. Each facilitator can introduce their own educational activities and materials, provided they respect the philosophy of the program. Consequently, a multi-site intervention will have cross-cutting contents in all the contexts in which it is implemented and other contents that will be variable, because they are tailored to each setting. Our case study has shown that collaboration networks between facilitators, whether planned or emerging, is an effective way to make such local adaptation. However, the collaboration network depends on the informal exchanges that take place, and therefore it is first necessary to foster an organizational climate that favors cultivating relationships.

Limitations and Further Research

This study focused exclusively on interactions among the facilitators of the province of Seville. Even if we assume that patterns of collaboration are similar in other provinces, we were not able

to detect emergent dynamics at the regional level. In addition, we followed an inductive approach, and accordingly there are some limits in the generalization of our results beyond the case study. However, the tension between integration and adaptation of programs could be present in different manners in other intervention contexts.

This study assumes that the implementation of a program can be described, at least in part, through the interaction that occurs between the different stakeholders (facilitators, participants, members of the community, etc.) (Valente, 2012). With this approach, we carried out a case study with which two differentiated roles in the implementation of a preventive program were inductively identified. Although we started from the recognition of an implicit tension between the consistent application of the program at multiple sites and the need to adapt the intervention to each local context, characterization of the two roles was the result of an iterative research process with mixed methods. It would be of interest to confirm these qualitative observations in programs with a similar structure.

On the other hand, we have verified that centrality or position indicators considered in isolation only partially inform the role of the actors, especially in cohesive networks or with high levels of multicollinearity. Therefore, it may be practical to combine different indicators simultaneously, or even incorporate attributive data, as we did in the second phase of data analysis. It would also be of interest to study the impact that the structure of interaction between stakeholders has on the effectiveness of the intervention.

Finally, it would be of interest to evaluate the impact of power, conflict, and hierarchy on the implementation processes that we have described. Facilitators with less seniority in the position could be more reluctant to apply activities as defined by a central authority, or more likely to enter into conflict with those who occupy the central positions in the network.

Conclusion

The implementation of community prevention programs that are applied in multiple community contexts faces the double challenge of guaranteeing a consistent application in each town and adapting to the peculiarities of each community. These two objectives can be contradictory to each other, since efforts to achieve greater integration of the program could reduce sensitivity to local idiosyncrasy. On the contrary, efforts to achieve greater community adjustment make coordinated action among program facilitators more difficult. Networking allows us to respond to these two challenges simultaneously. In our case study, the network of local coordinators had two differentiated roles that facilitated the balance between both principles during the implementation process. Central coordinators proved to have a fundamental role in the coordination of the program, while peripheral connectors were related to the adjustment to the specific community context as well as to local needs.

Conflict of Interest

The authors of this article declare no conflict of interest.

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Appendix

Description of “Cities against Drugs” Program

Description and objectives	<p>“Cities against Drugs” is a community drug abuse prevention program in local contexts in Andalusia (Southern Spain), which was created to facilitate the coordination of services of the different Administrations with competences in this topic in the region. The objectives of the program are: (a) to reduce drug abuse and to prevent the onset of consumption, promoting protection factors, as well as the participation of the population; and (b) to reduce the risks associated with drug use in the most vulnerable groups.</p>
Strategies and contents	<p>The program is based on local implementation of prevention actions in the educational, community, family and labor spheres, with the co-financing of the regional and local administrations. <i>Consejería de Igualdad, Políticas Sociales y Conciliación</i> establishes the general guidelines that the projects must follow in each municipality, defines the population sectors of special interest, and determines the central contents that the projects must have. However, each municipality has some autonomy for the selection, design and implementation of actions, as well as for the definition of intervention contexts, facilitating the adaptation of the program to the population.</p>
Activities	<p>There are four main contexts for intervention:</p> <ol style="list-style-type: none"> 1. Educational institutions: implementation of psychoeducational materials for promoting awareness of the problem and developing protective factors. 2. Family: training parental skills and specific actions with families at higher risk 3. Community: informative campaigns in local media, promoting awareness as well as participation in preventive activities 4. Workplace: promoting labor integration high-risk groups
Type of projects	<p>Very often local projects mainly focus on schools activities, with a complementary informative campaign in the community (e. g., Camas, Guillena or Dos Hermanas), ...</p> <p>While a few local projects implement multi-level and comprehensive activities, from individual to family and community programs (e. g., Sierra Norte, La Rinconada, Estepa, or Alcalá de Guadaíra).</p>
Coordination	<p>The local coordinator is responsible for the design, implementation, and evaluation of the program. In larger projects, in large municipalities, the coordinator focuses on supervising the application of the program by others. In smaller cities, the coordinator acts as a mediator in the application of programs with teachers in the educational centers or acts as a community promoter, facilitating the coordination of the different actions on drug dependence that are carried out in town.</p>
Evaluation: perceived results and coverage	<p>Local coordinators perceive positive results in raising awareness about the effects of drug use, especially in educational interventions. Program monitoring focuses on coverage indicators and human resources needs to ensure the sustainability of the intervention.</p>