



Social support network and continuity of care: an ego-network study of psychiatric service users

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Abstract

Purpose For severely mentally ill (SMI) users, continuity of care requires consistency between the supports provided by the members of their social support network. However, we know little about their network cohesion and its association with continuity of care. We set out to investigate this association and hypothesised that it would depend on the severity of the user's situation and on his/her living arrangements.

Methods We conducted face-to-face interviews with 380 SMI users recruited in outpatient and inpatient mental health services in three areas in Belgium. Data regarding users' social networks were collected using an ego-network mapping technique and analysed with social network analysis. The cohesion indicators were density (frequency of connections between network members), centralisation (having a small number of central people), and egobetweenness (the user's centrality in his/her own network). Participants' perception of continuity of care was measured by the Alberta Continuity of Services Scale.

Results Results show that cohesion indicators were associated with continuity of care only for users with high-severity problems, regardless of their living arrangements. The numbers of network members, professionals, and services in the network were all negatively associated with continuity of care for all the users.

Conclusions Satisfactory continuity of care requires fewer professionals or services in a user's network and a dense network for users with the most severe problems. This implies that those providing care must not only be able to increase cohesion within a network, but also to adapt their interventions to support the transition to a different, individualised network structure when severity decreases.

Keywords Continuity of care · Mental Health · Social support · Social network

Introduction

Over several decades, the organisation of care for severely mentally ill people [1, 2] has shifted from a system based on long-term hospital care to a set of services in the community. This has had many positive consequences for users [3–5], but has also increased the fragmentation of care and users' social integration is still an issue [6–8]. Nowadays, one challenge is to help users improve continuity of care once they have come into contact with the healthcare system [9–12]. By continuity of care, we mean the degree to which a series of discrete healthcare events is experienced as

coherent, connected, and consistent with the user's medical needs and personal context [12].

The social support network of a user is of strategic importance for continuity of care. The social support network comprises all the people who support a user including health professionals, relatives, friends, and colleagues. It offers resources and care interventions whose coherence and connectedness are key elements in improving continuity of care [13–15]. The support provided by the social network reduces the number of inpatient admissions and improves access to services. Conversely, a lack of social support is associated with back-and-forth visits between the hospital and the community and increased use of inpatient services [14, 16–19]. However, research has highlighted the weaknesses of psychiatric service users' social support networks. Compared to the general population, psychiatric service users have smaller [14, 20–24] and less diversified networks [25–27]. This puts them in an unfavourable position, as the

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size and diversity of their networks are negatively associated with quality of life and positively associated with inpatient services use [17, 20, 23, 25, 26, 28–32]. Beyond size and composition, there is a dearth of research about the cohesion of psychiatric service users' social support networks. Network cohesion is the extent and form of interaction between members of a network [33]: in a cohesive network, people have many ties with others and their ties are widely distributed; whereas, in a less cohesive network, people are less connected to others and their ties are concentrated on a limited number of people. Only a few studies have been carried out on this topic and the results are not conclusive [9, 14, 17, 34–40]. Compared to the general population, users with mental disorders have a higher social support network cohesion [9, 38, 39]. However, the association between network cohesion and inpatient services use (a proxy for continuity of care) is inconsistent. Some studies found an association between moderate cohesion and an increase in hospital days [9], but the other studies did not [40]. In addition, to our knowledge, no study has specifically examined the relationship between network cohesion and continuity of care. Yet cohesion is a key characteristic for studying the continuity of care. Studying relationships between members of a user's network makes it possible to understand how information circulates within it and to evaluate how those providing care (relatives and clinicians) coordinates with each other, coordination being one of the means of achieving continuity of care [12], e.g., by identifying and resolving the points of friction between services [41].

There are two competing assumptions about the effect of network cohesion on users' continuity of care. The "coordination assumption" assumes that network cohesion facilitates the flow of information, favours coordination, facilitates decision-making during crisis episodes [9, 42, 43], increases the social influence of those providing care on the user, and, therefore, improves continuity of care [39, 44–46]. However, according to the "structural autonomy assumption", network cohesion generates pressure on the user. As most individuals whom the user knows also know the other members of his or her network, they can push the user to act in a certain way. This can create a risk of dropping out of care if the network presses the user too hard to adhere to care [9]. Furthermore, a high level of cohesion would reduce the autonomy of the user in his/her network. He/she would then have less scope to make choices and to coordinate his/her own care network [47, 48]. This could limit the continuity of care, given that, in the community, the user is his/her own care coordinator in many situations: transmitting information, putting people in touch, ensuring consistency of intervention, and contacting new people to meet new needs [49].

Given these competing theoretical frameworks and inconsistencies in the literature, this study aims to investigate the association between network cohesion and continuity

of care. We first hypothesised, based on the "coordination assumption", that network cohesion would improve the continuity of care for the most severely affected users and those living in 24-h-supervised accommodation. Users with more severe conditions, who are less able to take care of themselves and more likely to experience a crisis episode, will need a more cohesive service set that provides more effective protection and continuity of care [41]. In addition, 24-h-supervised accommodation would offer a more cohesive network, as, in that configuration, most health professionals are likely to know each other. Second, we hypothesised, based on the "structural autonomy assumption", that network cohesion would reduce continuity of care for users with less severe disorders and for those living in the community. Higher cohesion, for users with a greater capacity for autonomy and able to coordinate their own networks, would have a counterproductive effect by generating control and limiting their autonomy. Living in the community with the support of a multitude of services requires users to ensure, for the most part, the coordination of their own networks, which overly strong network cohesion could harm.

Methods

Design

We developed a cross-sectional ego-network survey that is inspired by recent developments in the field [50, 51]. Ego networks are networks consisting of a single actor (ego) together with the individuals' ego is connected to (alters) and all the links among those alters [52]. Social support networks of psychiatric service users are ego networks: ego is the service user, alters are the members of his/her social support network, and the ties are the information exchange relationships between the network members.

Setting and participants

We conducted this survey in Belgium with 380 users with severe mental illness (SMI) [1, 53]. SMI users were identified by three criteria: (1) having a psychiatric diagnosis; (2) having difficulties in at least three of the following social skills: obtaining help; meeting basic needs; social functioning; finding and keeping a job; managing non-professional activities; (3) having illness or treatment duration of at least 2 years, including at least one hospitalisation [54]. SMI users are known to relapse and to be at risk of rehospitalization and adverse events [54–59].

The study was carried out in three Belgian areas of 250,000 inhabitants each: one metropolitan area (east of Brussels), one post-industrial, underprivileged area (La Louvière-Manage), and one semi-rural area with a largely

service economy (Namur). Those three areas were included in the nationwide reform that aims to set up networks of services to improve the continuity of care for users with psychiatric disorders [60, 61].

Data collection

Interviews lasted 1 h on average and were delivered face-to-face by seven trained interviewers with professional qualifications related to mental health care. The interviews were arranged by an area-specific coordinator who had the task of contacting and recruiting the services, presenting the research, and monitoring the selection procedure. The interviews mostly took place in residential or outpatient care facilities and sometimes at home. The interview comprised 42 questions arranged in four sections (network data, socio-demographics, outcomes, and service use). The data collection took place between 2014 and 2015.

Users were recruited in two stages. First, we selected in- and outpatient services in each area. The services were drawn at random from the directory of all mental health and primary care services available in the area. Second, services staff were asked to select SMI people, identified according to the criteria outlined above, from three strata: users living in 24-h-supervised accommodation, users living in collective housing, and users living in regular housing. 380 of the 594 people contacted agreed to participate in the study (see Fig. 1). Those who refused did so for two main reasons: either because of their poor mental health state at the time of the interview or because of a poor relationship with the clinician who attempted to recruit them for the study (see Table 1).

We collected the data using the participant-aided sociogram technique developed by Bernie Hogan and colleagues [62, 63], which we adapted to SMI people using Bidart's two-stage name generator [64]. In the first stage, we used a broad question designed to allow respondents to name the members of their social support networks (hereinafter, name

generator): “who are the people who support you?” This question was supplemented by probing different social contexts in which the respondent might meet people: psychosocial services and informal relationships. To differentiate the two contexts, we used repositionable adhesive papers in two different colours, as in the participant-aided sociogram technique [62]. During the interview, the interviewers encouraged respondents to take into account family members and friends as well as all informal resources such as colleagues, neighbours, a priest, etc. In the second stage, the same question investigated specific support in four particular domains: finances, housing, activities, and health. Pictures were used to probe these four domains and to assist respondents with potential cognitive difficulties [64]. During this stage, new alters could be added to the list by the respondent. After these two stages, the respondent placed alters on the bullseye map from Hogan's technique (Fig. 2), using the repositionable adhesive paper. The respondent was then asked to trace links on the bullseye map to identify those alters which he or she believed exchanged information (“who exchanges information about you?”). The two-step Bidart's method has the advantage of being more systematic and more likely to help users to remember their actual alters from different fields [64]. The visual design (see Fig. 2) facilitates user's focus. The bullseye map technique for collecting the links between alters makes the question easier to answer than if we had to ask the same question for each alter, i.e., $(n \times n - 1)/2$.

At the end of each interview, we asked the user to refer us to a mental health professional he/she saw as his/her main clinician. Information on the user's social support network from a professional point of view was obtained from the main clinician, using the same interview technique.

Measurements

As far as the independent variables were concerned, we measured the continuity of care using the Alberta Continuity

Table 1 Distribution of users interviewed by type of service and number of services involved, Morpheus Study, Belgium 2014–2015

Type of services	Number of users interviewed	Number of services through which users have been interviewed
Home treatment team	58	6
Psychiatric hospital	167	24
Sheltered housing	46	9
Nursing home	19	3
Psychiatric service in general hospital	21	6
Community mental health team	27	9
Day centre	23	6
Primary care centre	19	6
Total	380	69

Fig. 1 Sampling design, Morpheus study, Belgium 2014–2015

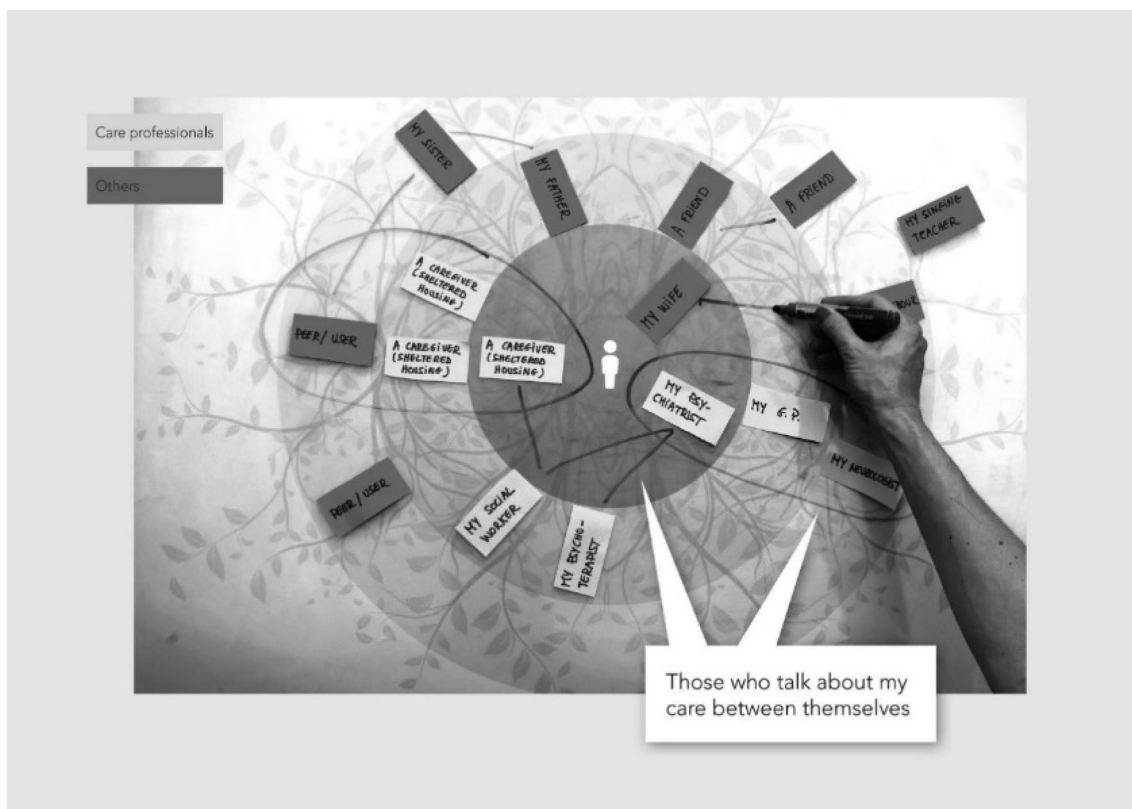
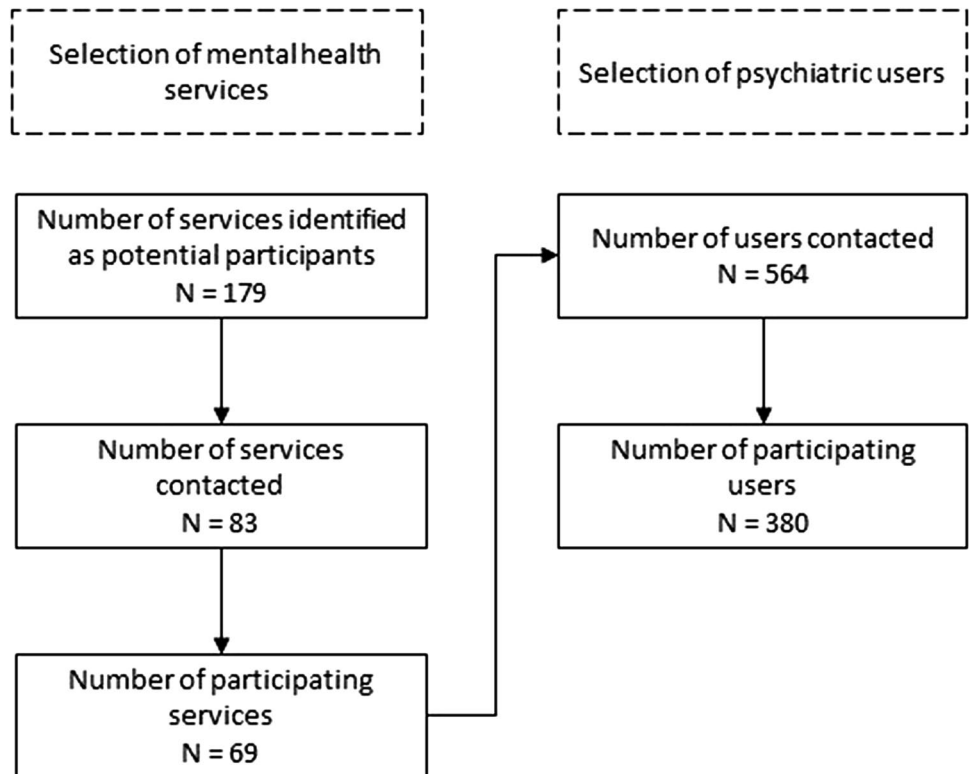


Fig. 2 Collection tool based on the participant-aided sociogram technique developed by Hogan et al., Morpheus Study, Belgium 2014–2015

of Service Scale-Mental Health (ACSS-MH) [55, 65], a scale widely used in the literature [66–68]. The scale includes 32 items that describe the users' experience of services, their perception of system fragmentation, the quality of relations with the people who support them, and the adaptability and flexibility of care [55, 65].

Regarding the dependent variables, we computed several indicators from the information collected with the sociogram describing network cohesion: network density, betweenness centralisation, and egobetweenness. Network density is the degree of interconnectedness of network members, and ranges from 0 (low density) to 1 (high density) [9]. A high density indicates a network where numerous members are linked to each other. An alter is considered central (according to the betweenness centrality) when he/she is often in an intermediate position between two other alters. Therefore, a highly centralised network implies that an alter is more central than the others and is thus well positioned to control the flow of information within the network. Finally, egobetweenness is the extent of the user's centrality in his/her own network. It is calculated as the frequency with which ego falls in the path between the pairs of network members. The first two indicators of cohesion are related to the "coordination assumption", as density and centrality are two ways to achieve coordination in a network. The third indicator, egobetweenness, is related to the "structural autonomy assumption", since it is an indicator of the extent to which a user is well positioned to control the information circulating about him/her and thus coordinate his/her own network. In addition to these cohesion indicators, we computed several indicators on network composition: number of network members, number of professionals in the user's network, and number of services used.

Other dependent variables were collected from users: their age, sex, nationality, country of birth, first contact with an in- or outpatient psychiatric service, number of hospitalisations, social integration, and psychosocial functioning. Social integration, i.e., reducing dependence on professional support in relation to social participation [69, 70], was measured by the Objective Social Outcome Index (SIX), which is composed of four items [71] relating to housing, employment, family status, and social relationships. The SIX allowed us to distinguish people living in the community (independent housing and sheltered housing) from people living in 24-h-supervised accommodation. The severity of psychosocial functioning problems [72, 73] was measured by the Health of the Nation outcomes scale (HoNOS). This scale, composed of 17 items, was filled in by the mental health professional considered by the user to be the main clinician (see above). The HoNOS includes 12 items that address the severity of several psychosocial problems with a score ranging from 0 (no problem) to 4 (severe problem). In particular, one item (No. 6) addresses problems related to

hallucinations and delusions. We considered that users who received a score of 2 or more had hallucinations or delusions. Similarly, we considered that users who were rated 2 or more at item No. 7 had depressed mood or anxiety (see Table 2).

Statistical analysis

We computed the correlation between the social network indicators, in terms of network composition (number of members, number of types of professionals, and number of services) and cohesion (density, centralisation, and egobetweenness). We then performed a linear regression between the perception of continuity of care and all those network indicators. We controlled for socio-demographic characteristics (age and sex), social integration (SIX), and clinical features (duration of psychiatric history since the first contact with an in- or outpatient psychiatric service, number of hospitalisations, and severity of psychosocial functioning

Table 2 Clinical features and structure of social support networks of severely mentally ill users, Morpheus Study, Belgium 2014–2015: mean and std ($n = 380$)

	Percent- age or mean	Std
Network cohesion		
Density (%)	21.6	17.1
Centralisation (%)	10.1	13
Egobetweenness (%)	18.3	18.7
Network composition		
Network members (number)	12.1	5.2
Professionals (number)	7.4	3.4
Services (number)	4	2
Clinical features		
Perceived continuity of care (ACSS-MH, score 0–160)	115.2	14.7
Health and social functioning (HoNOS, score 0–48)	11.6	6.7
Use of drugs or alcohol (%)	35	
Hallucinations or delusions (%)	40	
Depressed mood (%)	82	
Anxiety (%)	34	
Duration of psychiatric path (number of months)	179.5	170.1
Number of hospitalisations	7	6.5
Socio-demographic characteristics		
Social integration (SIX, score 0–6)	2.3	1.43
Living in independent housing (%)	50	
Female (%)	47	
Age (years)	45.4	11.6
Belgian nationality (%)	90	
Born in Belgium (%)	80	

problems), but taking into account each social network indicator, as those network indicators are strongly correlated with each other. We divided our sample into three groups of identical size according to their HoNOS scores (tertiles). Users in the first group had an HoNOS score ranging from 1 to 10 (low severity), users in the second group had a score from 11 to 18 (moderate severity), and users in the third group had a score higher than 18 (high severity). We then performed regressions on the three groups of users. We also performed regressions on two groups of users according to their type of accommodation: those living in 24-h-supervised accommodation and those living in the community. Finally, to ascertain the reliability of our ego-network data, Kappa coefficients were also computed to assess the agreement between users' reports and main clinicians' reports of users' social support networks.

Results

The sample was well balanced across genders and had an average age of 45.4 (std = 11.6). Most users were born in Belgium and had a rather low level of social integration (SIX score = 2.3 out of 6); 50% had independent living arrangements. Users had moderately average psychosocial functioning (HoNOS score of 11.6/48); a third had substance use problems; depressed moods and hallucinations and delusions were quite common. On average, they had had 7 hospitalisations and 15 years of psychiatric history (Table 2).

The user's ego network was composed of mean of 12.1 members (std = 5.2), most of whom (7.4, std = 3.4) were

professionals associated with four services (std = 2) (see Table 2). Regarding network cohesion, users' social support networks were dense (mean = 22.1%, std = 17) with rather low centralisation (mean = 10%, std = 13). The user him/herself was central, on average, in his/her own network, with an average egobetweenness of 18.3% (std = 18.7).

Most of these cohesion variables correlated with each other (see Table 3). Density and centralisation were positively associated with each other, and egobetweenness was positively associated with density and negatively with centralisation. These variables were also associated with the network composition variables: the larger the network, the lower the egobetweenness. Density was negatively related to the number of members in the network and to the number of services, whereas centralisation was not associated with any compositional variable.

We found no association between cohesion variables (density, centralisation, and egobetweenness) and continuity of care. However, for users with more severe disorders, continuity of care increased with the density of their social network. Such an association did not exist in the low-severity group. There was no association between cohesion and continuity, either for users living in the community or for those living in 24-h-supervised accommodation.

The three variables of network composition were all associated, negatively, with continuity of care: the number of network members, the number of professionals, and the number of services in the network. This remained true after controlling for individual characteristics. The results were somewhat different when we differentiated users according to the severity of their psychosocial functioning problems.

Table 3 Matrix of correlation between the variables of structures of the network of social support of the users (Pearson correlation coefficients), Morpheus project, 2014–2015, Belgium ($N = 380$)

	V1	V2	V3	V4	V5	V6
Network cohesion						
Density (V1)		0.37 ***	0.13 ***	-0.15 ***	0.06	-0.38 ***
Centralisation (V2)			-0.23 ***	-0.05	-0.02	-0.05
Egobetweenness (V3)				-0.59 ***	-0.46 ***	-0.26 ***
Network composition						
Network members (number) (V4)					0.79 ***	0.37 ***
Professionals (number) (V5)						0.38 ***
Services (number) (V6)						

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

For users in the high-severity group, higher continuity of care was associated with a smaller number of services, while, for users with low severity, higher continuity of care was associated with a smaller number of professionals. In addition, when we differentiated living situations, the number of professionals and the number of services were negatively associated with continuity of care for people living in 24-h-supervised accommodation, whereas only the number of services was negatively associated with continuity of care for people living in the community (see Table 4).

Finally, large Kappa coefficients were found, showing substantial agreement between users and professionals regarding the presence of different types of psychiatric services in users’ social support networks (outpatient care, day care centre, supported housing, and nursing home).

Agreement between the user and his/her main clinician was lower as to the presence of inpatient services and assertive community treatment (ACT) teams in users’ social support networks, but this is not surprising given that there is no central recording of users’ hospitalisations in Belgium and that ACT teams are still uncommon. The lowest level of agreement was about relatives and self-help services, which may seem logical, as not all information about the user’s personal life is accessible to health professionals.

Table 4 Regression on Alberta Continuity of Services Scale (ACSS-MH), by level of severity (HoNOS) and by type of housing, Morpheus project, 2014–2015, Belgium

Covariates	Continuity of care (ACSS-MH)		Continuity of care (ACSS-MH)				Continuity of care (ACSS-MH)			
	Model 1 ^A	Model 2 ^B	Low severity (HoNOS below 11, N = 108)		High severity (HoNOS above 18, N = 101)		Living in 24/24 supervised services		Living in the community	
			Model 1 ^A	Model 2 ^B	Model 1 ^A	Model 2 ^B	Model 1 ^A	Model 2 ^B	Model 1 ^A	Model 2 ^B
Network cohesion										
Density	0.06		-0.09		0.27 ***	0.32 ***	0.07		0.05	
Centralisation	0.03		0.03		-0.05		-0.07		0.07	
Egobetweenness	0.01		-0.04		-0.07		-0.03		0.01	
Network composition										
Network members	-0.13 ***	-0.12 **	-0.13		-0.07		0.20 **	-0.15	-0.10 *	
Professionals (number)	-0.13 **	-0.12 **	-0.20 **	-0.22 **	-0.03		-0.18 *	-0.20 *	-0.09	
Services (number)	-0.15 ***	-0.14 **	-0.04		-0.28 ***	-0.33 ***	-0.23 **	-0.23 *	-0.11 *	-0.13 **
Individual characteristics										
Severity (HoNOS)		-0.15 **						0.14		-0.21 ***
Duration of psychiatric		0.01		0.13		-0.09		-0.03		-0.01
Number of		0.04		-0.13		0.13		0.08		0.04
Socio-demographic										
Social integration (SIX)		0.04		0.19		-0.25 **		-0.04		0.00
Female (ref=male)		-0.16 ***		-0.25 **		-0.05		-0.20		-0.14 **
Age		0.06		0.05		0.24 **		0.06		0.06

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

^A t test bivariate

^B t test multivariate, controlled for individual characteristics only

Discussion

Main findings

This study is the first to investigate the association between network cohesion and continuity of care for users with severe mental illness. Our hypotheses were that, (1) based on the “coordination assumption”, ego-network cohesion will improve the continuity of care for the most severely affected users and those living in 24-h-supervised accommodation, whereas (2) it lessens the continuity of care for users with less severe disorders and those living in the community, based on the “structural autonomy assumption”.

The social support networks that we collected were composed of an average of 12.1 members and the density of information exchange relationships was 22%. No cohesion indicators were associated with higher continuity of care for the whole sample. For users with the most severe problems, however, density was more positively associated with continuity of care than for users with less severe problems. Concerning the correlation analysis, the two variables associated with coordination (density and centrality) were oppositely correlated with the variable associated with structural autonomy (egobetweenness). In addition to this main result, we found that continuity of care decreased with the size of the network, the number of professionals, and the number of services in the network, even when controlling for individual characteristics.

Consistency with the literature

The first hypothesis, that cohesion is related to the continuity of care for the most severely affected users, was partly supported. People less able to take care of themselves and more likely to experience a crisis probably need a more cohesive service set, providing protection and coordination. The second hypothesis, however, was not supported: no cohesion indicators were associated with continuity of care for users with less severe problems. One reason is that severity is negatively related to continuity of care. It could be that, for users with low severity, the structural features of their support networks do not matter that much, whether dense or centralised. Another possible explanation is that, for less severely affected users, many network structures exist—as there are many ways for a user to organise his/her life—and that none of those structures are specifically associated with continuity of care. Finally, it is also possible that, for these users, the content of social support relations matter more than the structure of the relations. Elliott Freidson suggests that the

probability of using a physician also depends on the content of exchanges within the network [46]. He describes a lower social-class referral system, which is characterised by strong cohesiveness and mutually reinforcing interaction. People living in this context will be less likely to seek professional care, because it is unfamiliar to their social group. Kadushin reached a similar conclusion in relation to referral to a psychotherapist in urban higher classes [74]. This suggests to us that we also need to identify the content of exchanges between members of a user’s network. For example, cohesion within a group that values professional care could have an entirely different effect from cohesion within a subgroup that only values informal support. The correlation analyses also showed that the two assumptions, coordination and structural autonomy, are compatible. It seems possible to achieve coordination and structural autonomy at the same time, depending on how coordination is organised, through density or through centralisation. A density-supported coordination appears to be compatible with structural autonomy.

Some of our descriptive results are consistent with the literature, while others are not. Our result for mean network members (12.1) is consistent with the literature [20, 21]. This is not the case for density and centralisation, indicators for which we have fewer studies [9]. Other studies have shown greater density [14, 40].

Finally, it should also be mentioned that most of the studies describing the size of psychiatric service users’ social networks found a positive link between the size of networks and quality of life, social support, and psychiatric hospitalisation [17, 20, 25, 32]. Our results go in the opposite direction, size being negatively associated with continuity of care, probably because it is easier to coordinate a small number of actors.

Limitations

First, the social networks and health care use were self-reported, as there is no centralised registration system in Belgium. Thus, we cannot rule out the possibility that the reporting of some information was incomplete. SMI users may have altered perceptions of reality and this is a risk which we need to consider. It seems to us, however, that this has had a limited impact on our study. On several occasions during the interviews, users were delirious. Only once, however, was a person from the user’s delusion cited as part of the social support network. It seems to us that the very practical and everyday aspect of the questions asked keeps the delusions away. In addition, according to the previous studies, ego’s report is rather accurate. Green et al. [75] report that egos do accurately report information about alters, and Adams and Moody [76] report an agreement of 80% between different egos about alter–alter social ties.

Second, our cross-sectional design is vulnerable to unobserved confounders (i.e., clinical alliance with the health professional who proposed the study) and reversed causation. In addition, we chose to focus on the structure of relationships within user's network. This tells us nothing about the content of relations, which, as we have seen above, may be important. Thus, additional research is needed: longitudinal studies and studies collecting information about the content of relationships as well as studies on the impact on users' network structures of coordination mechanisms that could increase the density of relationships, such as case management or coordination meetings.

Finally, our sample was not a random sample from the general population of psychiatric users. Comparison of our sample with the previous studies, however, suggests that our sample matches quite well the general Belgian population of users with psychiatric disorders: our mean Alberta Continuity of Services Scale (115.5, $std = 14.7$) is similar to that of another study conducted in Belgium in the same period with a much larger group of users (115.6, $std = 14.1$). This is also the case for the HoNOS, a proxy of psychosocial functioning severity (respectively, 11.6, $std = 6.5$ and 12.5, $std = 6.5$) (Lorant 2017).

Conclusion

In conclusion: our study shows that network cohesion has a positive association with continuity of care for those users with the most severe problems. The number of professionals and the number of services in the network, on the other hand, have a negative association with continuity of care, regardless of the situation of the user. These findings could be taken into account in clinical and organisational practice, with caution, however, giving the limitations. First, the number of services or professionals supporting an individual user could be reduced. Density of relations in a network, on the other hand, should only be encouraged for people in severe situations. However, this implies that caregivers must not only be able to increase the density of relationships within a network, but also to adapt their interventions to provide a different, individualised network structure when the severity decreases.

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Compliance with ethical standards

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest. This study was approved by

the "Commission d'Ethique Biomédicale Hospitalo-facultaire" of the Université catholique de Louvain on 18 June 2012. Belgian registration No.: B40320121407.

Appendix

See Table 5.

Table 5 Agreement between users and their main clinician on the presence of different types of services in a user's network, Morpheus Study, Belgium 2014–2015

Types of services	Kappa coefficient
Psychiatric hospitalisation	0.56
Outpatient care	0.71
Assertive community treatment team	0.56
Day care centre	0.75
Supported housing	0.81
Psychiatric nursing home	1
Peer support	0.49
General health care	0.45
Social and legal services	0.73
Social and professional integration	0.54
Relatives	0.31

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