

The impact of a social network intervention on retention in Belgian therapeutic communities: a quasi-experimental study

Veerle Soyez, George De Leon, Eric Broekaert & Yves Rosseel

Ghent University, Department of Orthopedagogics, Ghent, Belgium

ABSTRACT

Background Although numerous studies recognize the importance of social network support in engaging substance abusers into treatment, there is only limited knowledge of the impact of network involvement and support during treatment. The primary objective of this research was to enhance retention in Therapeutic Community treatment utilizing a social network intervention. **Aims** The specific goals of this study were (1) to determine whether different pre-treatment factors predicted treatment retention in a Therapeutic Community; and (2) to determine whether participation of significant others in a social network intervention predicted treatment retention. **Design, setting and participants** Consecutive admissions to four long-term residential Therapeutic Communities were assessed at intake ($n = 207$); the study comprised a mainly male (84.9%) sample of polydrug (41.1%) and opiate (20.8%) abusers, of whom 64.4% had ever injected drugs. Assessment involved the European version of the Addiction Severity Index (EuropASI), the Circumstances, Motivation, Readiness scales (CMR), the Dutch version of the family environment scale (GKS/FES) and an in-depth interview on social network structure and perceived social support. Network members of different cohorts were assigned to a social network intervention, which consisted of three elements (a video, participation at an induction day and participation in a discussion session). **Findings** Hierarchical regression analyses showed that client-perceived social support ($F_{1,198} = 10.9$, $P = 0.001$) and treatment motivation and readiness ($F_{1,198} = 8.8$; $P = 0.003$) explained a significant proportion of the variance in treatment retention (model fit: $F_{7,197} = 4.4$; $P = 0.000$). By including the variable 'significant others' participation in network intervention' (network involvement) in the model, the fit clearly improved ($F_{1,197} = 6.2$; $P = 0.013$). At the same time, the impact of perceived social support decreased ($F_{1,197} = 2.9$; $P = 0.091$). **Conclusions** Participation in the social network intervention was associated with improved treatment retention controlling for other client characteristics. This suggests that the intervention may be of benefit in the treatment of addicted individuals.

Keywords Social networks, Therapeutic Communities, treatment retention.

Correspondence to: Veerle Soyez, Ghent University, Department of Orthopedagogics, H. Dunantlaan 1, 9000 Gent, Belgium. E-mail: veerle.soyez@ugent.be
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INTRODUCTION

The impact of social network support in substance abuse treatment

Numerous studies recognize the importance of social network support in recruiting substance abusers into treatment (e.g. Landau *et al.* 2000) or maintaining substance abuse treatment achievements (e.g. Gordon & Zrull 1991; Havassy, Wasserman & Hall 1995; Griffith *et al.* 1998; Simpson *et al.* 2000; Broome, Simpson & Joe 2002). However, knowledge of the impact of network involvement and support during treatment (Dobkin *et al.*

2002) is only limited: studies indicate that, during (out-patient) treatment, social support is associated with behavioural improvement [e.g. decreased substance use (Knight & Simpson 1996; Wasserman, Stewart & Delucchi 2001), needle-sharing (Gogineni, Stein & Friedann 2001) and illegal activity (Knight & Simpson 1996)], and network involvement and support has important beneficial effects on treatment retention [e.g. Huselid & Gutierrez 1991; Westreich *et al.* 1997; Conner *et al.* 1998; Dobkin *et al.* 2002]].

This relationship between social support and retention is highly relevant, as—in all substance abuse

treatment modalities—successful outcome is related directly to the time a client remains in treatment (Simpson, Joe & Brown 1997). Obtaining more insight into the factors and mechanics that contribute to retention can have important implications for interventions that could reduce the number of dropouts. Overviews of the research literature on predictors of retention stress the importance of considering dynamic factors (e.g. treatment motivation and engagement, therapeutic relationship, social relationships and support) in understanding dropout, particularly during the early days of treatment (Condelli & De Leon 1993; Joe, Simpson & Broome 1998). With regard to social support, this implies that it is important to know about both the impact of perceived support (the expectation that help would be there if needed) and the impact of the actual provision of support (e.g. network involvement in treatment), as the latter variable is more easy to influence.

Studies on social networks and social support in Therapeutic Communities

Research on social network involvement and support in Therapeutic Communities (TCs) began only two decades ago (Soyez & Broekaert 2005). Nevertheless, existing studies (see Soyez 2004 for an overview) seldom analysed the association between social support and retention, and focused mainly on specific groups such as women (Ravndal & Vaglum 1994; Strauss & Falkin 2001; Falkin & Strauss 2003) or adolescents (Weidman 1987), which hampers generalization. Furthermore, few studies (Weidman 1987; De Leon 1991) utilized an experimental design. Finally, the majority of the studies measured only network involvement/support, without considering other variables that influence retention.

The present study addressed several of these limitations: first, it evaluated the impact of social network involvement utilizing a semicontrolled study design (implementation of an intervention for social network members to enhance client retention in treatment); and secondly, it assessed the separate contribution of the intervention and other key client variables to treatment retention. With regard to the latter, analyses focused upon two specific research questions: (1) which client factors, alone or in combination, with the intervention predict retention; and (2) does participation of significant others in the social network involvement improve retention?

METHODS

Procedure

The study used a sequential cohort design in which all consecutive admissions to four TC programmes in the Dutch-speaking part of Belgium and their network

members were recruited into the study. Between 1 May 2000 and 30 April 2002, 261 people were admitted across the four TCs. Two hundred and fourteen clients (82.0% of all new admissions) gave written informed consent to participate in the study; 207 clients completed all study instruments and were included in the analyses.

The first cohort (admitted into treatment between 1 May and 31 December 2000) received treatment as usual; this cohort was considered the control group ($n = 94$). The second cohort was admitted into treatment between 1 January 2001 and 30 April 2002 and received treatment as usual, but their network members were also offered a social network intervention; this cohort constituted the experimental group ($n = 113$). In order to control for historical effects (i.e. possible changes in treatment services and contextual factors over time), the intervention was not offered during some periods in TC2 and TC4.

This sequential assignment of network members of clients to an experimental intervention, compared to treatment as usual, has been described in the literature as a 'minimal bias design'. It is utilized as a reasonable alternative to standard experimental designs such as randomized controlled trials (Staines *et al.* 1999).

During the first 2 weeks of their stay, staff members explained the study to the residents; 13 clients (5%) did not provide consent. Residents in the experimental group who agreed to participate could indicate which network member(s) they wanted to be involved in the social network. Family counsellors then asked the network members for their consent to participate. None of the latter refused.

The protocol aim was to offer all elements of the social network involvement within the first 3 months of treatment, as dropout rates are highest in this phase; however, this was not possible in 18 cases (31.5% of the group that completed the intervention), given the group-based nature of the intervention. Overall, in 92.9% of the cases the intervention was completed before the fourth month.

Intervention

The social network involvement was carried out in all four TCs, which provided family counselling routinely before the start of the research project. This consisted usually of individual counselling sessions (for residents and their network members) and seminars for network members. The main elements of standard counselling were comparable for all four TCs (Soyez 2004).

The intervention was viewed as an enhancement of existing network activities. Thus, network members participating in the social network involvement were also involved in the standard network activities.

The different aims and content of the intervention were established in close deliberation with TC family

counsellors. Their clinical experience, together with findings of a literature study, guided the construction of the intervention aims. The social network involvement contained three elements: (1) a 40-minute video-film on family counselling and the TC approach; (2) an induction day in which family functioning and communication took central place; and (3) a discussion session that constituted a training situation as an extension of the induction day. In order to ensure reliable implementation of the social network involvement, different control mechanisms were built into it (elaborate research script, qualitative study on implementation, evaluation forms) [1].

Measures

During the first weeks of treatment, different instruments were administered in order to collect information about the severity of addiction (EuropASI), treatment motivation and readiness (CMR), social network and support (in-depth interview) and family background and functioning (GKS-II/FES).

Substance-related measures

The European version of the Addiction Severity Index (EuropASI; Kokkevi & Hartgers 1995) is a semistructured interview offering the possibility of mapping the nature and severity of diverse problems in seven distinct life areas of functioning (medical status, employment and support, alcohol use, drug use, legal problems, family and social relationships and psychiatric problems) (McLellan *et al.* 1980). Scoring is based on two indices: (1) interviewer's severity ratings and (2) composite scores. Composite scores reflect the severity of a problem in a more objective fashion compared to severity ratings (Alterman *et al.* 1994). However, as they comprise many 'past 30 days' items this can be a disadvantage when the instrument is administered in residential treatment settings, as was the case in this study. Therefore, both severity scores and composite scores were used in the analyses. Furthermore, an alternative 'life-time' version of the alcohol and drug composite score was constructed by replacing 'past 30 days' items by their 'life-time' equivalents and dividing them by age.

Treatment motivation

The Circumstances Motivation and Readiness Scales (CMR) (De Leon *et al.* 1994) was used for measuring motivation and readiness for treatment. The CMR is an 18-item, self-administered instrument that employs Likert-type items rated on a five-point scale ranging from 'strongly disagree' to 'strongly agree'. The CMR scales were factor-analysed for several subgroups of substances abusers; the scales had good (predictive) validity (De Leon, Melnick & Hawke 2000). The CMR was translated

into Dutch and the psychometric properties of this translated version were studied (Soyez *et al.* in press).

Family background and functioning

As well as some variables derived from the EuropASI's family/social relationships area (family history, number of close relationships ever, relational problems life-time and last 30 days), the Gezinsklimaatschaal (GKS, Jansma & De Coole 1995) was used to measure family background and functioning characteristics. The GKS is the Dutch translation and adaptation of the FES (Family Environment Scale) (Moos & Moos 1986) and contains 77 'yes-no' questions, distributed over seven dimensions that reflect the social climate of diverse family types (cohesion, expression, conflict, organization, control, norms and values, social orientation). Two clinically orientated composite scores can be measured: the family relation index and the family structure index. The internal consistency and validity of the GKS was found to be good (Jansma & De Coole 1995).

Social support

As most existing instruments designed to measure social support focus on only one specific aspect (Sarason & Sarason 1985), an in-depth interview was developed for this study focusing on social network support and construction, aiming to cover different aspects. The interviews, conducted by the first author, were guided by an interview scheme and lasted between 1.5 and 2 hours. They were tape-recorded and transcribed literally afterwards. Two other researchers coded the interviews independently, using the software package WinMAX 98 (Kuckartz 1998). In a second step this first coding was discussed to reach consensus. If more than 5% of the codes differed, the individual coding process was restarted.

For this paper, we used only information on the number of network members and perceived social support. Based on a number of qualitative criteria, investigators coded the client's perceived social support on a four-point scale, ranging from 'no perceived support' to 'strong perceived support'.

While the in-depth interview offered information on 'perceived social support', the network members' participation in the social network involvement was considered a measurement of network involvement ('actual provision of social support').

Client study sample

The clients ($n = 207$) in this study were connected with four relatively small (13–30 beds), traditional drug-free TCs with a planned duration of stay of 12 months in primary treatment (see Table 1), comprising a mainly male (84.9%) sample of polydrug (41.1%) and opiate (20.8%)

Table 1 Client characteristics ($n = 207$).

Socio-demographics	
Gender (% female)	15.1%
Age [mean (SD)]	26.4 (6.32)
Primary drug used	
Opiates	20.8%
Cocaine	6.4%
Alcohol + drug	16.3%
Polydrug use	41.1%
Ever injected	64.4%
Highest level of education (% primary school degree or lower)	49.5%
Legal referral	37.7%
Social network characteristics	
In-depth interview	
Total number of network members [mean (SD)]	6.25 (3.27)
EuropASI	
Number of substance abusers in family [mean (SD)]	2.28 (1.99)
days experiencing serious conflicts with family/social relationships during last month	3.56 (8.46)
GKS [mean (SD)]	
Cohesion	5.44 (2.95)
Expression	4.92 (2.61)
Conflict	6.77 (2.86)
Organization	6.64 (2.94)
Control	5.57 (3.10)
Norms	6.86 (2.55)
Social orientation	4.26 (2.38)
Family relation index	14.59 (6.95)
Family structure index	12.21 (5.44)
Treatment motivation	
Total CMR-score [mean (SD)]	71.33 (10.64)
MR-score [mean (SD)]	49.35 (7.76)
Problem severity	
EuropASI severity scores [mean (SD)]	
Medical health	2.47 (2.06)
Education/employment	3.67 (1.85)
Alcohol	3.34 (2.63)
Drug	6.65 (1.39)
Legal	3.69 (2.31)
Social/family	5.01 (1.68)
Psychological	4.35 (2.19)
EuropASI composite scores: [mean (SD)]	
Medical health	0.30 (0.32)
Education/employment	0.92 (0.22)
Alcohol	0.14 (0.21)
Drug	0.17 (0.09)
Legal	0.32 (0.28)
Family/social (days of conflicts)	
Family	0.27 (0.26)
Social	0.18 (0.21)
Psychological	0.13 (0.09)
Number of days in treatment (TIP; log TIP): [mean (median/SD)]	
Total days ($n = 207$)	242 (188/184); 2.21 (2.27/0.47)
TC1 ($n = 66$)	277 (217/214); 2.24 (2.33/0.50)
TC2 ($n = 72$)	231 (189/178); 2.17 (2.27/0.50)
TC 3 ($n = 34$)	250 (199/172); 2.25 (2.30/0.41)
TC 4 ($n = 35$)	200 (163/131); 2.18 (2.21/0.37)

abusers, of whom 64.4% had ever injected drugs. The average period of abuse was 8.75 (SD = 5.82) years for cannabis and 5.5 (SD = 4.85) years for opiates. The participants had a history of several treatment episodes for drug problems (mean = 8.01, SD = 13.62).

The mean time-in-programme (TIP) for our sample was approximately 8 months (242 days, SD 184 days, median 188 days). There were no significant differences between the four TCs for treatment retention ($F_{(3,203)} = 1.88, P = 0.13$; logarithm of TIP: $F_{(3,203)} < 1$). Almost 8% of the clients in the study (7.7%) had left treatment within the first 30 days; 25.6% had dropped out after 3 months. After 1 year, 72.9% of the clients had left the TC.

Significant differences between TCs were found for age (slightly older residents in TC4: $F_{(3,201)} = 3.20, P < 0.05$) and gender ratio (more women in TC1 and TC3 compared to TC2 and TC4: $\chi^2_{(3)} = 9.29, P < 0.05$). There were no differences between TCs in terms of other demographics (highest diploma, longest period of employment, marital status) and concerning age of substance abuse onset and EuropASI composite scores for alcohol or drugs. Fewer clients in TC3 had ever injected drugs.

Comparing the control and experimental group on different variables (demographics, age, gender ratio, treatment motivation, EuropASI composite scores) no significant differences were found.

Network study sample

During the in-depth interviews, clients enumerated a total of 1294 network members (mean: 6.25, SD: 3.27) who they experienced as being important to them. The mean number of network members actually involved in treatment was 1.61 per client (SD: 0.9); they participated in most of the activities offered by the TC.

A total of 207 network members began the intervention, but only 108 network members (related to 57 clients, 51.0%) completed it. In 12 cases (10.6%) the intervention was interrupted because of client dropout. Network members of 15 clients (13.3%) did not attend, and consequently did not receive any intervention components. There were no differences in network dropout rate between the TCs.

The network members who were involved and finished the intervention were mainly parents (70.4%). Siblings (9.2%), grandparents (7.4%) and partners (6.5%) represented the majority of the other participants.

Data analyses

A series of analyses were conducted, addressing the two main research questions of the study: (1) which variables predict retention and (2) does the participation of significant others in the social network intervention help to improve retention? The entire analysis was guided by a

conceptual model based on findings in the literature concerning factors associated with treatment retention.

In answering the first research question, 'TIP' was used as a dependent variable. As preliminary screening of this variable indicated that its distribution was fairly skewed (minimum = 2 days, maximum = 778 days, mean = 242, skewness = 0.750), the square-root transformation of TIP was used within all analyses (minimum = 1.41, maximum = 27.89, mean = 14.3, skewness = 0.081).

A series of hierarchical regression analyses was performed to assess the importance of five domains: (1) client characteristics (gender and age); (2) social support (four variables: perceived social support, number of supporting family members, number of supporting friends and number of formal supporters); (3) family characteristics (seven variables for each dimension of the GKS); (4) treatment motivation (one variable: the sum score for the CMR); and (5) problem severity (15 variables: seven severity ratings and eight composite scores).

Assessing the impact of network involvement (second research question), the previous analysis was repeated while including the social network involvement variable. This variable was made dichotomous [full participation of network members in the social network involvement – experimental group ($n = 57$ clients) versus partial ($n = 56$ clients) or no participation ($n = 94$) of network members in the social network involvement – control group (total $n = 150$)]. Thus, the original control group was combined with the partial experimental group, i.e. whose network members dropped out of the social network involvement (total $n = 150$) for the dichotomous comparisons, as most of these network members participated in the intervention to only a very limited extent.

RESULTS

Factors associated with retention

A baseline model containing only the client characteristics 'age' and 'gender' was used as a starting point. Then, for each of the next four domains a new model was constructed by adding the corresponding variables to the base model. The improvement of fit for these models is reported in Table 2.

Only the variables in the domains of 'social support' and 'treatment motivation' improved the fit of the model significantly. In the final model the variables of these two domains (together with gender and age) were included. This model fit was good, $F_{7,197} = 4.4, P = 0.000$, although only a moderate proportion of the variance could be explained, $R^2 = 0.14$, adjusted $R^2 = 0.10$. Two variables (of seven) had a significant contribution within

Table 2 Model fits for several regression models.

Model	Included domains	Δdf	df_2	F	Prob.	ΔR^2
1	Client	2	203	< 1	0.776	0.002
1 + 2	Client	4	199	5.2	0.000	0.095
	Social support					
1 + 3	Client	7	192	< 1	0.800	0.019
	GKS					
1 + 4	Client	1	202	14.4	0.000	0.066
	CMR					
1 + 5	Client	15	162	< 1	0.764	0.061
	Problem severity					

Dependent variable is the (square-root transformation of) TIP (time-in-programme). See text for more information.

this model: (1) perceived social support, $F_{1,198} = 10.9$, $P = 0.001$ and (2) the total sum score of the CMR, $F_{1,198} = 8.8$, $P = 0.003$.

The influence of a social network intervention on retention

In order to assess the effect of a social network involvement on retention, the final model that was used for predicting retention was refitted by including social network involvement as an additional variable in the model. The fit of the model improved significantly ($F_{1,197} = 6.2$, $P = 0.013$). Of note, the effect of 'perceived social support' failed to reach significance ($F_{1,197} = 2.9$, $P = 0.091$), while the effect of motivation remained ($F_{1,197} = 9.0$, $P = 0.003$).

Some interactional relationships between family background variables (GKS-II family relation index and GKS-II family structure index), severity of drug and alcohol use and treatment motivation, on one hand, and participation in the social network involvement on the other hand, were also tested. However, none of these interactions predicted retention significantly.

DISCUSSION

In this study the impact of different variables on retention in TCs was investigated. Specific attention was paid to clients' perceived social support and actual network involvement in treatment.

As expected, perceived social support contributed clearly to retention. Only one other variable—treatment motivation—also improved the model significantly. Other characteristics (client and family background characteristics and problem severity) were not significantly predictive. As reported in other studies, this finding indicates that dynamic variables are more influential predictors of retention than fixed pre-treatment characteristics. Nevertheless, in line with the conclusions of other authors (Dobkin *et al.* 2002), the contributing variables

accounted for only a small percentage of the variance, underscoring the need for further research in this domain.

When the variable 'social network involvement' was added to the model, the impact of perceived social support became less pronounced. This indicates that network involvement (i.e. actual provision of social support) early in treatment is more important in enhancing retention than perceived social support. This finding is in contrast with some literature stating that perceptions of receiving social support are more important than its actual provision (Pierce, Baldwin & Lydon 1997). However, others have suggested that perceived support alone is unlikely to protect certain groups of people in stressful situations (e.g. Macdonald, Hayes & Baglioni 2000). This may also be the case for substance abusers entering treatment. Furthermore, *how* the social network involvement implemented in this study affected the retention of the residents remains to be clarified. For example, involving network members in treatment and discussing with them their communication patterns does not necessarily mean that their relatives in treatment receive more support.

Despite previous theoretical considerations the present findings may have implications for clinical practice, particularly in TC programmes. The social network involvement intervention utilized in this study is a feasible protocol for involving social network members of residents in TC treatment and could enhance treatment retention of the target clients.

However, the involvement of social networks in treatment may not be appropriate in all cases. As suggested in the literature, the negative side of social support for some substance abusers, more specifically the deviant and dysfunctional patterns in their networks, may have a negative impact on the recovery process (e.g. Goehl *et al.* 1993). Thus, additional research is needed to determine which forms of involvement and interventions are the most appropriate for different social networks and clients.

Limitations

To our knowledge, this study is one of the first attempts to measure the impact of social network involvement in TCs by means of a controlled study design. However, the methodological quality of this study was affected by some interference.

First, the implemented social network involvement was an enhancement of existing network activities. Consequently, there is a possibility that these conditions are not independent from each other. However, as the standard network activities offered during the first 3 months of treatment (the period in which the intervention was implemented) are somewhat limited, the confounding effects will remain small.

Secondly, network members of approximately half the clients (49.0%) in the experimental group did not participate fully in the intervention. The study did not collect data systematically regarding the reasons for network dropout. However, the intervention was interrupted in approximately 10% of the cases because the client dropped out of treatment. This statistic suggests that offering the intervention earlier in treatment may affect dropout of the client and, consequently, of significant others.

As noted in the results, there were no significant interactions between client background variables, family participation in the social network involvement and client retention. However, further examination of social network characteristics as possible correlates of network participation revealed that there were more family problems (higher EuropASI composite score) in the dropout group. Also, when the network members of the subjects participated fully in the social network, the subjects themselves perceived more social support (Soyez 2004).

The literature offers several explanations for the high dropout rate of significant others which may be considered. For example, participating in the intervention required considerable effort from network members. Often, the client's repeated episodes of substance abuse have created a serious emotional, social and financial burden for significant others. Consequently, the latter are less motivated to offer support once the client is more or less stabilized (Wermuth & Scheidt 1986). Another factor noted in the literature is that network participation may reflect a dysfunctional family interaction pattern, in which the family asks for help during a crisis but does not attend when the behaviour becomes less problematic (Bentinck *et al.* 1986). Studies have also indicated that many significant others express the need for support themselves (De Civita, Dobkin & Robertson 2000).

CONCLUSIONS

The above limitations notwithstanding, the present TC findings support hypotheses in the literature stressing the

importance of network involvement in influencing retention in substance abuse treatment.

NOTE

For a more elaborate overview of the content of the intervention and implementation of control mechanisms see: V. Soyez, E. Broekaert & E. De Leon, Draaiboek Onderzoeksproject 'de Invloed Van Sociale Netwerken Op Retentie in En Succes Na Behandeling in Een Therapeutische Gemeenschap'—Partum: Interventies [Research script, 'The influence of social networks on retention in and success after Therapeutic Community treatment'—partum: interventions], Ghent: Ghent University Department of Orthopedagogics, unpublished document, 2001; P. De Vijlder, De implementatie van de onthaaldagen voor de sociale netwerkleden van nieuwe bewoners in een therapeutische gemeenschap [The implementation of the induction days for the social network members of new residents in a Therapeutic Community], Gent: Ghent University, unpublished Master's thesis, 2002; and V. Soyez, 'The influence of social networks on retention in and success after Therapeutic Community treatment', unpublished doctoral thesis, Ghent: Ghent University, 2004.

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