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Social Integration of People with Serious Mental Illness: Network Transactions and Satisfaction

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Abstract

Social integration involves a process through which an individual establishes and maintains meaningful interpersonal relationships characterized by mutual exchange with community members in nonclinical settings. Using self-report data from a probability sample (n=252) of supportive independent housing residents, transactional (i.e., support exchanges) characteristics of social networks, paying particular attention to reciprocation of exchanges between residents and their network members, were analyzed. The study also examined the extent to which transactional characteristics are related to satisfaction with social relations. Findings indicated considerable reciprocity in social relationships. Controlling for sociodemographic variables and network structure characteristics, mutual exchanges of tangible and problem-solving support were positively associated with network satisfaction. Results suggest that supported socialization services aimed at network and resource development with this population could facilitate more frequent exchanges of tangible resources and problem-solving opportunities between consumers and network members, which, in turn, might promote social integration.

Introduction

The integration of persons with serious mental illness (SMI) into the community is a paramount principle, value, and goal of contemporary mental health policy.^{1–3}

Social integration, a core dimension of community integration, refers to the degree to which an individual's social network reflects adequate size and multiple social roles (e.g., as friend, family member, coworker) and the extent to which an individual engages in mutual exchange, or reciprocity, in social relationships.⁴ Recent conceptualization work has characterized social integration as a process through which an individual establishes and maintains meaningful interpersonal relationships with his or her peers and community members.⁵ According to this perspective, people with psychiatric impairments have the capacity to assume roles as both the receiver and provider of support, signaling the

reciprocity in social relationships.⁶ In turn, this mutual exchange that is characteristic of social integration might have profound impacts on psychological well-being.⁷⁻⁹

Using data obtained from a probability sample of psychiatric consumers in supportive independent housing, this paper documents the transactional aspects of social networks (i.e., exchange patterns of social support) and examines the relationship between reciprocity and satisfaction with social relations. In doing so, it is demonstrated that systematically collected data on social network transactions can be instructive for exploring the degree of social integration and subjective well-being among persons with SMI.

A Transactional Approach for Understanding Social Integration and Network Satisfaction

The set of an individual's relationships with others is termed their social network. Social networks encompass a structural component and a transactional component. The structural component includes network size, network composition, relations among network members (density), multiplicity of social roles, frequency and intensity of contact, and amount of time known or spent with each other.^{10,11} The transactional component of social networks is tantamount to the construct of "social support" and refers to the functions performed by network members, as manifested in the exchange of resources.^{12,13}

Berkman and colleagues⁷ offered an overarching model linking the structural and transactional aspects of social networks to appraise their respective influence on health, a global concept encompassing both physical and psychological dimensions. Social network structure is conceptualized as mediating access to the opportunities for enactment of support among network members, which in turn, impacts an individual's health. Indicators of social network structure are, therefore, not only of interest in their own right but also would enable researchers to test whether network transactional measures remain associated with health outcomes after controlling for structural characteristics.

Network transactions and types of transactions

Network transactions are complex phenomena involving multiple dimensions, including (1) types of transactions, (2) valence of transactions (positivity/negativity; whether they are considered helpful or upsetting), (3) sources of transactions (e.g., family, friends, and coworkers), and (4) reciprocity in transactions (involving both provision and receipt of assistance).¹⁴ The four types of transactions typically delineated in the literature are emotional, instrumental, appraisal, and informational support.^{7,15} Emotional support refers to trust, love, sympathy or understanding¹²; instrumental (or tangible¹⁶) support includes tangible materials or money; informational (or problem-solving¹⁴) support involves information or advice on how to solve a problem; and appraisal support refers to evaluative feedback to others.¹⁷⁻¹⁹ For the purposes of this study, emotional, tangible, and problem-solving support are examined.

Valence of transactions

Valence refers to the perceived positivity or negativity of support. While the presence of network members willing to provide support is considered beneficial to their recipients, not all network transactions are devoid of stress and conflict. Reciprocation obligations associated with received support can sometimes be burdensome and some relations may provoke anger or distress and do not serve as positive influences on an individual's well-being.²⁰⁻²² Indeed, numerous studies using community and patient samples have documented that negative (i.e., upsetting or unsupportive) transactions exert a stronger influence on psychological adjustment than positive (or supportive) transactions.^{21,23-26}

Although the literature has ascertained the value of perceived emotional support and having an intimate, confiding relationship in promoting health and buffering stress, these findings suggest the need to examine the effects of both supportive and unsupportive transactions on well-being.

Sources of transactions

Different sources of aid play a role in influencing perceived helpfulness or unhelpfulness of support.²⁷ Relationship-specific assessments of supportive and unsupportive interactions have been documented in studies with patients experiencing chronic illnesses.^{28–31} For example, one study of cancer patients²⁹ found intimate others to be most valued for the emotional support that they provided, but they were less likely to be rated as helpful when it came to informational support and tangible aid. It can be argued that this finding is illness-context specific; however, the relative value attributed to the support provided through different relationships is consistent with the expectations of support attached to different relationships such as spouse/partner, family, friend, or coworker.

Reciprocity of transactions

Reciprocity is a basic tenet of social exchange.^{32–34} Failure to adhere to expectations of reciprocity in social relations can lead to discord, cessation of relationships, and discontinuation of access to resources inherent in those associations.³⁵ This “quid pro quo” or balancing of support provided to and received from social network members can influence physical health, psychological well-being, and life satisfaction.^{7,8,36–40} Indeed, there is an extensive literature from equity and social exchange theory research supporting the desire to seek balanced supportive relationships with network members and the benefits of this equity on physical and emotional well-being (for a review, see Buunk et al.,⁸ Walster et al.⁴¹). However, studies in this vein rely mostly on reports of overall perceived reciprocity in social relationships and not on examination of dyad exchange patterns with individual network members, nor do they typically compare types of transaction or valence of transaction and the relationships among types and valence of transaction and outcomes.

Social Network Transactions of People with Serious Mental Illness

Persons with SMI have social networks that are distinct from those of persons without SMI, possibly reflecting lower levels of social integration. Prior research has found social networks of persons with SMI to be smaller^{42,43} and more likely to include relatives, other psychiatric consumers, and mental health professionals.^{43–47} Specific to network transactional characteristics, research has shown salutary effects of social support on psychiatric rehabilitation⁴⁸ by reducing distress symptoms^{49–51} and psychiatric hospitalizations,⁴³ increasing access to outpatient mental health and substance treatment services,⁵² and promoting residential stability.⁵³ However, as some of these studies do not differentiate between different types, valence, and sources of transactions,^{51,53} they are limited in providing a nuanced understanding of the potential benefits of network transactions for persons with SMI. Only two studies^{14,54} were known to the authors to have differentiated between supportive and unsupportive transactions, and only one study¹⁴ examined both network structure and transactional characteristics’ relationships with measures of psychological well-being.

Research on the reciprocity of transactions between persons with SMI and their network members is also scarce. Earlier reviews on the interpersonal relationships of persons with SMI report an asymmetry in supportive transactions.^{55–57} While this imbalance might reflect consumers’ “unwillingness to serve functions for their network members” (p. 412),⁵⁸ others attribute these findings, in part, to the residential contexts of earlier studies—i.e.,

hospitals and board-and-care homes—which were unlikely to render opportunities for consumers to reciprocate the support they were receiving.^{14,59} Three recent qualitative studies provide evidence of consumers' awareness of the importance of reciprocal network transactions and highlight the need for assessing reciprocity when describing social integration of persons with mental illness.^{5,60,61} These studies are consistent with the findings of Nelson et al.,¹⁴ which provided some evidence of symmetry in social network transactions. Specifically, moderate to high levels of correlation were documented between number of people to whom support was provided and from whom support was received, as well as between the frequency of support provided and received by study participants.¹⁴

Satisfaction in Social Relationships

Research has found that persons with psychiatric disabilities report less satisfaction with their social networks when compared to their nondisabled peers.^{42,62,63} Among this population, level of satisfaction with social relations has shown to have significant correlates; it is positively related to an individual's self assessment of recovery,^{64,65} income⁶⁶ and engagement in gainful employment,⁶⁷ and negatively associated with psychiatric symptoms.^{54,63,66–68}

Recent studies have also paid particular attention to elucidating the associations among network characteristics and satisfaction with social relations. While some studies pointed to network size as a predictor of network satisfaction,^{69,70} others found network composition,⁷¹ or both network size and composition to be a determining factor.⁷² The lack of consistent findings can be attributable to the different populations sampled in each of these studies. While all the studies' participants were diagnosed with serious mental illness, they varied greatly in terms of race/ethnic background, living arrangement, as well as site of recruitment.^{69–71,73} Moreover, prior research has yet to examine the influence of network transactions, particularly reciprocity in social relationships, on satisfaction with social relations, although at least one study of persons without a psychiatric disability found network transactions⁷⁴ to be associated with participants' satisfaction with social relations.

The Present Study

The current analyses build upon the work of Nelson and colleagues,¹⁴ the only study to date that examined multiple dimensions of social network transactions in community-based residential settings for persons with SMI. Whereas the findings of Nelson et al. were based on overall prevalence of supportive and unsupportive transactions provided and received within participants' networks, the present study is unique in documenting reciprocity at the dyadic level, that is, between study participants and each of their core network members. Dyadic analysis of network transactions constitutes a more nuanced and parsimonious approach to understanding reciprocity in social relationships. For example, while high correlations between number of network members to whom support was provided and from whom support was received can be indicative of reciprocity of exchange, devoid of dyadic data, one cannot ascertain the degree to which social support transactions were in fact conducted with the same set of network members. It can be argued that high correlations noted are a function of overall network size and intensity of contact and not necessarily reciprocity.

The current study intends to address the following questions:

1. What are the social network characteristics of persons with SMI residing in supportive independent housing, measured in terms of type, valence, and source of transaction?

2. Does the number of reciprocal ties in study participants' social network, measured at the dyadic level, differ by type, valence, and source of transaction?
3. To what extent are indicators of reciprocity related to consumers' satisfaction with social relations, controlling for sociodemographic and network structure characteristics?

Methods

Participants

The sample was drawn from a cross-sectional study of people with SMI who resided in supportive independent housing (SIH) in a large urban county between July 2002 and December 2003. As a normalized housing approach that promulgates the principles and goals of community integration and that is increasingly preferred by consumers and providers of mental health services, SIH provides an appropriate context in which to examine social network transactions.

The criteria for admission to SIH in the study site included (1) at least 18 years of age, (2) 6 to 12 months of sobriety prior to entering housing, (3) current residence in the county for at least 6 months, exclusive of any institutionalization, (4) a primary diagnosis of major mental illness, including schizophrenia or major affective disorder, and (5) ability to maintain independent living with assistance from residential support staff. The last criterion was assessed by case management staff and ensured comparable levels of functioning among SIH residents regardless of psychiatric diagnoses. In addition to these admission criteria, two study inclusion criteria were added: (1) ability to speak English and (2) residence in their current SIH residence for 6 months or more.

At the time of the study, about 85% of the county's 632 SIH residential support slots were occupied and supported by 27 support teams. Twenty-four consumers from one residential support team serving exclusively Spanish-speaking clients were excluded from the study due to language barriers, thus limiting the generalizability of findings to English-speaking clients. The sampling frame comprised 514 SIH residents in 26 support teams. Study participants were selected randomly with target recruitment per team set proportionate to the size of the team's caseload with at least two participants recruited per team. A total of 406 consumers were selected, yielding a final sample of 252 participants (62% completion rate). The 252 study participants were interviewed in person by trained interviewers and received a small honorarium for an interview that lasted an average of 2 h. The structured interview protocol contained various measures of community integration, psychiatric symptomatology, drug and alcohol use history, physical health status, service use, and sociodemographic information.

Basic demographic and clinical variables in the county Department of Behavioral Health's (DBH) administrative database were queried to compare study participants ($n=252$) with non-participants ($n=262$). No statistically significant differences were found, except for slightly higher Global Assessment of Functioning scores for study participants ($p<.05$). In order to account for differences of participants from the sampling frame, sample weights were created using propensity scoring methods.

Control variable measures

Sociodemographic characteristics and experience of stigma—The sociodemographic control variables were coded as follows. Age and education (formal schooling) were measured in number of years. Income was measured in amount of money participants received during the past month. Because income is highly skewed, the variable

was transformed on a logarithmic scale in the regression analysis. Gender (male, female), race (African American, other), and history of homelessness (yes, no) were all binary coded. In addition, the Stigma section of the Consumer Experiences of Stigma Questionnaire was included as a control variable.^{75,76} The Stigma section is a nine-item scale with questions addressing the frequency of unfavorable treatment experienced by people with mental illness ($\alpha=0.75$). The questions were measured on a five-point Likert scale, ranging from 0 (never) to 4 (very often).

Clinical characteristics—Administrative data obtained from the DBH provided information on the psychiatric diagnosis for the sample, binary coded as schizophrenia and otherwise. Lifetime history of substance abuse was assessed by asking participants if they had a major problem with one or more of 13 different substances (including alcohol) in their lifetime.⁷⁷

The Colorado Symptom Index (CSI) was used to assess the severity of psychiatric symptoms experienced during the past month, including anxiety, depression, psychotic symptoms, and disturbed thought processes⁷⁸ ($\alpha=0.86$). The questions were measured on a five-point Likert scale, ranging from 1 (not at all) to 5 (at least everyday).

The SF-12 Health Survey was employed to assess the participants' health status in eight domains.^{79,80} The questions were measured on a Likert-type response set, and the items were coded with a higher score indicating a better health status. Summary scores were computed for the 12-item scale by summing the responses to questions within a domain, transforming the raw scores into normed scores that ranged from 0 to 100, and then averaging across the eight domains ($\alpha=0.82$).

Characteristics of network structure—Social network structure variables included size, composition, intensity of contact, and density. Research interviewers asked participants to name people whom they considered important in their lives, according to different types of relationship (e.g., family; friends; acquaintances from work, school, and volunteering; and staff persons in professional services). Network size is indicated by the total number of network members participants mentioned. Network composition is indicated by the percent of network members who were (1) family members, (2) friends or acquaintances, and (3) service staff.

Study participants who reported more than 10 persons in their social network were asked to pick their 10 most important (core) network members. Information on intensity of contact and network density was collected for up to 10 members for all participants. Participants were asked how often they saw or talked to their network members, with a response set ranging from "1" (daily contact) to "7" (less than once a year). Intensity of contact was measured by computing percentages of network members with whom study participants had contact at least once a week. Network density was measured by asking participants to rate how well each network dyad knew each other, using a four-point scale with "1" indicating very well, "2" somewhat well, "3" not very well, and "4" do not know each other. The number of network dyads ranged from 1 (network of two members) to 45 (network of 10 members). Network density was measured as the percentage of network dyads who knew each other either well or somewhat well.

Study variable measures

Characteristics of network transactions—For each of the 10 possible core network members, study participants were asked whether or not they provided to and received from the network member emotional, tangible, and problem-solving supports. These transaction types in turn included both positive and negative dimensions. Positive emotional

transactions refer to the expression of care, love, esteem, and value. Positive tangible transactions refer to offering practical help with daily living tasks or financial help. Positive problem-solving transactions refer to encouraging the participant to understand a problem and to make plans to solve the problem. Negative emotional transactions refer to the expression of anger, criticism and ridicule. Negative tangible transactions refer to refusing to provide practical or financial help. Negative problem-solving transactions refer to encouraging the participant to deny a problem or to avoid taking action to solve the problem. These definitions of supportive and unsupportive transactions have been adapted from an instrument used in the 1992 study of Nelson et al.¹⁴

Number and percent of network members to whom the study participant provided support and from whom he or she received support were computed. Reciprocity of support is indicated when the study participant reported to have both provided to and received from a network member the same type of transaction. Two scales, respectively, indicating the number of positive reciprocal transactions and number of negative reciprocal transactions were compiled. Each scale contains nine items with three transaction types (emotional, tangible, and problem-solving) multiplied by three transaction sources (family, friends, and service staff). Similarly, two scales of nine items each were compiled reflecting the percents of network members with whom exchanges were reciprocal. The internal consistency scores (alphas) of the four scales are: (1) number of positive transactions (0.67); (2) number of negative transactions (0.50); (3) percent of positive transactions (0.71); and (4) percent of negative transactions (0.56). Though not ideal, these alphas are in range of those reported by Nelson and colleagues on their transaction measures.¹⁴

Satisfaction with social relations—Ten items from the Lehman's Quality of Life scale⁸¹ were used to measure the level of satisfaction with social relations (alpha=0.89). The items assess the extent to which participants were satisfied with their social relations with family and friends, as well as people in general. Participants responded to a seven-point scale, ranging from 1 (terrible) to 7 (delighted). Table 1 shows the sociodemographic, clinical, and network structure characteristics and levels of satisfaction with social relations of study participants.

Analyses

To describe the sample and their social network characteristics, percentage distributions and measures of central tendency and dispersion were computed. A three-way repeated measures (completely within design) ANOVA was conducted to examine the extent to which reciprocal exchanges differ by valence, type, and source of transaction. The assumption of sphericity was examined using Mauchly's test. Results using the Greenhouse–Geisser adjustment and the Huynh–Feldt adjustment, which correct for the violation of sphericity in the study data, were reported.⁸² Following the 1992 study of Nelson et al., simple main effects and interaction comparisons were used to explore the nature of the three-way interaction.⁸³ Starting with significant higher-order ANOVA results, this procedure systematically identifies the sources of three-way interactions by conducting a set of increasingly focused (or lower-order) statistical tests (in this case, two-way repeated measures ANOVA and paired-samples *t* tests).

Ordinary least squares regression analysis was employed to examine the relationship between the number of network members involved in reciprocal transactions and satisfaction with social relations while controlling for sociodemographic and clinical variables, as well as characteristics of network structure. To adjust for non-response and selection of participants from residential support teams, the SURVEYREG procedure in SAS 9.1 was used. This procedure corrected for non-independence within clusters by specifying the team

identifier variable as the level of aggregate in the model. Multicollinearity was examined using tolerance values, which identify “the proportion of the variance of that variable not associated with independent variables already entered into the equation”⁸⁴ (p. 484). All variables in the model had tolerance values ranging from 0.43 to 0.92, indicating no multicollinearity among study variables. All analyses were based on the weighted sample to account for differences between respondents and nonrespondents.

Results

Characteristics of network transactions

Table 2 shows the characteristics of network transactions, indicating the mean counts and percentages of network members to whom participants provided support and from whom they received support, as well as the mean counts and percentages of network members with whom participants were engaged in reciprocal transactions. Findings are organized along the dimensions of transaction valence, transaction type, and transaction source.

Positive transactions were much more common than negative transactions, with participants engaging in unsupportive transactions with small numbers and percentages of network members. Emotional transactions (both provided to and received from network members) were more prevalent than tangible and problem-solving transactions. Tangible support was more common than problem-solving support for positive transactions, whereas a reverse pattern was observed for negative transactions. Across both positive and negative transactions, participants engaged in all types of transactions more with family members, followed by friends, and service staff. More receipt than provision of support was consistently reported.

As expected, the prevalence of reciprocity was lower than that of provision or receipt because not all network transactions were reciprocal. Nevertheless, a pattern parallel to the findings on provision and receipt of support was observed. First, greater numbers (and percentages) of network members were engaged in reciprocal positive relationships than reciprocal negative relationships. Second, reciprocity was most prevalent for emotional transactions regardless of transaction valence. Third, reciprocity was reported mostly with family members across all types of positive transactions, followed by friends, and service staff.

Results from three-way repeated measures ANOVA show a significant interaction between all three variables (i.e., transaction valence, type, and source) [$F(2,595)=23.00, p<.0001$]. All two-way interaction effects were also significant: valence by type [$F(2,431)=136.49, p<.0001$]; valence by source [$F(2,415)=70.11, p<.0001$]; and type by source [$F(2,573)=33.21, p<.0001$]. Keppel's procedure on simple effects and interaction comparisons was employed to explore the nature of three-way interaction.⁸³ Specifically, the interaction between transaction source and transaction type was examined at each level of transaction valence. The results were consistent for both positive and negative transactions: there was a significant interaction effect between transaction source and transaction type and significant main effects for both variables ($p<.05$).

For all three transaction sources (family, friends, and service staff), results from paired-samples *t* tests with Bonferroni adjustment for multiple comparisons (holding family-wise error rate at 0.05) indicate that the number of network members with whom participants engaged in reciprocal positive emotional exchanges was significantly greater than both reciprocal positive tangible and reciprocal positive problem-solving exchanges. There was no difference in the number of network members engaged in reciprocal positive tangible and reciprocal positive problem-solving exchanges. With regard to negative transactions, no

differences were found between different types of reciprocal transactions with one exception. Among family and friends, study participants engaged in a significantly greater number of reciprocal negative emotional exchanges than reciprocal negative tangible exchanges.

Predictors of satisfaction with social relations

Table 3 displays the results of the ordinary least squares regression analysis. The overall model is significant [$F(24,219)=10.3$, $p<.001$], with 41% of variance in the level of satisfaction with social relations explained by the variables included in the analysis. Among the network transaction characteristics, the number of network members with whom participants engaged in reciprocal positive tangible transactions and reciprocal positive problem-solving transactions were both positively associated with participants' levels of satisfaction with social relations. Among sociodemographic and clinical characteristics, study participants' experience of stigma and severity of psychiatric symptoms were negatively associated with their levels of satisfaction with social relations. In terms of network structure characteristics, network size, intensity of contact, and network density were all positively associated with the participants' levels of satisfaction ($p<.01$).

Discussion

The present study documented the characteristics of social network transactions among adults with SMI who resided in SIH. The study focused on type, valence, and source of social network transactions in order to decipher the prevalence and pattern of reciprocal relationships. The study also examined the extent to which indicators of reciprocity are associated with consumers' satisfaction with social relations, controlling for sociodemographic and network structure characteristics.

Social network transactions

Consistent with the results of Nelson et al.,¹⁴ positive support transactions flowed between participants and their network members, often in a reciprocal manner, whereas negative (unsupportive) exchanges were infrequently reported. Positive emotional support was provided to and received from network members much more often than positive tangible and positive problem-solving support and might reflect a need emanating from the emotional strains that mental illness places on the study participants and their network members. On the other hand, whether the result of living in poverty or driven by social selection, mental illness is disproportionately found among persons with little means.^{85,86} As such, nonmaterial resources could be the most available form of support SIH residents and their network members have to exchange, resulting in emotional support being reciprocated much more often than either problem-solving or tangible support.

All types of support transactions were found to be mutually exchanged more often with family members than with friends and service staff. The preponderance of mutual exchange with family members is not unique to network transactions of persons with SMI⁸⁷ and likely reflects the old adage that "blood is thicker than water." However, if mutual exchange with community members is part and parcel of social integration,⁴⁻⁶ the much lower prevalence of reciprocal transactions with non-family members relative to family members might attest to the limited opportunities that people with psychiatric disabilities have to be fully involved in daily activities and social roles alongside their peers without disabilities.

Moreover, it appears that the professional service setting is not one in which participants have had the opportunity to develop or apply mutual exchange roles. The low levels of exchange with service staff might reflect the reality that although reciprocity is a norm in

social relationships among adults,⁸⁸ consumers and providers are not expected to engage in a commensurate relationship within the context of formal social services. For example, the typical roles of a mental health case manager are those of a broker of services and an advocate on behalf of consumers. These roles might limit the opportunities for reciprocation between SIH residents and their service providers.

Relatedly, it is important to note that reciprocity between consumers and their network members need not be restricted to the same types of support exchange; for example, as in the current study, reciprocity of emotional support was identified when emotional support was both provided to and received from a focal network member. It is plausible that reciprocal ties accomplished with returning a different type of support than was initially provided are meaningful exchanges within certain contexts and/or in reference to specific role-sets. Broadening the scope of the identification of reciprocal relationships, however, requires the development of more nuanced interpretations of various configurations of reciprocal exchanges within a coherent analytical framework.

Satisfaction with social relations

Indicators of reciprocity of positive tangible and problem-solving support were found to be associated with network satisfaction. In regard to tangible support, this finding can be interpreted in reference to research on an experimental intervention of supported socialization⁸⁹ in which participants with psychiatric disabilities in the control group, who were given monthly stipends but not matched with a peer with whom to spend the money, tended to use the stipends to purchase items for persons who had provided assistance to them in the past. The experiment's findings alluded to the propensity of psychiatric consumers to take up a "giver" role in order to redress inequitable relationships in their social circle.

In regard to positive problem-solving support, one need only consider the myriad challenges psychiatric consumers face in their endeavor to maintain community living and consequently, the importance of daily problem-solving skills to handle these challenges. Indeed, problem-solving therapies have been shown to be effective at reducing depressive symptoms,⁹⁰ and in an examination of social relationships among persons with psychotic disorders, Breier and Strauss⁹¹ found that a majority of study participants felt that "discussing their problems and getting concrete feedback was a valuable means of ordering their lives on a day-to-day basis and planning for the future" (p. 952). The present study adds to the extant literature by suggesting the role that reciprocity of problem-solving support has on increasing satisfaction with social relations. It can be argued that reciprocation of this much needed assistance might increase an individual's self esteem as someone who is capable of providing advice to his or her network members.⁹¹

Participants' experience of stigma was a significant predictor of reduced satisfaction with social relations, a finding that has been documented in prior research.^{73,92} Given that multiple factors that might have contributed to stigma (e.g., severity of psychiatric symptoms, schizophrenia diagnosis, health status, history of substance abuse) were controlled for in the current study, this finding suggests that attention needs to be paid on identifying "lurking variables" that mediate the negative relationship between stigma and satisfaction. For example, the various neighborhoods where participants were housed can be more or less accepting to supportive independent housing residents,⁹³ thus impacting their satisfaction with social relations. If that is the case, researchers and policymakers of mental health services need to identify neighborhood characteristics that are conducive to the social integration of psychiatric consumers, as well as to design intervention strategy that supports consumers in less-welcoming neighborhoods.

All but one network structure characteristics were significant predictors of satisfaction with social relations. Prior research has similarly documented larger social networks to be positively associated with network satisfaction.^{42,62,69,72} Interestingly, the network composition variable was not a significant predictor, suggesting that frequent contact with more people, regardless of their relation to consumers, may foster a sense of satisfaction among persons with mental illness.

While the observation of the positive association between network density and satisfaction supports the findings by some,⁶⁴ it appears to contradict those of others that found more loosely connected, non-familial networks to be predictive of better outcomes for persons with schizophrenia.^{94–97} This lack of consistency with the latter set of studies may be due to sampling residents in SIH who were likely to experience a lower level of symptom severity than residents in other community residential programs. However, in testing whether or not psychiatric symptoms interacted with network density in affecting satisfaction with social relations, there was no significant interaction effect.

In tandem with the regression results on reciprocal positive transactions, findings of this study are consistent with the framework offered by Berkman and colleagues,⁷ who hypothesize that social network characteristics are predictive of a psychological pathway that could potentially impact health, including subjective well-being. While it is evident that network structure characteristics are robust predictors of network satisfaction, an encouraging finding of this research is that having more network members engaged in reciprocal ties does have a salutary effect on an individual's sense of satisfaction with social relations, regardless of one's size and density of social network and intensity of contact with one's network members.

Implications for Behavioral Health

As social network characteristics are indicative of the degree to which individuals are socially integrated, the current findings have important implications for behavioral health policymaking and service delivery in improving the community life for psychiatric consumers. Prior research showing social network correlates of quality of life⁶⁹ has suggested mental health providers focus on building larger networks and encouraging more interaction among clients. While findings of the current study support this approach, they also point to another dimension: that reciprocity of network transactions is crucial to increased satisfaction. The potential importance of reciprocity has programmatic implication for interventions like supported socialization programs⁹⁸ that assist individuals with psychiatric disabilities in expanding their social networks. These interventions could increase benefits to consumers by enhancing their social exchange skills in a way that promotes reciprocity. Indeed, in programs that provide monetary support for mental health clients to participate in activities with their socializing partners, participants expressed an enhanced sense of self-worth that came from being able to offer support to others rather than unilaterally taking the recipient role.^{89,99} In addition to the augmentation of tangible resources, this study highlights the importance of the development of problem solving skills so that individuals with SMI can exchange problem-solving support with network members. Doing so could directly promote social integration and in turn, increase satisfaction with social relations.

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Table 1 Sample characteristics ($N=252$)

Variables	Percentage	Mean (SD; range)
Sociodemographic characteristics		
Age (years of age)		45.4 (8.8; 22–72)
Gender (Female=1)	54.8	
Race (Black=1)	62.3	
Education (years of schooling)		11.6 (2.6; 3–18)
Total income received during the past month		782.4 (408.5; 20–3,760)
Total income received during the past month (log transformation)		6.6 (0.4; 3.0–8.2)
Ever been homeless since 18 years (yes=1)	61.5	
Experience of stigma (9-item scale)		16.1 (6.6; 0–32)
Clinical characteristics		
Psychiatric diagnosis (schizophrenia=1)	74.1	
Lifetime use of substance a major problem (yes=1)	55.4	
Severity of psychiatric symptoms (CSI)		30.7 (10.5; 14–62)
Health status (SF-12)		60.3 (18.2; 13.5–92.7)
Network structure characteristics		
Size		13.9 (6.77; 0–8)
0	0.4	
1–3	2.0	
4–6	11.4	
7–10	23.6	
11–20	47.7	
>20	15.0	
Network composition		
% family member		38.6 (22.4; 0–100)
% friend/acquaintance		41.9 (20.2; 0–100)
% service staff		19.5 (14.9; 0–100)
Intensity of contact		
% of members had contact with at least once a week		72.5 (23.4; 0–100)
Network density		
% of dyads who know each other well/somewhat well		47.0 (25.1; 0–100)
Satisfaction with social relations		50.2 (10.3; 16–70)

Table 2

Network transaction characteristics—provision, receipt, and reciprocity: valence of transaction, type of transaction, and source of transaction ($N=246$)

Type of transaction	Provided to network members				Received from network members				Reciprocity of transaction			
	Mean number (Mean %) ^a				Mean number (Mean %) ^a				Mean number (Mean %) ^a			
	Family	Friend	Service staff	All	Family	Friend	Service staff	All	Family	Friend	Service staff	All
Positive ^b												
Emotional	2.99 (64.2)	1.62 (46.1)	0.64 (24.4)	5.25 (57.9)	2.83 (60.3)	1.77 (50.7)	1.02 (39.8)	5.62 (61.6)	2.43 (52.4)	1.34 (38.5)	0.55 (20.6)	4.33 (47.4)
Tangible	1.46 (31.1)	0.79 (22.9)	0.14 (6.0)	2.39 (26.3)	1.64 (35.5)	1.01 (29.2)	0.38 (16.1)	3.04 (32.6)	0.91 (19.5)	0.51 (14.4)	0.09 (3.7)	1.51 (16.4)
Problem-solving	1.18 (26.9)	0.70 (21.9)	0.12 (4.8)	2.01 (22.5)	1.34 (30.3)	0.90 (26.8)	0.69 (27.0)	2.93 (31.9)	0.67 (16.4)	0.38 (12.6)	0.08 (3.5)	1.13 (12.9)
Negative ^c												
Emotional	0.63 (14.0)	0.33 (10.4)	0.16 (5.5)	1.12 (12.8)	0.57 (13.4)	0.26 (7.9)	0.08 (3.1)	0.91 (10.7)	0.31 (6.9)	0.16 (5.2)	0.05 (2.0)	0.53 (6.4)
Tangible	0.22 (4.9)	0.15 (4.9)	0.08 (1.8)	0.45 (5.6)	0.27 (7.2)	0.14 (5.6)	0.04 (1.7)	0.45 (5.9)	0.11 (2.8)	0.04 (2.0)	0.01 (0.3)	0.17 (2.6)
Problem-solving	0.28 (5.7)	0.19 (6.5)	0.06 (2.6)	0.53 (6.1)	0.35 (7.1)	0.28 (9.4)	0.12 (5.5)	0.75 (8.1)	0.12 (2.4)	0.08 (3.2)	0.01 (0.7)	0.22 (2.4)

^aThe percentages were computed by dividing the number of network members in a particular transaction category by the total number of members, respectively, in the categories of family, friend, service staff, and all (source of transaction)

^bFor all three transaction sources (family, friend, and service staff), the number of network members engaged in reciprocal emotional exchanges was significantly greater than both reciprocal tangible and reciprocal problem-solving exchanges ($p<.05$). No difference was found in the number of network members engaged in reciprocal tangible and reciprocal problem-solving exchanges

^cNo differences were found between different types of reciprocal transactions with one exception; among family members and friends, study participants engaged in a significantly greater number of emotional exchanges than tangible exchanges ($p<.05$)

Table 3 Ordinary least squares regression results ($N=245$)

Variable	<i>b</i>
Sociodemographic characteristics	
Age	0.03
Female	-0.70
Black	-1.76
Education (years of schooling)	-0.36
Total income received during the past month (log transformation)	-0.84
Ever been homeless since 18 years	0.35
Experience of stigma	-0.29 **
Clinical characteristics	
Psychiatric diagnosis (schizophrenia=1)	2.44
Lifetime use of substance a major problem	-1.12
Severity of psychiatric symptoms (CSI)	-0.30 ***
Health status (SF-12)	0.04
Network structure variables	
Network size	0.26 **
Network composition (% family)	0.03
Intensity of contact	0.07 **
Network density	0.08 **
Network transaction variables	
Positive reciprocal transactions	
Number of members engaged in emotional transactions	-0.16
Number of members engaged in tangible transactions	0.71 **
Number of members engaged in problem-solving transactions	0.60 *
Negative reciprocal transactions	
Number of members engaged in emotional transactions	-0.76
Number of members engaged in tangible transactions	-1.17
Number of members engaged in problem-solving transactions	0.03
Constant	55.46 ***
R^2	0.41

*
 $p < 0.05$ **
 $p < 0.01$ ***
 $p < 0.001$