An Exploratory Analysis of Correlates of Recovery

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Objective: **The concept of recovery has received increasing emphasis in the delivery of services to persons with schizophrenia. This study was an initial effort to develop an empirically based model of factors associated with a recovery orientation.** ***Methods:*** **The authors reanalyzed data from 825 persons with schizophrenia who were assessed in the Schizophrenia Patient Outcomes Research Team (PORT) client survey. Multiple regression models were used to identify client and service use variables associated with each of four domains identified as important to a recovery orientation: life satisfaction, hope and optimism, knowledge about mental illness and services, and empowerment.** ***Results:*** **In each regression model, the strongest relationship was observed between recovery orientation and lower severity of depressive symptoms. Both receipt of family psychoeducation and fewer side effects of medications were significantly and positively related to three of the four recovery domains. Psychotic symptoms were associated with less life satisfaction. Receipt of various services, including day treatment and legal services, was positively associated with knowledge about illness and services.** ***Conclusions:*** **Severity of psychiatric symptoms, a core feature of the biomedical perspective of mental illness, was negatively associated with a recovery orientation, and use of a variety of standard services were positively associated with a recovery orientation. Thus a polarized view of biomedical and recovery perspectives on mental illness may be unfounded, given that these perspectives appear to be mutually reinforcing. (*Psychiatric Services* 55:540–547, 2004)**

Research on personal experience with severe mental illness has received increasing emphasis in recent years. Concepts such as quality of life and self-esteem have been explored with growing regularity in qualitative research (1) and have been included as outcomes in quantitative research (2) as a way of understanding correlates of mental illness and factors that affect the efficacy of treatment. Most recently, the concept of recovery has become especially prominent (3).

As used in the literature, the term "recovery" has two meanings. The first, as in conventional usage, relates to an objective outcome, a point at which there is a lack of evidence of illness. The second, more recent, meaning relates to a subjective attitude or orientation asserting that regardless of their state of illness or health, people can have hope, feel capable of expanding their personal abilities, and make their own choices. The first definition of "recovery," as an outcome, is straightforward, although somewhat variable—for example, the absence of or significant decrease in symptoms and full vocational or social functioning—and has been demonstrated in several large studies (4–7). However, few empirical studies have been conducted of the second, broader definition of recovery as an attitude or life orientation.

In a recent literature review, Liberman and colleagues (8) identified several factors that have been hypothesized as being associated with a recovery orientation, including family support, treatment compliance, a strong working alliance with a treater, and access to comprehensive services. However, the relationship of client characteristics, clinical status, and service use to a recovery orientation has not been empirically explored.

The study reported here was an initial effort to develop an empirically based model of factors associated with a recovery orientation by using an exploratory approach. We used multiple regression analysis to examine the associations of client sociodemographic characteristics, clinical status, and service use with a previously derived multidimensional measure of recovery orientation (9).

Methods

Participants

The data for the study were derived from two sources: the original Schizophrenia Patient Outcomes Research

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Team (PORT) study, which examined usual care in a random sample of persons with schizophrenia in Ohio and Georgia (10), and a Department of Veterans Affairs (VA) PORT extension, which followed a parallel sampling strategy to provide an expanded VA-specific comparison group to the original study (11), for a total sample of 1,076 (10,11).

Client interviews were conducted from December 1994 through March 1996. All participants were aged 18 years or older, were legally competent, spoke English, had a working clinical diagnosis of schizophrenia, and provided written informed consent as approved by the applicable institutional review boards. A total of 825 persons were included in the analyses: 577 (70 percent) from the original PORT study and 248 (30 percent) from the VA extension; 251 participants were excluded from the analyses because of missing data on one of the main dependent variables. As can be seen from Table 1, several significant differences were found between the participants for whom data were missing and the other participants. The participants with complete data were more likely to be male, to have current drug problems, to be younger, to have more education, and to be receiving VA services. The two groups also differed in housing status and income.

Sociodemographic and clinical measures

Information about demographic characteristics (age, gender, ethnicity, education, income, and employment status), history of mental health treatment, and housing instability (number of times the participant had moved in the previous year) were self-reported through interview.

Symptoms of mental illness were measured with a shortened version (30 items) of the Symptom Checklist 90 (12). Two subscales—depression and psychotic symptoms—were created by averaging the appropriate items; thus subscale scores ranged from 1, not at all, to 5, extremely. Internal consistency (Cronbach's alpha) was good at .90 for the depression subscale and .86 for the psychotic symptoms subscale.

We used the four-item CAGE (13) as well as an analogue to the CAGE as dichotomous measures of current alcohol and drug problems. Each CAGE item is rated as absent or present; thus scores for each scale range from a low of zero to a high of 4. We used the standard cutoff of 2 to indicate the presence of current problems (14).

Several questions assessed participants' perceptions of side effects of psychotropic medications and were averaged to create a total score ranging from 1 to 3. Cronbach's alpha for this scale was .72.

In a recent literature review, Liberman and colleagues identified several factors thought to be associated with a recovery orientation, including family support and treatment compliance.

We also included questions about the use of various mental health, legal, and rehabilitation services in the year before the assessment.

The recovery orientation domains that served as dependent variables in our analyses are based on a previously derived empirical conceptualization of recovery orientation (9). To create this measure, we first selected items from the PORT client survey that met two criteria. First, the item reflected a theme that is prominently used in the existing recovery literature (3,15,16). Second, the item was a self-reported measure of a personal attitude or disposition. We then randomly divided the PORT participants into two separate and distinct samples. We conducted a series of principal-components and confirmatory-factor analyses, using the first sample for hypothesis generation and the second for model confirmation, and ultimately derived a four-factor model.

The fit indexes were good in both samples: sample 2 yielded a comparative fit index of .92, and a root mean square residual of .054; the confirmatory analyses repeated on the first data set yielded a comparative fit index of .94 and a root mean square residual of .066 (9). The four dimensions of recovery orientation identified through this procedure were life satisfaction, hope and optimism, perceived knowledge about mental illness and services, and empowerment. The individual items from each domain and their means are listed in Table 2. Details of these analyses are presented elsewhere (9).

We created recovery orientation domain scores by converting item scores to Z scores and averaging the Z scores within each domain. Thus the domains all had a mean of 0 and a standard deviation of 1. Intercorrelations between the domains were small (r values ranging from .10 to .37) but significant ($p<.01$), which suggests that these dimensions are approximately orthogonal. Internal consistency was good, with a Cronbach's alpha of .92 for life satisfaction, .75 for hope and optimism, .86 for knowledge, and .90 for empowerment.

Data analysis

First, data for participants with no missing values for any of the dependent variables (recovery orientation dimensions) were selected for analysis (N=825). The number of missing values for the independent variables was then calculated. For the 14 variables for which fewer than 10 percent of the values were missing, each missing data point was replaced with a value imputed by linear regression (17). For the one variable for which more than 10 percent of the values were missing (total income in the past month), we created three dummy variables to represent medium income ($301 to $900), high income

Table 1

Background and mental health characteristics of a sample of 1,076 persons with schizophrenia from the Schizophrenia Patient Outcomes Research Team (PORT) survey and a subsample of 825 assessed in a study of recovery orientation

Variable	Subsample assessed (N=825)		Excluded because of missing data (N=251)		Test statistic	df	p
	N	%	N	%			
Gender (N=1,075)					χ^2=7.6	1	.006
Male	591	71.6	201	80.4			
Female	234	28.4	49	19.6			
Ethnicity (N=1,070)					χ^2=5.65	2	ns
White	461	56.1	160	64.5			
Black	324	39.4	78	31.5			
Other	37	4.5	10	4.0			
Marital status (N=1,072)					χ^2=1.76	2	ns
Currently married	153	18.6	43	17.3			
Previously married	270	32.8	93	37.4			
Never married	400	48.6	113	45.4			
Housing status					χ^2=23.6	3	<.001
Independent housing	445	53.9	130	51.8			
Living with family or friends	197	23.9	36	14.3			
Supervised in the community	149	18.1	60	23.9			
Institution or other	34	4.1	25	10.0			
Income from all sources in the past month					χ^2=10.2	3	.02
0 to $300	119	14.4	47	18.7			
$301 to $900	414	50.2	111	44.2			
More than $900	234	28.4	63	25.1			
Data missing	58	7.0	30	12.0			
Working for pay					χ^2=1.1	1	ns
No		694	84.1	218	86.9		
Yes	131	15.9	33	13.2			
Attended any drug or alcohol treatment in the past year, including Narcotics Anonymous or Alcoholics Anonymous (N=1,074)					χ^2=.42	1	ns
No		671	81.3	207	83.1		
Yes	154	18.7	42	16.9			
Current alcohol problems as determined by the CAGE					χ^2=2.38	1	ns
No		731	88.6	231	92.0		
Yes	94	11.4	20	8.0			
Current drug problems as determined by the CAGE					χ^2=4.62	1	.03
No		718	87.0	231	92.0		
Yes	107	13.0	20	8.0			
Admitted to the hospital for emotional problems in the past year (N=1,017)					χ^2=1.2	1	ns
No		359	45.6	95	41.5		
Yes	429	54.4	134	58.5			
Receiving mental health services from the VA					χ^2=11.6	1	<.001
No		466	56.5	111	44.2		
Yes	359	43.5	140	55.8			
Age (mean±SD years) (N=1,075)	44.6±12		48.9±14.2		t=4.37	364	<.001
Mean±SD number of years of school	11.8±2.4		11.1±2.4		t=3.02	1,074	.003
Mean±SD number of times moved in the past year (N=1,060)	.6±1.1		.7±1.5		t=1.6	329	ns
Side effects of medications (mean±SD score)[a]	1.7±.4		1.7±.4		t=–.5	1,074	ns
Depression subscale of the Symptom Checklist (mean±SD score)[b] (N=1,075)	2.2±.9		2.1±1		t=.6	1,073	ns
Psychoticism subscale of the Symptom Checklist (mean±SD score)[b] (N=1,075)	2±.9		2±.9		t=0	1,073	ns

[a] Possible scores range from 1 to 3, with higher scores indicating more severe side effects.
[b] Possible scores range from 1 to 5, with higher scores indicating more severe symptoms.

(more than $900), and missing income data, using the low-income group (up to $300) as the reference group. Multiple regression analysis was used to explore the relationship between the recovery orientation domains and background characteristics, psychiatric service use, psychiatric symptoms, and use of other (nonpsychiatric) services.

Results

Four separate multiple regression analyses were conducted to identify associations between the four recovery orientation dimensions and

Table 2

Mean scores on measures of recovery orientation in a sample of 825 patients with schizophrenia

Item	Mean	SD
Beliefs about current mental health, on a scale of 1 to 5		
In general, at the present time, would you say your mental or emotional health is . . .	3.04	1.10
Compared with 12 months ago, would you say your mental or emotional health is . . .	2.21	1.03
Compared with five years ago, would you say your mental or emotional health is . . .	2.07	1.17
Optimism, on a scale of 1 to 5		
Thinking ahead to 12 months from now, do you expect your mental or emotional health to be . . .	2.14	.96
Thinking about five years from now, do you expect your mental or emotional health to be . . .	2.01	1.01
Satisfaction with family; on a scale of 1 to 7, how do you feel about:		
your family in general?	5.11	1.52
how often you have contact with your family?	4.81	1.62
the way you and your family act toward each other?	4.78	1.66
the way things are in general between you and your family?	4.82	1.57
Satisfaction with social network; on a scale of 1 to 7, how do you feel about:		
the things you do with other people?	4.91	1.44
the amount of time you spend with other people?	4.72	1.53
the people you see socially?	4.88	1.48
how you get along with other people in general?	5.07	1.45
the chance you have to know people with whom you really feel comfortable?	4.86	1.55
Satisfaction with living arrangements; on a scale of 1 to 7, how do you feel about:		
the living arrangements where you live?	5.10	1.57
the rules there?	5.20	1.52
the privacy you have there?	5.17	1.65
the amount of freedom you have?	5.56	1.49
staying on where you currently live for a long period of time?	4.79	1.85
Satisfaction with community; on a scale of 1 to 7, how do you feel about:		
the people who live in the houses or apartments near yours?	4.99	1.51
people who live in this community?	5.00	1.48
the outdoor space there is for you to use outside your home?	5.23	1.52
the particular neighborhood as a place to live?	5.00	1.61
this community as a place to live?	5.07	1.61
Satisfaction with safety; on a scale of 1 to 7, how do you feel about:		
your personal safety?	4.91	1.49
how safe you are on the streets in your neighborhood?	4.73	1.56
how safe you are where you live?	5.14	1.43
the protection you have against being robbed or attacked?	4.76	1.56
your chance of finding a police officer if you need one?	4.66	1.67
Knowledge about mental health and mental health services; on a scale of 1 to 4, how much do you know about:		
schizophrenia, including symptoms and illness management?	2.56	1.05
providers of mental health care in your area?	2.42	1.03
the best and worst providers of care in your area?	2.07	1.03
emergency and crisis services in your area?	2.29	1.09
social and recreational activities in your area for people with mental illness?	1.92	1.04
support groups or meetings where you can talk with other people with mental illness?	1.91	1.03
organizations in your area for family members of people with mental illness?	1.64	0.91
Knowledge about procedural assistance; on a scale of 1 to 4, how much do you know about:		
how to find help with housing?	2.04	1.06
how to find help with employment or job training?	2.12	1.07
how to find help with applying for benefits like SSDI or Medicaid?	2.23	1.08
Empowerment—self agency, on a scale of 1 to 4		
How much do your opinions and ideas count in which services you get?	1.97	0.96
How much responsibility do you feel you have for the services you get?	1.88	0.88
How much input do you have into your rehabilitation plan and personal goals?	1.95	0.92
How much do these services help you learn to make your own decisions about your life?	1.96	0.93
How much do you rely on these services to help you through difficult times?	1.77	0.90
Empowerment—mental health services, on a scale of 1 to 4		
Do the people at these services care about you?	1.73	.84
How much do you have the feeling of being cared about at these services?	1.76	.85
How much does your overall service plan fit what you want?	2.03	.88
How much do you feel your therapists or counselors really know what you need?	1.94	.88
How much do these services give you a sense of competence, that you have skills you can use?	2.03	.95
How much do you think people providing these services want to see you get better?	1.52	.78

Table 3

Correlates of the four recovery domains in a sample of 825 patients with schizophrenia

Variable	Satisfaction with life			Hope			Knowledge			Empowerment		
	Beta	t[†]	p	Beta	t[†]	p	Beta	t[†]	p	Beta	t[†]	p
Background characteristics												
Age	.03	.84	ns	–.13	–3.49	<.001	–.09	–2.35	.02	.07	1.83	ns
Sex, female	.04	1	ns	.15	4.04	<.001	–.04	–.98	ns	.07	1.81	ns
Race or ethnicity												
Black	–.13	–3.96	<.001	–.03	–.92	ns	–.11	–3.17	.002	–.01	–.33	ns
Hispanic	–.02	–.75	ns	.02	.48	ns	.02	.6	ns	–.04	–1.19	ns
Highest grade completed in school	–.02	–.62	ns	–.06	–1.79	ns	.04	1.27	ns	–.05	–1.49	ns
Income in the past month												
$301 to $900	–.02	–.34	ns	.02	.43	ns	.11	2.46	.01	.1	2.08	.04
More than $901	.03	.86	ns	–.01	–.16	ns	.1	2.2	.03	.08	1.59	ns
Missing	–.08	–2.51	.01	–.03	–.82	ns	.01	.41	ns	–.06	–1.8	ns
Currently working for pay	–.01	–.35	ns	.06	1.77	ns	.03	1	ns	.09	2.62	.009
Number of moves in the past year	–.09	–2.67	.008	.07	2.03	.04	–.05	–1.37	ns	–.03	–.77	ns
Psychiatric services												
Receives VA mental health care	.08	1.87	ns	–.06	–1.36	ns	–.09	–2.17	.03	–.01	–.21	ns
Psychiatric hospitalization in the past year	–.02	–.53	ns	.02	.64	ns	–.04	–1.07	ns	–.05	–1.39	ns
Attended a day hospital in the past year	.07	2.06	.04	.05	1.34	ns	.13	3.94	<.001	.02	.64	ns
Saw a psychiatrist in the past year	–.05	–1.55	ns	.03	.86	ns	0	.04	ns	.05	1.3	ns
Has a social worker or case manager	.01	.2	ns	.03	.91	ns	.11	2.9	.004	.07	1.84	ns
Has a therapist	.02	.72	ns	.02	.53	ns	.09	2.68	.008	.04	1.25	ns
Received crisis intervention services in the past year	–.01	–.38	ns	–.07	–2.04	.04	.09	2.58	.01	.05	1.43	ns
Patient's family received psychoeducation in the past year	.06	1.71	ns	.07	2.06	.04	.16	4.61	<.001	.15	4.19	<.001
Symptoms												
Psychotic symptoms[a]	–.14	–2.57	.01	–.04	–.73	ns	.02	.3	ns	.01	.26	ns
Depressive symptoms[a]	–.22	–4.29	<.001	–.26	–4.82	<.001	–.14	–2.5	.01	–.2	–3.54	<.001
Current alcohol problems[b]	–.03	–.82	ns	–.07	–2.06	.04	–.01	–.43	ns	–.02	–.65	ns
Current drug problems[b]	0	.02	ns	.01	.36	ns	–.01	–.39	ns	–.02	–.47	ns
Side effects of medication	–.09	–2.58	.01	–.09	–2.45	.01	.03	–.82	ns	–.13	–3.42	<.001
Other services												
Received help with a legal problem from a lawyer	.01	.22	ns	.03	–.93	ns	.07	2.1	.04	.04	1.14	ns
Attended 12-step meetings	–.03	–.81	ns	.02	.52	ns	.06	1.59	ns	.05	1.23	ns
Received help with food stamps or benefits	0	.07	ns	.05	1.45	ns	.05	1.38	ns	–.01	–.21	ns
Received help with housing	–.05	–1.49	ns	–.04	–1.16	ns	.01	.23	ns	–.05	–1.34	ns

[a] As assessed with the 90-item Symptom Checklist

[b] As assessed with the CAGE

[†] df=1

client background, health status, and service use measures. The results are presented in Table 3. In all four regression models, the strongest relationship was observed between recovery orientation and lower severity of depressive symptoms, and these associations were highly significant. Medication side effects were negatively and significantly associated with three of the four dimensions. Receipt of family psychoeducation was also strongly and positively associated with three dimensions.

General life satisfaction was significantly associated with less housing instability, fewer side effects of medications, lower severity of psychotic symptoms, attendance at a day hospital, absence of reported help with housing issues, and nonblack race or ethnicity.

Hope was significantly and positively associated with younger age, housing instability, absence of receipt of crisis intervention services, fewer side effects of medications, receipt of family psychoeducation, and female gender.

Knowledge was significantly associated with younger age, medium or high income, attendance at a day hospital, presence of a social worker or a

case manager, visits to a therapist, receipt of crisis intervention services, receipt of help from a lawyer, and nonblack race or ethnicity.

Empowerment was associated with current paid employment, income of $301 to $900 in the previous month, fewer side effects of medications, and receipt of family psychoeducation.

Receipt of mental health services from the VA was significantly and negatively associated with only one measure: knowledge of mental illness and services.

Discussion

These results serve as an initial model of factors associated with a recovery orientation and as a starting point for generation of further hypotheses. Each of the four domains was associated with a somewhat different constellation of client, clinical, and service use factors, which reinforces the complexity of recovery orientation.

Perhaps the most important finding of this study was that severity of symptoms, especially depressive symptoms, was strongly and negatively related to all four components of recovery orientation. The literature on the psychopathology of schizophrenia suggests that there is an "open linked" system of domains—that is, that symptoms are independent from functional domains (7,18). Similarly, some proponents of the recovery movement have emphasized that recovery can occur despite the presence of psychiatric symptoms. For example, Jacobson and Greenley (15) asserted that "the recovery model questions some of the assumptions of the biomedical model, and, in so doing, challenges its hegemony," in particular, the emphasis on disease states and symptoms. Our findings instead suggest that the severity of psychiatric symptoms, which is most commonly associated with a biomedical perspective of mental illness, may be significantly and negatively related to recovery orientation.

Another factor that was negatively and significantly associated with several of the recovery domains was side effects of medications. Side effects of psychotropic medications are often extremely uncomfortable and, as such, have been implicated in noncompliance and thus poorer treatment outcomes (19). Consistent with our findings, Ritsner and colleagues (20) found that side effects of antipsychotic medications were inversely associated with quality of life. These findings suggest that aggressive treatment of both symptoms and side effects is important in the promotion of a recovery orientation.

Although our results should not at all diminish the importance of consumer-oriented rehabilitative services that promote the goals of the recovery movement, they do suggest that the process of recovery for persons with mental illness may be more challenging for persons who have more severe symptoms, especially those with symptoms of depression, and that facilitating remission of symptoms may be an important aspect of fostering a recovery orientation that should not be neglected. Approaches that minimize the importance of the symptoms of severe mental illness in the recovery process may be unjustified and counterproductive (21).

The literature on the psychopathology of schizophrenia suggests that there is an "open linked" system of domains—that is, that symptoms are independent from functional domains.

Mead and Copeland (22) described a consumer vision of a treatment system that integrates biomedical and recovery models rather than placing them in opposition. Although they depicted a "recovery-based environment" in which consumers have the right to request or refuse various psychopharmacologic interventions, they agree that treatment of psychiatric symptoms is an important element of recovery. The data presented here are consistent with their perspective.

The final factor associated with several recovery domains in our study was provision of education about mental illness to patients' family members. Although the mechanism for this relationship is unclear, there is strong evidence for the efficacy of family psychoeducation, which has consistently been shown to improve outcomes for both consumers and caregivers (23).

Life satisfaction

Our first dimension (life satisfaction) was strongly and negatively associated with the severity of depressive symptoms. One of the most robust findings reported in the literature on life satisfaction is the inverse relationship between subjective well-being and negative moods (24) and depressive symptoms (25), a relationship that is somewhat tautological.

Life satisfaction was also significantly and negatively associated with the severity of psychotic symptoms, a finding that has been reported by other researchers (26). The relationship between symptoms and quality of life has been observed to be much stronger than that between quality of life and other psychosocial variables, such as social functioning (27).

Hope and optimism

The recovery literature places great value on hope for persons with severe mental illness. Hopelessness has been associated with increased risk of suicide (28), poorer outcomes of vocational rehabilitation (29), and decreased global quality of life (30). Consistent with our findings, at least two other studies did not show a significant relationship between hope and severity of psychotic symptoms (30,31).

Knowledge about mental illness and services

The third recovery dimension (knowledge of mental illness and services)

was significantly and positively associated with receipt of multiple types of conventional services, including traditional mental health services (crisis intervention services, visits to a therapist, and attendance at a day hospital) as well as procedural assistance with problems in living (receipt of legal services and having a social worker or a case manager). Thus persons who received traditional mental health services also believed that they were knowledgeable about mental illness and about the services available to them.

Poorer knowledge about mental health services was also related to being black. This finding is consistent with the results of other studies that have suggested that African Americans are more likely to seek treatment through general medical services than through mental health services (32) and reinforces the importance of providing culturally sensitive services to persons with schizophrenia (33).

Empowerment

Empowerment is perhaps the newest recovery concept to appear in the literature, and few quantitative studies of its correlates have been conducted. Empowerment was associated with five factors, including participation in paid employment. Previous studies have demonstrated relationships between employment and positive subjective experience. For example, both Mueser and colleagues (34) and Bond and colleagues (35) reported an association between competitive employment and higher self-esteem, a concept somewhat similar to empowerment. However, we know of no previous studies that directly tested this relationship.

Interestingly, none of the measures of alcohol abuse, drug abuse, or addictions treatment in our study were related to any of the recovery measures. Many studies have shown significant relationships between substance abuse and negative outcomes for persons with severe mental illness (36,37). However, the instrument we used (the CAGE) is a screening instrument, which although adequate in identifying the presence or absence of current addiction problems, was not designed to measure the severity of these problems (13). A more comprehensive instrument might be more sensitive in detecting relationships between alcohol and drug use and a recovery orientation.

Limitations

Because our data were cross-sectional, we could not unambiguously determine the causal direction of the relationships observed between the client, clinical, and service use factors we studied and our conceptualization of recovery orientation. It is unclear whether enhancements in domains such as housing status, service use, and employment will foster a recovery orientation or whether greater feelings of recovery in turn help patients to improve these external aspects of their lives. One study that addressed this question by using structural equation modeling showed that changes in objective life circumstances precede changes in subjective well-being (38), a finding that warrants further investigation. In addition, we did not have data on neurocognitive impairment, a variable that has been suggested to be a mediator between functional status and subjective experience (31,39).

Future empirical explorations of recovery orientation are needed to validate and modify this conceptualization. Because the survey on which our study was based was not originally designed to be an investigation of the recovery process, we were limited in the domains that we could include. Issues such as spirituality, sense of identity (8,40), feelings of independence, involvement in meaningful activity (3), and self-advocacy (22) were not addressed in this study, but it will be important to include them in future studies of recovery orientation.

Conclusions

Recovery orientation is an important component of personal experience. The results presented here suggest that recovery is a complex concept that has multiple factors and correlates. However, three factors were associated with several recovery domains, which suggests that reduced symptoms and side effects of medication and participation in family psychoeducation are especially important correlates of recovery orientation among persons with schizophrenia. The polarity between biomedical and recovery models may thus be unfounded, and biomedical and recovery-oriented treatment may be found to be mutually reinforcing. ♦

References

1. Estroff SE: Self, identity, and subjective experiences of schizophrenia: in search of the subject. Schizophrenia Bulletin 15:189–196, 1989
2. Brekke JS, Levin S, Wolkon GH, et al: Psychosocial functioning and subjective experience in schizophrenia. Schizophrenia Bulletin 19:599–608, 1993
3. Onken SJ, Dumont JM, Ridgway P, et al: Mental Health Recovery: What Helps and What Hinders? Washington, DC, National Technical Assistance Center for State Mental Health Planning, 2002
4. Harding CM, Brooks GW, Ashikaga T, et al: The Vermont longitudinal study of persons with severe mental illness: II. long-term outcome of subjects who retrospectively met DSM-III criteria for schizophrenia. American Journal of Psychiatry 144:727–735, 1987
5. Harrow M, Sands JR, Silverstein ML, et al: Course and outcome for schizophrenia versus other psychotic patients: a longitudinal study. Schizophrenia Bulletin 23:287–303, 1997
6. Hegarty JD, Baldessarini RJ, Tohen M, et al: One hundred years of schizophrenia: a meta-analysis of the outcome literature. American Journal of Psychiatry 151:1409–1416, 1994
7. Carpenter WT Jr, Strauss JS: The prediction of outcome in schizophrenia: IV. eleven-year follow-up of the Washington IPSS cohort. Journal of Nervous and Mental Disease 179:517–525, 1991
8. Liberman RP, Kopelowicz A, Ventura J, et al: Operational criteria and factors related to recovery from schizophrenia. International Review of Psychiatry 14:256–272, 2002
9. Resnick SG, Fontana A, Lehman AF, et al: Recovery: a conceptualization and empirical measure, submitted manuscript
10. Lehman AF, Steinwachs DM, and the Survey Co-investigators of the PORT project: patterns of usual care for schizophrenia: initial results from the Schizophrenia Patient Outcomes Research Team (PORT) client survey. Schizophrenia Bulletin 24:11–20, 1998
11. Rosenheck RA, Desai R, Steinwachs DM, et al: Benchmarking treatment of schizophrenia: a comparison of service delivery by the national government and by state and local providers. Journal of Nervous and Mental Disease 188:209–216, 2000
12. Derogatis LR: Symptom Checklist 90–Revised: Administration, Scoring, and Procedures Manual. Minneapolis, National Computer Systems, 1994

13. Ewing JA: Detecting alcoholism: the CAGE questionnaire. JAMA 252:1905–1907, 1984

14. Vanable PA, King AC, de Wit H: Psychometric screening instruments to identify alcohol-related problems, in CRC Handbook of Alcoholism: Clinical and Theoretical Approaches. Edited by Zernig G, Saria A, Kurz M, et al. Boca Raton, Fla, CRC Press, 2000

15. Jacobson N, Greenley D: What is recovery? A conceptual model and explication. Psychiatric Services 52:482–485, 2001

16. Ralph RO: Review of recovery literature: synthesis of a sample of recovery literature 2000. Washington, DC, National Technical Assistance Center for State Mental Health Planning and National Association for State Mental Health Program Directors, 2000

17. Little RJA: Regression with missing X's: a review. Journal of the American Statistical Association 87:1227–1237, 1992

18. Brekke JS, Long JD: Community-based psychosocial rehabilitation and prospective change in functional, clinical, and subjective experience variables in schizophrenia. Schizophrenia Bulletin 26:667–680, 2000

19. Dencker SJ, Liberman RP: From compliance to collaboration in the treatment of schizophrenia. International Clinical Psychopharmacology 9:75–78, 1995

20. Ritsner M, Ponizovsky A, Endicott J, et al: The impact of side-effects of antipsychotic agents on life satisfaction of schizophrenia patients: a naturalistic study. European Neuropsychopharmacology 12:31–38, 2002

21. Peyser H: What is recovery? Psychiatric Services 52:486–487, 2001

22. Mead S, Copeland ME: What recovery means to us: consumers' perspectives. Community Mental Health Journal 36: 315–328, 2000

23. Dixon L, McFarlane WR, Lefley H, et al: Evidence-based practices for services to families of people with psychiatric disabilities. Psychiatric Services 52:903–910, 2001

24. Schwartz N, Clore GL: Mood, misattribution, and judgments of well-being: informative and directive functions of affective states. Journal of Personality and Social Psychology 45:513–523, 1983

25. Fakhoury WKH, Priebe S: Subjective quality of life: its association with other constructs. International Review of Psychiatry 14:219–224, 2002

26. Lam JA, Rosenheck RA: Correlates of improvement in quality of life among homeless persons with serious mental illness. Psychiatric Services 51:116–118, 2000

27. Romney DM: Psychosocial functioning and subjective experience in schizophrenia: a reanalysis. Schizophrenia Bulletin 21:405–410, 1995

28. Caldwell CB, Gottesman II: Schizophrenics kill themselves too: a review of risk factors for suicide. Schizophrenia Bulletin 16:571–589, 1990

29. Hoffmann H, Kupper Z, Kunz B: Hopelessness and its impact on rehabilitation outcome in schizophrenia: an exploratory study. Schizophrenia Research 43:147–158, 2000

30. Landeen J, Pawlick J, Woodside H, et al: Hope, quality of life, and symptom severity in individuals with schizophrenia. Psychiatric Rehabilitation Journal 23:364–370, 2000

31. Lysaker P, Clements C, Wright DE, et al: Neurocognitive correlates of helplessness, hopelessness, and well-being in schizophrenia. Journal of Nervous and Mental Disease 189:457–462, 2001

32. Snowden LR: Barriers to effective mental health services for African Americans. Mental Health Services Research 3:181–187, 2001

33. Mental Health: A Report of the Surgeon General. Rockville, Md, Substance Abuse and Mental Health Services Administration, 1999

34. Mueser KT, Becker DR, Torrey WC, et al: Work and nonvocational domains of functioning in people with severe mental illness: a longitudinal analysis. Journal of Nervous and Mental Disease 185:419–426, 1997

35. Bond GR, Resnick SG, Drake RE, et al: Does competitive employment improve nonvocational outcomes for people with severe mental illness? Journal of Consulting and Clinical Psychology 69:489–501, 2001

36. Drake RE, Wallach MA, Alverson HS, et al: Psychosocial aspects of substance abuse by clients with severe mental illness. Journal of Nervous and Mental Disease 190:100–106, 2002

37. RachBeisel J, Scott J, Dixon L: Co-occurring severe mental illness and substance use disorders: a review of recent research. Psychiatric Services 50:1427–1434, 1999

38. Marshall GN, Burnam MA, Koegel P, et al: Objective life circumstances and life satisfaction: results from the course of homelessness study. Journal of Health and Social Behavior 37:44–58, 1996

39. Brekke JS, Kohrt B, Green MF: Neuropsychological functioning as a moderator of the relationship between psychosocial functioning and the subjective experience of self and life in schizophrenia. Schizophrenia Bulletin 27:697–708, 2001

40. Noordsy DL, Torrey WC, Mueser KT, et al: Recovery from severe mental illness: an intrapersonal and functional outcome definition. International Review of Psychiatry 14: 318–327, 2002