Supplement Table 1. Recovery instruments used to inform instrument development.

Measure	*Domains/topics*		*Citation*
Recovery Promotion Fidelity Scale (RPFS)	• Collaboration • Participation and acceptance • Development	• Self-determination and peer support • Quality improvement	Armstrong, N. P., & Steffen, J. J. (2009). The recovery promotion fidelity scale: assessing the organizational promotion of recovery. *Community Ment Health J, 45*(3), 163-170. doi:10.1007/s10597-008-9176-1
Recovery Knowledge Inventory (RKI)	• Staff knowledge of recovery principles	• Staff knowledge of recovery-promoting practices	Bedregal, L. E., O'Connell, M., & Davidson, L. (2006). The Recovery Knowledge Inventory: assessment of mental health staff knowledge and attitudes about recovery. *Psychiatr Rehabil J, 30*(2), 96.
Staff Attitudes to Recovery Scale (STARS)	• Staff attitudes • Staff hopefulness	• Goal setting	Crowe, T. P., Deane, F. P., Oades, L. G., Caputi, P., & Morland, K. G. (2006). Effectiveness of a collaborative recovery training program in Australia in promoting positive views about recovery. *Psychiatric Services, 57*(10), 1497-1500.
Pillars of Recovery Service Audit Tool (PoRSAT)	• Leadership • Hope inspiring relationships • Education	• Access and inclusion • Research and evaluation • Person-centered and empowering care	Higgins, A. (2008). *A recovery approach within the Irish mental health services: A framework for development*. Prepared for the Mental Health Commission, Dublin. Accessed April 1, 2019 from http://hse.openrepository.com/hse/bitstream/10147/75113/1/Framework+for+mental+health+services.pdf
Recovery Oriented Service Evaluation (AACP‐ROSE)	• Administration • Treatment	• Supports Organizational culture	American Association of Community Psychiatrists. (n.d.). AACP-ROSE- Recovery Oriented Services Evaluation. Accessed April 1, 2019 from https://drive.google.com/file/d/0B89glzXJnn4cZDRxVDBoMExtb2s/view
Recovery‐Oriented Practice Index (ROPI)	• Meeting basic needs • Comprehensive services • Customization and choice	• Community integration Strengths-based approach • Self-determination Recovery focus • Consumer involvement	Mancini, A. (2006). *Can recovery orientation inform the implementation of evidence-based practices.* Paper presented at the 114th annual convention for the American Psychological Association.

Scottish Recovery Indicator- adapted from ROPI	Same as previous		Same as previous
Recovery Self‐Assessment (RSA)	• Life goals • Involvement • Diversity of treatment options	• Choice • Individually-tailored services	O'Connell, M., Tondora, J., Croog, G., Evans, A., & Davidson, L. (2005). From rhetoric to routine: assessing perceptions of recovery-oriented practices in a state mental health and addiction system. *Psychiatr Rehabil J*, *28*(4), 378-386.
Recovery Oriented Systems Indicators Measure (ROSI)	• Peer support Choice • Staffing ratios System culture and orientation	• Consumer inclusion in governance • Coercion hindering recovery • Access to services	Dumont, J. M., Ridgway, P., Onken, S. J., Dornan, D. H., & Ralph, R. O. (2005). Recovery oriented systems indicators measure (ROSI). Measuring the promise: A compendium of recovery measures, 2, 229-243.
Recovery Culture Progress Report	• Recovery culture • Welcoming and accessible services • Growth and orientation • Staff morale and recovery	• Quality of life focus • Emotionally healing environments and relationships • Community integration • Consumer inclusion	Ragins, M. (2009). A Recovery Culture Progress Report. Exploring Recovery: The Collected Village Writings of Mark Ragins. Accessed April 1, 2019 from https://rickpdx.files.wordpress.com/2013/12/87arecoverycultureprogressreport.pdf
Recovery Based Program Inventory (RBPI)	• Recovery beliefs and implementation • Recovery treatment	• Recovery relationships and leadership • Recovery culture	Ragins, M. (2003). A recovery based program inventory. Mental Health Nursing: Competencies for Practice, 109-110.
Recovery Enhancing Environment Measure (REE)	• Personal involvement in recovery process • Recovery markers	• Elements of recovery enhancing services • Organizational climate	Ridgway, P., & Press, A. (2004). Assessing the recovery-orientation of your mental health program: A user's guide for the Recovery-Enhancing Environment scale (REE). *Kansas: University of Kansas*.
Elements of a Recovery Facilitating System (ERFS)	• Consumer perceptions of staff as recovery-supporting		Dumont, J., Ridgway, P., Onken, S., Dornan, D., & Ralph, R. (2006). Mental health recovery: What helps and what hinders? Prepared for the National Technical Assistance Center for State Mental Health Planning, National Association of State Mental Health Program Directors, March 2006.

Recovery Promoting Relationships Scale (RPRS)	• Relationship with provider	• Perceived support	Russinova, Z., Rogers, E.S., Ellison, M.L. (2006). RPRS Manual. Recovery Promoting Relationships Scale. Boston University, Center for Psychiatric Rehabilitation.
INSPIRE	• Perceived support from provider	• Relationship with provider	Williams, J., Leamy, M., Bird, V., Le Boutillier, C., Norton, S., Pesola, F., & Slade, M. (2015). Development and evaluation of the INSPIRE measure of staff support for personal recovery. *Social psychiatry and psychiatric epidemiology*, *50*(5), 777-786.

Additional instrument development details

The following details elaborate on the item development process described in the manuscript:

We reviewed the items contained in the instruments outlined in Supplement Table 1, and coded each item for the recovery dimension and/or organizational domain in our conceptual framework that the item's content addressed. We used definitions of recovery dimensions from Ellison and colleagues (1) and definitions of organizational domains from Ehrhart, Schneider and Macey (2) as a basis for coding. Items with content that did not directly map onto our framework were coded as "not relevant" and thus were not retained in the next step of instrument development.

Item stems were intentionally constructed to capture the organizational domain the item was measuring.

- Items measuring staff expectations were worded to ask about staffs' expectations of each other and therefore used the stem, "To what extent do your coworkers in the PRRC expect each other to…"
- Items measuring staff values were worded to ask about staffs' personal values about recovery and therefore used the stem, "How important is it to you personally that…"
- Items measuring PRRC leadership were worded to ask about leadership behaviors in the PRRC and therefore used the stem, "Thinking about the person who is your current PRRC team lead…"
- Items measuring PRRC staff education and training were worded to elicit information about recovery-related education and training opportunities provided to PRRC staff and therefore used the stem, "To what extent do you receive (or have you received) education/training that…" In this domain there are several additional items worded to ask about expected recovery competencies, training provided by veterans who use the PRRC, and adequacy of time for training and skills development.
- Items measuring rewards in the PRRC for recovery-promoting practices were worded with the stem, "To what extent are PRRC staff rewarded for…"
- Items measuring existence of recovery-promoting policies in the PRRC were worded to aske about these policies and therefore used the stem, "Does this PRRC have a formal policy specifying that…"
- Items measuring quality improvement practices that incorporate recovery principles were worded with the stem, "To what extent does this PRRC actively solicit feedback from PRRC participants…"

Eleven of the thirteen recovery dimensions were reflected in the final 28-item instrument. Those dimensions were: individualized/person-centered; empowerment; self-direction; relational; strengths-based; respect; responsibility; peer support; holistic; culturally-sensitive; and trauma-informed.

Additional survey administration details

Prior to administering the survey, we notified medical center directors at PRRC locations by email that their staff would be invited to participate in a survey. About one week before survey launch, the study and forthcoming survey were announced on a national conference call. Additionally, we emailed PRRC program managers to convey the importance of survey participation and to suggest allocating 10 minutes of their next staff meeting for survey participation.

Our three-step recruitment approach consisted of the following: First, an email was sent explaining the purpose of the study and notifying staff they would soon receive another email containing an electronic link to the survey. Second, an email was sent inviting staff to complete the survey with the live survey link. Third, a reminder email was sent about 1 week after the second email with another live link to the survey.

Additional analysis/results details

We recoded “don’t know” responses as “missing” for Likert scale items and “no” for dichotomous (yes/no) items.

The number of respondents per program ranged from 0 to 8, and the number of respondents by discipline per program ranged from 0 to 4.

Supplement Table 2. Descriptive results for original 35 items.

Item #	*Items*	*N*	*Mean*	*SD*	*Min*	*Max*	*Skew*
1	To what extent do your coworkers in the PRRC expect each other to work on life goals with PRRC participants?	240	4.55	0.88	1	5	-2.23
2	To what extent do your coworkers in the PRRC expect each other to refer to people in a way that describes the person first, the illness condition second?	243	4.58	0.84	1	5	-2.48
3	To what extent do your coworkers in the PRRC expect each other to educate PRRC participants about their rights as citizens in the larger community?	238	4.37	0.96	1	5	-1.80
4	To what extent do your coworkers in the PRRC expect each other to share program space with PRRC participants, like having shared bathrooms, telephones, and eating areas?	240	3.79	1.27	1	5	-0.73
5	To what extent do your coworkers in the PRRC expect each other to facilitate relationship-building among PRRC participants so that those who are more advanced in their own recovery process will serve as role models or mentors for their peers?	244	4.34	1.02	1	5	-1.58
6	To what extent do your coworkers in the PRRC expect each other to deliver services in a way that is sensitive to each PRRC participant's ethnic background, race, sexual orientation, religious beliefs, and gender?	244	4.56	0.82	1	5	-2.19
7	To what extent do your coworkers in the PRRC expect each other to facilitate PRRC participants' involvement in community activities and social networks outside the mental health system?	240	4.43	0.95	1	5	-1.74
8	To what extent do your coworkers in the PRRC expect each other to involve PRRC participants in running the program, such as conducting groups, planning and preparing meals, and adding to the resource room?	244	3.53	1.34	1	5	-0.41
9	To what extent do your coworkers in the PRRC expect each other to build on PRRC participants' strengths and capabilities as the foundation of their participation in the PRRC program?	241	4.49	0.87	1	5	-1.82
10	How important is it to you personally that the PRRC continues to work with PRRC participants even when they refuse certain other treatments (e.g. medication, inpatient hospitalization)?	244	4.58	0.73	2	5	-1.79
11	How important is it to you personally that PRRC staff support the decisions and choices of PRRC participants even when staff have concerns about possible negative consequences?	244	4.41	0.80	1	5	-1.45

12	How important is it to you personally that the PRRC includes staff members who themselves are people in mental health recovery?	244	4.27	1.01	1	5	-1.43
13	Thinking about the person who is your current PRRC team lead, how strongly does he or she emphasize including PRRC participants in decisions about the PRRC?	239	4.13	1.13	1	5	-1.32
14	Thinking about the person who is your current PRRC team lead, how strongly does he or she emphasize including in the care planning and recovery process family members and others who are important to PRRC participants?	239	4.01	1.17	1	5	-1.20
15	Thinking about the person who is your current PRRC team lead, how strongly does he or she emphasize giving attention to all life areas of PRRC participants, including health, home, purpose, and community?	240	4.40	1.04	1	5	-1.90
16	Thinking about the person who is your current PRRC team lead, to what extent does he or she actively advocate for the use of recovery-promoting practices throughout the whole VA facility?	240	4.09	1.14	1	5	-1.20
17	Thinking about the person who is your current PRRC team lead, to what extent does he or she demonstrate recovery promotion in practice?	228	4.33	1.08	1	5	-1.60
18	To what extent do you receive (or have you received) education/training that specifically focuses on how to develop individualized PRRC care plans that are client-driven?	238	3.76	1.27	1	5	-0.84
19	To what extent do you receive (or have you received) education/training that specifically focuses on how to work supportively with PRRC participants when they are not adhering to treatments they have agreed to use?	237	3.67	1.23	1	5	-0.71
20	To what extent do you receive (or have you received) education/training that specifically focuses on how to teach PRRC participants to advocate for their own wellness?	239	3.92	1.21	1	5	-1.09
21	To what extent do you receive (or have you received) education/training that specifically focuses on how to make PRRC participants feel comfortable and safe in the program?	238	4.13	1.16	1	5	-1.31
22	To what extent do you receive (or have you received) education/training that specifically focuses on how to connect PRRC participants with natural supports in the community?	237	3.82	1.25	1	5	-0.82
23	Are PRRC staff expected to have documented competencies in specific recovery-promoting practices and approaches?	240	0.63	0.49	0	1	-0.52

24	To what extent do Veterans who themselves have lived experience with mental illness directly provide staff training in this PRRC?	238	2.85	1.48	1	5	0.10
25	To what extent do PRRC staff have enough time for reading, attending trainings and getting supervision specifically focused on helping them increase their skill in promoting recovery?	239	3.10	1.27	1	5	-0.08
26	To what extent are PRRC staff rewarded for championing recovery-promoting principles and practices in the PRRC?	234	2.62	1.36	1	5	0.29
27	To what extent are PRRC staff rewarded for promoting a holistic approach in the PRRC, including attention to health, home, purpose, and community?	235	2.67	1.37	1	5	0.28
28	To what extent are PRRC staff rewarded for promoting cultural sensitivity within the PRRC?	233	2.64	1.39	1	5	0.32
29	Does this PRRC have a formal policy specifying that Veterans who use the PRRC are asked to participate in the development and modification of program policies and procedures?	237	0.61	0.49	0	1	-0.44
30	Does this PRRC have a formal policy specifying that Veterans who wish to use the PRRC program may do so even if they are refusing or non-compliant with other treatment?	236	0.57	0.5	0	1	-0.29
31	Does this PRRC have a formal policy specifying that Veterans with lived experience with serious mental illness have a role in PRRC program quality improvement and evaluation?	237	0.61	0.49	0	1	-0.44
32	To what extent does this PRRC actively solicit feedback from PRRC participants by using surveys that go beyond completing program evaluation forms or providing access to a suggestion box?	236	4.07	1.17	1	5	-1.14
33	To what extent does this PRRC actively solicit feedback from PRRC participants in meetings convened specifically for that purpose, such as focus groups, roundtable discussions, and community meetings?	235	3.98	1.29	1	5	-1.16
34	To what extent does this PRRC use peers to actively solicit feedback about the PRRC from PRRC participants?	236	3.71	1.35	1	5	-0.69
35	To what extent does this PRRC use feedback from PRRC participants as the basis for making changes in how services are delivered in this PRRC, such as the intake process, staff-Veteran roles, and the physical setup of the PRRC?	236	3.86	1.27	1	5	-0.85

Notes: SD = standard deviation; Min = minimum; Max = Maximum; all items had 8% or less missing data. Item numbers correspond to the original 35 items; these numbers were updated for the final 28-item scale.

Supplement Table 3. Factor loadings for all 35 items included in the exploratory factor analysis, with the 7-factor solution.

Item #	Items	Domain	F1	F2	F3	F4	F5	F6	F7	ITC	Retained
	Eigenvalues		14.37	3.07	2.22	1.99	1.9	1.57	1.26		–
1	Are PRRC members expected to work on life goals with PRRC participants?		**0.46*†**	**0.41***	-0.13	0.34*	-0.11	-0.07	-0.06	0.52	N
2	Are PRRC members expected to refer to people in a way that describes the person first, the illness condition second		**0.53***	0.32*	0.04	0.21	-0.14	0.10	-0.05	0.42	N
3	Are PRRC members expected to educate PRRC participants about their rights as citizens in the larger community	Expectations	**0.62***	0.19	0.11	0.21*	0.07	0.05	-0.06	0.67	Y
4	Are PRRC members expected to share program space with PRRC participants		**0.58***	-0.15	-0.08	-0.05	0.05	-0.13	0.13	0.32	N
5	Are PRRC members expected to facilitate relationship-building among PRRC participants	Expectations	**0.76***	-0.04	0.11	0.02	0.02	-0.07	0.07	0.57	Y
6	Are PRRC members expected to deliver services in a way that is sensitive to each PRRC participant	Expectations	**0.63***	0.25*	0.04	0.04	-0.05	0.00	0.05	0.54	Y
7	Are PRRC members expected to facilitate PRRC participants' involvement in community activities	Expectations	**0.77***	0.04	0.07	-0.04	0.12	0.16*	0.12	0.60	Y
8	Are PRRC members expected to involve PRRC participants in running the program		**0.70***	-0.17	-0.09	-0.10	0.12	-0.00	0.32*	0.44	N
9	Are PRRC members expected to build on PRRC participants' strengths and capabilities	Expectations	**0.77***	0.07	0.07	0.19*	-0.05	-0.04	-0.01	0.63	Y
10	Important to work with PRRC participants even when they refuse certain other treatments	Values	-0.13	0.11	-0.01	**0.71***	0.02	-0.06	0.11	0.26	Y
11	Important that PRRC staff support the decisions and choices of PRRC participants	Values	0.04	-0.07	0.04	**0.86***	0.11	0.03	0.04	0.35	Y

12	Important that PRRC includes staff members who themselves are people in mental health recovery	Values	0.01	-0.01	-0.01	**0.47***	0.23*	0.07	0.15	0.26	Y
13	How strongly does team lead emphasize including PRRC participants in decisions	Leadership	0.04	**0.76***	-0.01	-0.07	0.09	-0.16	0.15	0.69	Y
14	How strongly does team lead emphasize including...family members and others	Leadership	-0.07	**0.79***	0.02	-0.01	0.08	-0.29	0.01	0.65	Y
15	How strongly does team lead emphasize giving attention to all life areas of PRRC participants	Leadership	0.02	**0.87***	0.02	0.01	0.02	-0.19	0.04	0.69	Y
16	Team lead actively advocate for the use of recovery-promoting practices	Leadership	0.01	**0.74***	0.02	0.05	0.25*	0.09	0.07	0.69	Y
17	Team lead demonstrate recovery promotion in practice	Leadership	0.16*	**0.74***	0.03	-0.02	0.26*	0.14	-0.00	0.65	Y
18	Education that focuses on how to develop individualized PRRC care plans that are client-driven	Education & Training	0.05	0.07	**0.81***	-0.02	0.04	-0.12	-0.23*	0.58	Y
19	Education that focuses on how to work supportively with PRRC participants	Education & Training	0.03	0.08	**0.87***	0.04	-0.01	-0.07	-0.19*	0.64	Y
20	Education that focuses on how to teach PRRC participants to advocate for their own wellness	Education & Training	0.04	-0.07	**0.98***	0.003	-0.01	0.03	0.05	0.69	Y
21	Education that focuses on how to make PRRC participants feel comfortable and safe in the program	Education & Training	-0.03	-0.03	**0.96***	0.00	-0.03	-0.01	0.06	0.65	Y
22	Education that focuses on how to connect PRRC participants with natural supports in the community	Education & Training	0.00	0.05	**0.87***	-0.01	0.03	0.03	0.06	0.70	Y
23	PRRC staff expected to have documented competencies in specific recovery-promoting practices and approaches?		-0.07	0.11	-0.14	-0.05	-0.31*	0.36*	0.03	0.38	N
24	Do Veterans...directly provide staff training in this PRRC?		0.04	-0.04	0.23*	0.15	0.30*	-0.18*	0.22*	0.55	N

25	Do PRRC staff have enough time for reading, attending trainings and getting supervision		-0.02	0.07	0.33*	-0.04	0.31*	0.02	0.02	0.41	N
26	PRRC staff rewarded...for championing recovery-promoting principles and practices in the PRRC	Rewards	0.01	0.08	-0.04	0.08	**0.93***	-0.04	-0.04	0.55	Y
27	PRRC staff rewarded...for promoting a holistic approach in the PRRC	Rewards	-0.00	0.06	-0.00	-0.04	**0.97***	-0.02	-0.01	0.54	Y
28	PRRC staff rewarded...for promoting cultural sensitivity within the PRRC	Rewards	0.01	0.00	0.05	0.00	**0.91***	-0.08*	0.01	0.55	Y
29	Veterans...are asked to participate in the development and modification of program policies and procedures	Policy	0.00	-0.10	0.05	0.03	-0.04	**0.72***	-0.10	0.36	Y
30	Veterans who wish to use the PRRC program may do so even if they are refusing or non-compliant	Policy	-0.02	-0.01	-0.06	-0.09	0.11	**0.74***	0.05	0.28	Y
31	Veterans...have a role in PRRC program quality improvement and evaluation	Policy	0.03	-0.01	-0.10	0.04	-0.07	**0.79***	-0.07	0.40	Y
32	PRRC actively solicit feedback from PRRC participants by using surveys	Quality Improvement	0.08	0.28	-0.01	0.10	-0.05	-0.19	**0.52***	0.56	Y
33	PRRC actively solicit feedback from PRRC participants in meetings	Quality Improvement	0.24*	0.17	0.01	-0.01	0.01	-0.03	**0.68***	0.61	Y
34	PRRC use peers to actively solicit feedback about the PRRC from PRRC participants	Quality Improvement	-0.04	0.25	0.17	0.04	0.20*	0.04	**0.53***	0.64	Y
35	PRRC use feedback from PRRC participants as the basis for making changes	Quality Improvement	0.02	0.32	0.17	0.02	-0.05	-0.03	**0.65***	0.67	Y

Notes: EFA using weighted least squares with mean and variance adjustment (WLSMV) with pair-wise deletion; Rotation: Geomin; Goodness of fit statistics of the seven factor model: Chi-square statistic = 539.739, df = 371, p = 0.00; Comparative fit index = 0.990; Tucker-Lewis Index = 0.984; Root mean square error of approximation (90% confidence interval) = 0.043 (0.034, 0.05); Standardized root mean square residual = 0.036; *Significant at .05 level; †Bolded values indicate a factor loading >0.4; ITC = Item-total correlation. Rating scale was 1=not at all present to 5=present to a great extent, with the exception of items 23 and 29-31, which were yes, no, and don't know. Item numbers correspond to the original 35 items; these numbers were updated for the final 28-item scale.

Supplement Table 4. Score distribution ranking for PRRC sites with 4 or more respondents, overall score and sub-scale scores, sorted lowest to highest by overall score.

Site	Expectations	Values	Leadership	Education	Rewards	Policies	QI	Overall
A	4.4	4.8	2.9	3.9	2.1	1.6	3.1	**3.1**
B	3.1	4.7	3.4	3.3	1.9	4.4	2.8	**3.4**
C	4.8	4.4	3.8	4.0	1.6	2.4	4.0	**3.5**
D	4.7	4.2	4.6	4.4	2.5	2.9	3.6	**3.8**
E	4.6	4.8	4.2	4.1	2.8	3.2	3.5	**3.8**
F	4.4	4.4	4.2	4.0	3.3	3.0	3.8	**3.9**
G	4.2	4.4	4.6	3.8	2.8	4.0	3.1	**3.9**
H	4.4	4.5	4.3	3.9	2.5	3.8	3.9	**3.9**
I	4.8	4.8	4.9	4.0	2.6	2.3	4.4	**3.9**
J	4.5	4.2	4.6	4.1	3.9	2.6	4.3	**4.0**
K	4.8	4.3	4.6	4.6	1.8	4.3	4.3	**4.1**
L	4.5	4.5	4.4	4.2	3.9	3.9	4.5	**4.2**
M	5.0	4.9	4.9	4.8	4.0	3.5	4.9	**4.5**
N	4.7	4.9	4.8	4.3	3.7	5.0	4.8	**4.6**

Median overall score 3.9
Interquartile range 3.5-4.2
Chose the 2 highest and two lowest-scoring sites.