A scale to measure quality of supported employment for persons with severe mental illness

Gary R. Bond[a,*], Kikuko Campbell[a], Lisa J. Evans[b], Robert Gervey[c], Alysia Pascaris[d], Shaleigh Tice[d], Donato Del Bene[e] and Grant Revell[f]

[a]*Department of Psychology, Indiana University Purdue University Indianapolis, IN, USA*
[b]*Department of Public Health and Preventative Medicine, Louisiana State University Health Sciences Center, LC, USA*
[c]*University of Medicine and Dentistry in New Jersey, NJ, USA*
[d]*New York Work Exchange, NY, USA*
[e]*Puerto Rican Family Institute, PR, USA*
[f]*Virginia Commonwealth University, Richmond, VA, USA*

Abstract. *Objective*: Fidelity scales, which are instruments for measuring implementation of a program practice, are sorely needed as the mental health field increasingly moves toward adoption of evidence-based practices. We examined the psychometric properties of a new fidelity scale developed for assessing supported employment for people with severe mental illness.
Study design: Telephone surveys were conducted in 5 states using the 33-item Quality of Supported Employment Implementation Scale (QSEIS) and the 15-item Individual Placement and Support (IPS) Fidelity Scale. We interviewed program directors for 144 vocational programs, including 106 supported employment programs and 38 programs offering vocational services other than supported employment.
Results: Internal consistency for the total QSEIS was 0.72. For 27 (82%) of the QSEIS items, at least one-third of the supported employment sites were rated as fully implemented, suggesting concordance between the operating principles of supported employment as practiced in the field and the content of the QSEIS. Factor analysis yielded 5 interpretable factors: Job Placement, Integration with Mental Health Treatment, Long-Term Support, Teamwork, and Engagement. Supported employment differed from other vocational services, especially with respect to job placement in competitive employment and long-term support in these jobs. Concurrent validity was suggested by a 0.85 correlation between the QSEIS and the IPS Fidelity Scale.
Conclusions: Fidelity scales are an essential component of an evidence-based practice. Surveys based on psychometrically adequate fidelity scales, such as the QSEIS, can foster greater understanding to the extent of implementation of such practices. For local, state, and national surveys of supported employment, it is incumbent that researchers and program planners use the QSEIS or instruments like it to describe vocational services.

1. Introduction

Over the past few years, the mental health field has undergone a philosophical change in defining services for consumers with severe mental illness (SMI). As part of a larger movement within medicine, there has been an increasing emphasis on "evidence-based practices," defined as practices with demonstrated effectiveness in rigorous research studies [27]. Managed care financing of public mental health has accelerated this change, with its emphasis on accountability, i.e., defining services and documenting that the services provided are effective [21]. Unfortunately, the gap is wide between practices as described in the literature and practices as actually implemented [8]. Often the practice standards provided in the literature are not operationally defined.

*Address for correspondence: Gary R. Bond, Department of Psychology, LD124, IUPUI, 402 N. Blackford St., Indianapolis, IN 46202-3275, USA. Tel.: +1 317 274 6760; Fax: +1 317 274 6756, E-mail: gbond@iupui.edu.

Supported employment is one of six evidence-based practices endorsed by a national group of experts for widespread adoption [23]. Nine experimental studies have shown that supported employment is consistently superior to other widely-practiced vocational approaches in helping consumers with SMI achieve competitive employment [6,15].

Supported employment has achieved its evidence-based practice status in a brief span of time. During the 1980s, it was developed in the field of vocational rehabilitation as a radical innovation replacing sheltered workshops and day care for persons with developmental disabilities [28]. When it was first introduced for people with SMI, providers did not have clear guidelines for setting up their programs [22]. Early efforts in the mental health field involved borrowing strategies used for other disability groups, some of which proved unsuitable or incomplete. These initial efforts resulted in understandably wide variation in implementation, including many failures, as a consequence of ambiguities concerning the best way to implement such programs [4,11,18,26]. During the last few years, however, there has been increasing consensus among experts and practitioners on the principles of supported employment for people with SMI [17], as well as growing empirical support for specific principles [5,6,14]. Among the principles on which there is general agreement, as well as evidence for their importance in achieving better employment outcomes, are the following [1]:

– Eligibility is based on consumer choice: No one is excluded who wants to participate.
– Supported employment is integrated with treatment: Employment specialists coordinate plans with the treatment team, e.g., case manager, therapist, psychiatrist, etc.
– Competitive employment is the goal: The focus is on community jobs anyone can apply for and that pay at least minimum wage, including part-time and full-time jobs.
– Job search occurs soon after a consumer expresses an interest in working: No requirements for completing extensive pre-employment assessment and training, or intermediate work experiences (like prevocational work units, transitional employment, or sheltered workshops).
– Follow-along supports are continuous: Individualized supports to maintain employment continue as long as consumers want the assistance.
– Attention to consumer preferences: Choices and decisions about work and support are individualized based on the person's preferences, strengths, and experiences.

Throughout the US, state mental health agencies are actively promoting the adoption of evidence-based practices, including supported employment [25]. However, we do not have adequate documentation about the success of these dissemination efforts. A recent survey of state mental health agencies indicated that 40 reported statewide dissemination of supported employment [25]. The utility of this survey was limited by the lack of a shared operational definition of supported employment understood by all respondents. Moreover, without detailed probing into specific program practices, the credibility of a self-administered survey is suspect. Programs self-identifying as providing a particular practice do not always adhere to the program standards [3]. Thus the NASMHPD survey highlights the need for a more systematic method of inquiry. The research literature has many examples of dissemination efforts in which program developers have failed to clearly define a practice [12] and of dissemination efforts in which the practices have been poorly implemented [8].

For these and other reasons, program leaders and state mental health planners have discovered the necessity for developing standards for practices they intend to implement. Even for practices with clear standards, there is a further need for practical, psychometrically valid methods to systematically assess the quality of implementation when these practices are being adopted on a wide scale basis [19].

Fidelity scales have been proposed as one solution to the various problems noted above. Fidelity scales measure the degree of implementation of a practice, that is, the degree of attainment of practice standards [8]. Fidelity scales have many uses: (1) rigorously documenting the dissemination of a practice, as was attempted in the NASMHPD survey, (2) providing state agencies (e.g., mental health, vocational rehabilitation) with standards to assess strengths and weaknesses of programs receiving funding for a defined service, (3) guiding the planning process for agencies considering a new practice, and (4) monitoring by program leaders and others of the progress in implementation of a new practice. Although not yet documented in the literature, one potential further use of fidelity scales is providing consumers and family members with a framework to make service choices and to advocate for better services.

Already in widespread use for assessing implementation of supported employment is a 15-item fidelity

scale, originally known as the *IPS Fidelity Scale*[1] [1]. This scale differentiates well between evidence-based supported employment and other types of vocational programs [7,10]. It also predicted better employment outcomes in one study [2].

Despite encouraging findings for the IPS Fidelity Scale, one feature limits its universal application. The small number of items on the scale contributes to its modest internal consistency. Recognition of this problem led the scale's developers to recommend supplementing the original scale with further items [7].

A second issue concerning the IPS Fidelity Scale is the developers' recommendation that fidelity assessment be conducted in conjunction with a daylong visit at a program site [1]. The underlying principle is that data collection procedures are more likely to be valid if they involve multiple sources of information and direct observation of program services. Nonetheless, many potential users of fidelity scales, including state mental health and vocational rehabilitation agencies, typically seek monitoring tools that are less labor intensive. Consequently, we sought to develop a new scale to measure quality of implementation of supported employment that could be administered via a telephone interview, acknowledging that the site visit format remains the superior method.

The Quality of Supported Employment Implementation Scale (QSEIS) is a 33-item telephone-administered monitoring tool. Previously we reported the feasibility of the QSEIS in a two-state pilot study [9]. The QSEIS was developed with the help of a national advisory panel who endorsed a set of items as critical components of supported employment. The resulting instrument included items borrowed from existing fidelity checklists, as well as newly developed items. The pilot study suggested that inter-rater reliability was adequate. However, the internal consistency of the total scale was poor (Cronbach's alpha = 0.51). We attributed the lack of internal consistency to a restriction of range within a study sample comprised solely of supported employment programs.

The current report extends this earlier work by examining the psychometric properties of the QSEIS using our cumulative five-state data base, which now includes supported employment programs with diverse provider organizations as well as a contrasting sample of programs subscribing to other vocational models. The objectives of the current report are to identify scale properties of the QSEIS, including the adequacy of the items on the scale, its correlation with the IPS Fidelity Scale, its underlying factor structure, and the degree to which the QSEIS discriminates between supported employment and other vocational programs.

2. Method

2.1. Sample description

Between 1998 and 2001, surveys of supported employment programs for people with SMI were conducted in five states: Kansas, New Jersey, Maryland, North Carolina, and New York. The states were selected through personal contacts. The method used for identifying and contacting sites varied by state.

The study sample included data from the original pilot study, which was conducted in Kansas and New Jersey [9]. State administrators responsible for monitoring supported employment programs for people with SMI contacted program directors for these programs to introduce the survey. They then forwarded contact information to the research team, who conducted the telephone surveys. In these two states, the majority of supported employment programs were located in community mental health centers (CMHCs).

In Maryland, we contacted the director of the Maryland Association of Psychiatric Support Services, a state professional organization with a membership consisting primarily of psychosocial rehabilitation agencies operating independently of CMHCs. At our request, the director sent us a roster of organizations providing supported employment, which we subsequently attempted to contact.

In North Carolina, the research team identified a sample of programs while providing consultation on an unrelated project examining the impact of a class action suit. The North Carolina sites were identified as supported employment programs. They were all housed within comprehensive rehabilitation centers serving a range of disability populations, including developmental disabilities as well as psychiatric disabilities.

In New York, the research team was contacted by the director of a technical assistance center, the New York Work Exchange, with a request to use the QSEIS as part of a project to improve vocational services within New York City. Staff from the New York Work Exchange

---

[1]This scale, originally used to assess fidelity to the Individual Placement and Support model of supported employment, has been renamed the Supported Employment Scale. For the sake of continuity with the published literature cited, we have retained the original designation in this report

were trained in the survey methodology by the research team and conducted all the telephone surveys, with consultation from the research team.

Overall, we identified 215 sites eligible for the study. The final sample consisted of 144 vocational programs (16 from Kansas, 20 from New Jersey, 17 from Maryland, 21 from North Carolina, 68 from New York, and 2 from other states). We obtained a 67% overall response rate: 59% for Kansas, 95% for New Jersey, 57% for Maryland, 54% for North Carolina, and 69% from New York. From the first four states, 72 (97%) of the programs confirmed that they provided supported employment. Among the New York sites, 34 (50%) described their programs as supported employment, while 34 (50%) indicated that they offered some other form of vocational services.

The sample consisted of 106 supported employment programs and 38 programs offering vocational services other than supported employment. The supported employment programs included 30 (28%) located in CMHCs, 20 (19%) operated by a social services agency, 15 (14%) located a psychosocial rehabilitation agency, 4 (4%) free-standing supported employment programs, 2 (2%) based in a hospital, 14 (13%) with other types of parent organization, and 21 (20%) located in comprehensive rehabilitation centers.

The non-supported employment vocational programs were very diverse. Using the labels given to the interviewers during the QSEIS assessments, the 38 other vocational programs included 13 (34%) prevocational programs, 5 (13%) enclaves, 4 (11%) clubhouses, 3 (8%) affirmative businesses, 3 (8%) psychosocial rehabilitation programs, 3 (8%) welfare to work programs, 2 (5%) sheltered workshops, 1 (3%) transitional employment program, 1 (3%) internship program, and 3 others.

2.2. Survey instrument

We used a revised version of the QSEIS[2]. consisting of 33 items (31 of the original 33 QSEIS items and 2 items from the IPS Fidelity Scale). Each item is rated on a five-point, behaviorally-anchored response scale, with a rating of 5 indicating *full implementation*, 4 indicating *moderate implementation*, and the remaining scale points indicating increasingly larger departures from the supported employment standards. For example, S5 (*Rapid job search*) is scored "5" if first job application typically takes place within a month after program entry, and is scored "1" if first job application typically takes place over a year after program entry. Scoring for the QSEIS consists of a simple linear summative scale, computing the mean for all 33 QSEIS items.

In the pilot study two items rarely achieved full implementation and therefore were dropped from the current version of the QSEIS: S15, which examines the extent to which the supported employment team reaches out to family members and S16, which assesses if the program uses a consumer satisfaction measure. The two added items were taken from the IPS Fidelity Scale: IPS1 (*Emphasis on permanent jobs*) and IPS2 (*Individualized follow-along support for employed consumers*). With these additions, the IPS Fidelity Scale also can be scored after administering the QSEIS. With these exceptions, the QSEIS reported here is the same instrument as used in the pilot study [9].

The QSEIS is divided into three sections. *Vocational Staffing* (6 items) is designed to assess the commitment of the agency to staffing supported employment programs at levels appropriate for providing quality services. *Organization* (11 items) measures the organizational features of the vocational program and its relationship to mental health treatment services. *Services* (14 items) assesses the type of services offered by employment specialists and the way in which they are offered. The items are listed in the order the questions are asked in Table 1.

2.3. Interview procedures

The methods for contacting sites followed similar principles in all 5 states. The vocational program directors at potential sites were notified by mail or at a state meeting about the opportunity to participate in a survey. Each director then was contacted by telephone and invited to participate in the study. Upon receiving consent, surveys were conducted via telephone interviews with the vocational program director (or occasionally another knowledgeable staff member) using the QSEIS.

The QSEIS is administered in a semi-structured format, using an interview guide. Two fidelity assessors trained on the standard administration procedures for the QSEIS were present for each interview. During the telephone call, one assessor conducted the interview, while the second recorded information and asked supplemental questions, as appropriate. On av-

---

[2]A copy of the current version of the QSEIS, along with an interview guide, is available from the first author

Table 1
QSEIS item statistics and mean comparisons between supported employment vs. other vocational programs

Item	Item-total r	Distribution of ratings in supported emp. programs						Supported emp. ($n = 106$)	Other voc. ($n = 38$)	t
		N	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean(SD)	Mean (SD)	
VOCATIONAL STAFFING										
VS1: Most of the vocational staff are solely devoted to supported employment (SE)	0.26	96	22.9	14.6	16.7	11.5	34.4	3.20(1.59)	1.68(1.31)	4.61***
VS2: Vocational team currently operates at full staffing	−0.03	106	0.9	1.9	6.6	17.0	73.6	4.60(0.78)	4.57(0.80)	0.24
VS3: Employment specialists (EP's) manage caseloads of up to 16 consumers	0.21	105	−	−	4.8	21.9	73.3	4.69(0.56)	4.25(1.11)	3.06**
VS4: Single ES is assigned to each consumer for the duration of services	0.24	106	17.0	5.7	23.6	24.5	29.2	3.43(1.41)	3.08(1.27)	1.32
VS5: ES's focus on vocational services only	0.04	104	−	1.0	12.5	34.6	51.9	4.38(0.74)	4.14(1.07)	1.46
VS6: Program has at least 3 vocational staff members to function as a team	0.15	105	8.6	1.0	1.9	20.0	68.6	4.39(1.17)	4.08(1.52)	1.27
ORGANIZATION										
O1: Single agency provides treatment and vocational services at the same location	0.21	105	40.0	2.9	4.8	18.1	34.3	3.04(1.79)	2.65(1.81)	1.13
O2: ES's attend regular clinical treatment team meetings at least weekly	0.44	105	18.1	25.7	21.9	8.6	25.7	2.98(1.45)	2.62(1.46)	1.29
O3: ES's have frequent contact with consumer's treatment team	0.43	106	3.8	17.0	14.2	17.9	47.2	3.88(1.28)	3.24(1.36)	2.56*
O4: ES's function as a team, rather than a group of individual practitioners	0.14	106	10.4	5.7	4.7	8.5	70.8	4.24(1.37)	4.16(1.55)	0.29
O5: Team members meet with their supervisor at least weekly	0.08	106	15.1	3.8	0.9	15.1	65.1	4.11(1.48)	4.13(1.46)	−0.07
O6: All prospective clients are given information on SE	0.19	106	13.2	0.9	29.2	16.0	40.6	3.70(1.36)	3.08(1.42)	2.35*
O7: Program does not have exclusionary eligibility requirements for admission	0.36	106	20.8	5.7	20.8	8.5	44.3	3.50(1.59)	3.00(1.49)	1.68
O8: Consumers can receive immediate services upon their interest in the program	0.10	106	17.0	5.7	4.7	20.8	51.9	3.85(1.52)	4.05(1.45)	−0.71
O9: VR approval for SE services is not required or given within 2 weeks	0.00	96	1.0	3.1	6.3	9.4	80.2	4.65(0.82)	4.89(0.39)	−1.79
O10: Approval from case manager is not required for referral to the program	0.02	95	43.2	4.2	13.7	4.2	34.7	2.83(1.79)	2.95(1.93)	−0.33
O11: Vocational records are kept in same files as treatment records	0.20	106	20.8	14.2	34.0	5.7	25.5	3.01(1.44)	2.49(1.66)	1.83
SERVICES										
S1: Vocational services are provided in natural community setting	0.28	106	4.7	17.9	12.3	20.8	44.3	3.82(1.30)	2.51(1.48)	4.97***
S2: Initial vocational assessment is completed within 1 week	0.08	95	6.3	15.8	29.5	20.0	28.4	3.48(1.24)	3.97(1.32)	2.00*
S3: Most clients do not receive prevocational work-readiness activites	0.44	96	30.2	12.5	12.5	16.7	28.1	3.00(1.63)	1.89(1.45)	3.56**
S4: Program provides individualized benefits/entitlement counseling to consumer	0.30	106	3.8	1.9	10.4	5.7	78.3	4.53(1.02)	3.38(1.48)	5.23***
S5: Search for competitive jobs occurs rapidly after program entry	0.40	104	1.9	5.8	20.2	36.5	35.6	3.98(0.99)	3.13(1.48)	3.73***
S6: Employer contacts begin with a focus on consumer job preferences and needs	0.33	105	9.5	5.7	17.1	18.1	49.5	3.92(1.33)	2.28(1.73)	5.69***
S7: ES's provide diverse job options in multiple settings	0.40	101	1.0	2.0	9.9	15.8	71.3	4.54(0.83)	2.65(1.82)	8.13***
S8: All consumers are invited to consider long-term career planning	0.46	106	13.2	15.1	12.3	16.0	43.4	3.61(1.49)	3.06(1.46)	1.90
S9: An explicit support plan is designed for each employed consumer	0.30	104	6.7	10.6	5.8	11.5	65.4	4.18(1.31)	2.86(1.66)	4.85***
S10: Individualized follow-along supports are available to consumer and employer	0.43	105	−	−	21.9	9.5	68.6	4.47(0.83)	3.29(1.38)	5.98***

Table 1, continued

Item	Item-total	Distribution of ratings in supported emp. programs						Supported emp.	Other voc.	
	r	N	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	($n = 106$) Mean(SD)	($n = 38$) Mean (SD)	t
SERVICES										
S11: All consumers receive comprehensive follow-along support for > 1 year	0.16	106	4.7	6.6	3.8	5.7	79.2	4.48(1.14)	3.56(1.90)	3.37**
S12: ES's help consumers end jobs when appropriate and then find new jobs	0.44	105	2.9	12.4	5.7	22.9	56.2	4.17(1.16)	3.58(1.56)	2.35*
S13: Assertive outreach is used to engage/re-engage consumers	0.24	98	7.1	1.0	41.8	12.2	37.8	3.72(1.19)	3.59(0.99)	0.59
S14: Job support groups are offered	−0.20	106	49.1	1.9	15.1	4.7	29.2	2.63(1.76)	2.78(1.93)	−0.44
IPS ITEMS ADDED										
IPS1: ES's offer competitive jobs with permanent status	0.36	98	1.0	4.1	10.2	9.2	75.5	4.54(0.91)	3.03(1.67)	6.55***
IPS2: All employed consumers receive individualized follow-along support	0.30	105	1.9	1.0	3.8	5.7	87.6	4.76(0.74)	4.64(1.03)	0.77
Total	−	106	−	−	−	−	−	3.89(0.40)	3.34(0.43)	7.28***

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

erage, each interview took approximately 90 minutes to complete. During and after the interview, fidelity assessors completed independent ratings of the QSEIS items. After the interview, they discussed each item rating and reached consensus. Previous research has established satisfactory inter-rater reliability for these procedures [9].

2.4. Data analysis

Descriptive statistics (means, standard deviations, and item-total correlations) were examined at the item level. As a check on the realistic scaling of the QSEIS items (as measured against actual practice), we used an arbitrary rule of thumb of at least one-third of the supported employment sites achieving full implementation (i.e., "5" on the response scale) on a given item.

Principal component factor analysis with varimax rotation was performed on the 33-item scale. We used Cattell's [13] criteria and examination of the scree plots of eigenvalues larger than 1.0. Factors were identified using a cutoff of 0.40 as the minimum factor loading. We used Cronbach's alpha to assess internal consistency.

Data analyses were conducted at the item, total scale, and factor score levels. The total score was calculated as the mean of all 33 items, and the factor scores calculated in similar fashion. Effect sizes, using the d statistic [20], were used to describe differences between supported employment and other vocational services.

To establish global cutoff scores to classify programs on their level of supported employment implementation, we used program scores on the IPS Fidelity Scale, as explained below.

3. Results

3.1. General program characteristics

Seventy-two percent of programs identified themselves as serving only urban areas, 11% reported serving only rural areas, and 17% reported serving both urban and rural areas. The programs averaged 5.9 years (SD = 4.7) since their inception. On average, the programs employed 9 full-time equivalent staff (median = 3) and served 52 consumers (median = 42). Overall, programs averaged 15 consumers per staff worker (median = 13).

3.2. Psychometric properties of QSEIS

3.2.1. Item analyses

As shown in Table 1, the item-total correlation was 0.30 or higher for 14 (42%) items. Except for two items – VS2 (*Vocational team currently operates at full staffing*) and S14 (*Job support groups are offered*)– all items were positively correlated with the total scale.

One indicator of whether an item is suitable for assessing supported employment is to examine the percentage of supported employment sites rated 5 on that item (i.e., achieving full implementation). Across the 33 items, the median percentage of supported employment programs rated 5 on a given item was 52.4%. Further, for 27 (82%) of the QSEIS items, at least one-third of the supported employment sites were rated as fully implemented. These two statistical indicators suggest concordance between the operating principles of supported employment as practiced in the field and

Table 2
QSEIS factor solution ($N = 144$)

Factors and items	Factor loading
Factor 1: Job Placement	
S7: Diversity of jobs	0.749
IPS1: Emphasis on permanent jobs	0.712
S6: Individualized job search	0.654
S3: Prevoc activities	0.610
VS1: Agency focus on SE	0.561
S5: Rapid job search	0.532
S1: Community based services	0.505
Factor 2: Integration with Mental Health Treatment	
O1: Co-location with MH tx	0.792
O11: Integration of records	0.754
O2: Tx team meeting attendance	0.752
O3: Contact w/ tx team members	0.727
Factor 3: Long-Term Support	
S8: Career planning	0.623
S4: Benefits counseling	0.612
S11: Duration of follow-along	0.544
S10: Types of follow-along	0.514
S9: Job support plan	0.470
Factor 4: Teamwork	
O4: Vocational unit	0.815
VS6: Voc team size	0.783
O5: Team meetings	0.763
VS3: Caseload size	0.443
Factor 5: Engagement	
O7: Screening policy	0.641
O10: Role of CM	0.547
S12: Multiple jobs	0.536
S13: Assertive outreach	0.499
Items not loading on any factor:	
VS2: Staff capacity	
VS4: Vocational generalists	
VS5: Exclusive vocational focus	
O6: Information on SE	
O8: Waiting list	
O9: Role of voc rehab	
S2: Length of Assessment	
S14: Job support groups	
IPS2: % receiving follow-along	

Note: 5-factor solution with varimax rotation with Kaiser normalization.

the content of the QSEIS. The 6 items for which less than one-third of supported employment sites scored 5 were: VS4 (*Generalist employment specialist role*), O2 (*Employment specialists attend weekly treatment team meetings*), O11 (*Vocational records integrated with treatment records*), S2 (*Initial vocational assessment completed within one week*), and S3 (*Most clients do not receive prevocational work-readiness training*), and S14 (*Weekly job support group*).

Conversely, few QSEIS items had ceiling effects. Instead, most QSEIS items achieved adequate response variability, with at least 25% of the supported employment sample rated as not achieving full implementation. On only 5 items were more than 75% of all

supported employment programs rated as fully implemented: O9 (*Role of VR*), S4 (*Benefits counseling*), S11 (*Duration of follow-along*), IPS1 (*Emphasis on permanent jobs*), and IPS2 (*% receiving follow-along*). However, 3 of these 5 items (S4, S11, and IPS1) sharply differentiated the supported employment sample from the other vocational program sample, suggesting that the utility of these 3 items.

3.2.2. Internal consistency

The overall internal consistency of the QSEIS was adequate (Cronbach's alpha $= 0.72$). As expected, the internal consistency for the subsample restricted to

Table 3
Internal consistency and correlations between QSEIS (total and factors) and IPS fidelity scale

| | QSELS factors | | | | | QSEIS | IPS |
	1	2	3	4	5	Total	Total
QSEIS factors:							
1. Job Placement	(0.79)						
2. Integration w/MH Treament	0.26	(0.81)					
3. Long-Term Support	0.37	0.13	(0.66)				
4. Teamwork	0.00	−0.14	0.28	(0.76)			
5. Engagement	0.29	0.33	0.16	−0.10	(0.53)		
QSEIS total	0.72	0.55	0.65	0.28	0.55	(0.72)	
IPS total	0.86	0.39	0.40	0.15	0.54	0.85	(0.72)

Note: Diagonal values are internal consistency coefficients (Cronbach's alpha).

supported employment programs ($n = 106$) was lower (Cronbach's alpha = 0.66).

3.2.3. Factor analysis

As shown in Table 2, a five-factor solution was chosen as the most theoretically meaningful and parsimonious model, with 26 of the 33 items each loading on exactly one factor. As noted below, one item loaded on two factors. To increase the internal consistency of the factor scores we subsequently excluded 3 of the 26 items that loaded above the 0.40 criterion: VS5 (*Exclusive vocational focus*), O8 (*Waiting list*), and IPS2 (*% receiving follow-along*). Six of the 33 items that did not load onto any factor were: VS2 (*Staff capacity*), VS4 (*Vocational generalists*), O6 (*Information on supported employment*), O9 (*Role of VR*), S2 (*Length of assessment*), and S14 (*Peer support groups*).

The five factors were labeled as follows: Job Placement consists of 7 items reflecting an exclusive focus on supported employment, avoiding lengthy pre-placement interventions, rapid search for permanent (rather than temporary) jobs commensurate with consumer preferences and skills, diversity of jobs, and staff time spent in the community. Five of these 7 items fell within the Services Section of the interview protocol. *Integration with Mental Health Treatment* consists of 4 items related to the integration of vocational services with mental health treatment, including shared location and integrated treatment team meetings and records. All 4 of these items fell within the *Organization* Section of the interview protocol. *Long-Term* Support consists of 5 items (all 5 from the Services Section of the interview protocol) concerning availability of time-unlimited follow-along support, benefits counseling, job support planning, and long-term career development. *Teamwork* consists of items reflecting the structure of the vocational program and caseload size. *Engagement* consists of 4 items concerning assertive outreach and rapid referral and admission to the pro-

gram. S5 (*Rapid job search*) loaded on two factors, Job Placement (0.53) and Engagement (0.51), and was classified with Job Placement.

The five factors accounted for 10.9%, 8.7%, 8.3%, 7.8%, and 7.6% of the total variance, respectively. As shown in Table 3, Cronbach's alpha for the five factors ranged from 0.53 to 0.81. Correlations between the factors ranged from −0.14 to 0.37 (median = 0.21), suggesting a moderate level of statistical independence.

3.2.4. Comparison with IPS fidelity scale

The total QSEIS correlated 0.85 with the IPS Fidelity Scale. This finding was not surprising, given that the 15 IPS Fidelity Scale items are included in the QSEIS. Cronbach's alpha for the IPS Fidelity Scale was 0.72 for all programs and 0.67 for supported employment programs only.

3.2.5. Discrimination of supported employment from other vocational approaches

Overall, supported employment programs differed significantly from other vocational approaches, as shown in Table 1. On the total QSEIS score, the mean difference was 0.55 on the 5-point scale, and the effect size for the difference between the supported employment and other vocational groups was $d = 1.34$, indicating a very large difference. Sixteen QSEIS items significantly differentiated the two groups. We then compared the supported employment and other vocational samples on the 5 factor scores, as shown in Table 4. The two groups differed on 3 factors (Job Placement, Integration, and Long-Term Support), but not Teamwork or Engagement. The differences for Job Placement and Long-Term Support both exceeded one scale point. The IPS Fidelity Scale also differentiated the supported employment sample ($M = 3.98$, $SD = 0.48$) from the other vocational sample ($M = 3.35$, $SD = 0.49$), $t(142) = 6.91$, $p < 0.001$.

Table 4
Comparison between supported employment and other types of vocational programs on factor scores

	Supported emp. ($n = 106$)	Other voc ($n = 38$)	t value	Effect size (d statistic)
Job placement	3.86 (0.73)	2.52 (0.99)	8.76***	1.67
Integration w/ MH treatment	3.22 (1.18)	2.75 (1.30)	2.04*	0.39
Long-term support	4.25 (0.70)	3.16 (1.04)	7.18***	1.36
Teamwork	4.36 (0.86)	4.17 (1.21)	1.06	0.20
Engagement	3.57 (0.99)	3.23 (1.01)	1.84	0.34

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

3.2.6. Cutoff scores

We also defined global cutoff scores to classify programs on their level of supported employment implementation. Noting that a rating of 4 is given on an item defined a priori as "moderately implementing" that element of supported employment, we used that label for programs with a mean item total $\geqslant 4.0$. For other cutoff scores we adapted the framework used in the IPS Fidelity Scale [7]. The IPS Fidelity Scale uses 3 gradations, with cut points of 4.3 and 3.7 on the total score. Using 4 gradations for the QSEIS and 3 cut points (4.3, 4.0, and 3.7), the two scales agree closely in classifying sites, as shown in Table 5.

4. Discussion

4.1. Psychometric properties of the QSEIS

The main purpose of the current report was to assess the adequacy of the QSEIS as a fidelity scale. In our pilot study, our sample was limited to self-identified supported employment programs, leading to a restricted range of responses on many items [9]. The expanded database used for the current report permitted a better understanding of the scale's psychometric properties. Regarding the scale properties of the QSEIS, the findings from the current report are encouraging. Overall, the scale had adequate internal consistency (0.72), considerably higher than that found in the original study (0.51). The addition of programs providing other types of vocational services increased the internal consistency of the QSEIS.

The suitability of the specific items included in the QSEIS was further indicated by the fact that a sizeable proportion of supported employment sites achieved full implementation on most items. Among the 6 items for which less than one-third achieved full implementation, three (O2, S2, S3) are strongly supported as evidence-based principles according to the research literature [6]. One item (O11: *Integration of vocational and treatment*

records) has not been directly validated in the literature, although it is endorsed by experts [16]. We are less confident that the remaining two items (VS4: *Employment specialists as generalists, and S14: Weekly job support groups*) should be considered critical ingredients of supported employment. Overall, the current set of QSEIS items is highly relevant to the actual practice of supported employment for people with SMI.

We conclude that the QSEIS satisfies many of the criteria for a psychometrically adequate scale, including internal consistency and discriminant, factorial, and concurrent validity. The scale also can be considered to have content validity, based on the initial review of the items by a panel of experts [9] and in comparison with responses from a subsequent expert survey [17]. One key unanswered question concerns the predictive validity of the QSEIS: Are higher ratings on the QSEIS associated with better employment outcomes? We did not find a significant correlation between the QSEIS total score and several indicators of employment outcomes in our pilot study [9]. However, in a sample of supported employment teams in Indiana, the QSEIS total score was significantly correlated with the number of successful VR closures reported for the team (McGrew J., personal communication, September 2002). The highest priority for future research is to examine the relationship between quality of program implementation and employment outcomes. If this linkage is firmly established, then this strengthens the rationale for close monitoring of program fidelity using the QSEIS.

4.2. Comparison of supported employment with other vocational services

One key finding is that supported employment clearly differs from other forms of vocational services. Moreover, the study helps to clarify the nature of these differences. Supported employment differs most sharply from other vocational services with respect to job placement in competitive employment and long-term support in these jobs. Both of these principles are

Table 5
Comparison of QSEIS and IPS fidelity scale on global cutoff scores

	IPS Fidelity Scale			
QSEIS	< 3.7	3.73 −4.3	> 4.3	
< 3.7	49	8	0	57 (39.6%)
3.7 - 3.99	10	28	5	43 (29.9%)
4.0 - 4.29	0	20	7	27 (18.8%)
⩾ 4.3	0	3	14	17(11.8%)
	59 (40.9%)	59 (40.9%)	26 (18.1%)	144

weak or absent in other vocational approaches. At the item level, we found the largest differences in program elements relating to provision of services, including the locus of contact in the community, the kinds of jobs that are pursued, and how they are pursued, and what services are provided once the job is obtained. Specifically, other vocational approaches rated low on items regarding the focus on consumer preferences, permanent competitive jobs, diverse jobs in multiple settings, benefits counseling, and career planning, reinforcing the idea that these other approaches did not have the clear objective of helping consumers achieve permanent competitive employment jobs consonant with consumer preferences. The list of items on which the other vocational approaches rated low should give pause to consumers and family members as they seek out service providers to assist them in achieving their recovery goals.

Conversely, supported employment was not consistently different from other vocational approaches on most of the staffing and organizational items included in the scale. Commonalities among vocational approaches are especially of interest in consideration of organizational features and resources required for different approaches.

4.3. Normative standards for supported employment programs

One proposed application of the current survey is to provide normative expectations for supported employment services provided to people with SMI. One very important caveat is that the supported employment sample in the current report was heterogeneous with respect to provider organizations, which included CMHCs, psychosocial rehabilitation agencies, and comprehensive rehabilitation agencies. We found systematic differences on the QSEIS within these subgroups, which will be a focus of a later report. The descriptive findings from the total supported employment sample are of value as indicators of common supported employment practices that transcend these disparate organizational settings.

One obvious question regarding the utility of the current sample concerns the representativeness of the sample. Did we sample "typical" supported employment programs? Are they exemplary? Or perhaps there are other states with more fully developed supported employment services. We do not have satisfactory answers to these questions; indeed, a direct answer to this question probably requires a systematic national assessment using a fidelity scale such as the one described in this paper. The current study is part of a "bootstrapping" process, by which we establish baseline data for future comparisons. One advantage of the current sample is that it is one of the largest surveys of its kind on supported employment.

Although we cannot adequately address the question of the representativeness of the supported employment programs examined in this report, we note that four of the states (Kansas, Maryland, New Jersey, and New York) have technical assistance centers aimed at promoting supported employment and other evidence-based practices, suggesting these states' investment in proactive efforts toward quality improvement. As further indication of their commitment to improvement, two of these states (Kansas and Maryland) have chosen to implement evidence-based supported employment as part of the National Implementing Evidence-Based Practice Project [23].

Surprisingly, we have only meager information to indicate the scope of supported employment nationwide. Published surveys are limited by both their data sources [24,29] and their survey methodologies, including the instruments used to query respondents. We offer the QSEIS as one standardized instrument that could be used as part of a national survey. Moreover, the global cutoff scores defined in this paper provide a simple and face valid way to classify programs once assessed.

A related use of the survey findings is to provide standards for specific components of supported employment services. For example, based on our findings, we recommend that the maximum caseload size for an employment specialist on a supported employment team

should not exceed 18. This guideline is lower than the maximum caseload size of 25 given in the IPS Fidelity Scale [7], which was derived from clinical experience.

Basic supported employment principles such as rapid job search, individualized job search, and provision for multiple jobs were fully implemented in most programs. Conversely, some empirically-validated principles, such as integration of employment services with mental health treatment, were adopted in only a minority of supported employment programs, suggesting areas for needed change in current supported employment practices.

4.4. Comparison of QSEIS and IPS fidelity scale

Contrary to expectations, the longer QSEIS did not have greater internal consistency than the IPS Fidelity Scale in this study. However, because it has more items, the QSEIS global cutoff scores permit finer discriminations among programs than does the IPS Fidelity Scale. In general, the QSEIS may be a more suitable survey instrument, at least for telephone surveys, when the purpose of the fidelity assessment is to differentiate between programs. The IPS Fidelity Scale does require more inference for some items, which are more suited to ratings based on a site visit. However, the two scales were highly correlated, so that the two scales probably yield similar results for many purposes. Validity studies are needed before drawing further conclusions about the relative merits of each scale.

4.5. Study limitations

A major limitation of this study was the lack of independent confirmation of the ratings obtained through the program director. The variability in responses provides indirect evidence that program directors were giving differential responses and consequently not uniformly socially desirable responses. Nevertheless, the validity of responses remains an issue requiring further study.

Sampling bias was another study limitation. Bias occurred at both levels of the two-stage sampling strategy. As noted above, the sampling of states was not random, but instead used opportunity sampling for the selection of states. Within states, we sought to interview all programs within the lists provided. However, volunteer bias was operating in all but the New Jersey sample, where we obtained virtually all of the listed programs.

A third study limitation concerns aggregation of different approaches under a single category of other vocational approaches. Rather than classifying all other vocational programs into a single "non-supported employment" group, an ideal sampling strategy would be to identify specific alternative models. The heterogeneity of the sample of other vocational approaches in the current study did not permit this.

5. Conclusions

One main finding of our study is that supported employment is now being implemented in various sections of the country. Moreover, although the levels of implementation varied across programs and provider organizations, the typical level of supported employment implementation was at least moderate for nearly half of our quality indicators, such as small caseload sizes, teamwork among the employment specialists, diverse job options, providing consumers with benefits counseling, providing multiple job opportunities, and time-unlimited follow-along support. Recalling that supported employment is a relatively recent innovation, our survey suggests these states have taken important steps toward realizing one main objective of the Rehabilitation Act of 1986 and its later amendments.

Fidelity scales are an essential component of an evidence-based practice. Surveys based on psychometrically adequate fidelity scales, such as the QSEIS, can foster greater understanding to the extent of implementation of such practices. For local, state, and national surveys of supported employment, it is incumbent that researchers and program planners use the QSEIS or instruments like it to describe vocational services.

Acknowledgment

References

[1] D.R. Becker and G.R. Bond, eds, Supported employment implementation resource kit: User's guide. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 2002.

[2] D.R. Becker, J. Smith, B. Tanzman, R.E. Drake and T. Tremblay, Fidelity of supported employment programs and employment outcomes, *Psychiatric Services* **52** (2001), 834–836.

[3] G.R. Bond, Variations in an assertive outreach model, *New Directions for Mental Health Services* **52** (1991), 65–80.

[4] G.R. Bond, Vocational rehabilitation, in: *Handbook of psychiatric rehabilitation*, R.P. Liberman, ed., New York: Macmillan, 1992, pp. 244–275.

[5] G.R. Bond, Principles of the Individual Placement and Support model: Empirical support, *Psychiatric Rehabilitation Journal* **22**(1) (1998), 11–23.

[6] G.R. Bond, D.R. Becker, R.E. Drake, C.A. Rapp, N. Meisler, A.F. Lehman, M.D. Bell and C.R. Blyler, Implementing supported employment as an evidence-based practice, *Psychiatric Services* **52** (2001), 313–322.

[7] G.R. Bond, D.R. Becker, R.E. Drake and K.M. Vogler, A fidelity scale for the Individual Placement and Support model of supported employment, *Rehabilitation Counseling Bulletin* **40** (1991), 265–284.

[8] G.R. Bond, L. Evans, M.P. Salyers, J. Williams and H.K. Kim, Measurement of fidelity in psychiatric rehabilitation, *Mental Health Services Research* **2**(2) (2000), 75–87.

[9] G.R. Bond, J. Picone, B. Mauer, S. Fishbein and R. Stout, The Quality of Supported Employment Implementation Scale, *Journal of Vocational Rehabilitation* **14** (2000), 201–212.

[10] G.R. Bond, K.M. Vogler, S.G. Resnick, L.J. Evans, R.E. Drake and D.R. Becker, Dimensions of supported employment: Factor structure of the IPS Fidelity Scale, *Journal of Mental Health* **10** (2001), 383–393.

[11] K.F. Botterbusch and F.R. Menz, *The Diffusion Network Project, Technical report* Final report to Rehabilitation Services Administration CFDA #84.235D ed., Menomonie, WI: Research and Training Center, University of Wisconsin-Stout, Vol 1, 1995.

[12] J.S. Brekke, What do we really know about community support programs? Strategies for better monitoring, *Hospital and Community Psychiatry* **39** (1998), 946–952.

[13] R.B. Cattell, The scree test for the number of factors, *Multivariate Behavioral Research* **1** (1996), 245–276.

[14] J. Cook and L. Razzano, Vocational rehabilitation for persons with schizophrenia: Recent research and implications for practice, *Schizophrenia Bulletin* **26** (2000), 87–103.

[15] R.E. Crowther, M. Marshall, G.R. Bond and P. Huxley, Helping people with severe mental illness to obtain work: Systematic review, *British Medical Journal* **322** (2001), 204–208.

[16] R.E. Drake, D.R. Becker, G.R. Bond, D. Delmasse and K.T. Mueser, in press, A process analysis of integrated and non-integrated approaches to supported employment, *Journal of Vocational Rehabilitation*.

[17] L.J. Evans, *Obtaining expert consensus on the critical ingredients of supported employment programs for people with severe mental illness*, Unpublished dissertation, Indiana University Purdue University Indianapolis, Indianapolis, 2002.

[18] C.B. Forbrich, *OVR/OMH grant program review*, Rehabilitation in the Community (Bulletin #10), Harrisburg, PA: Division of Community Support Programs, Office of Mental Health.

[19] H.H. Goldman, V. Ganju, R.E. Drake, P. Gorman, M.F. Hogan, P.S. Hyde and O. Morgan, Policy implications for implementing evidence-based practices, *Psychiatric Services* **52** (2001), 1591–1597.

[20] M.W. Lipsey, *Design sensitivity*, Newbury Park, CA: Sage.

[21] R.W. Manderscheid and M.J. Henderson, Federal and state legislative and program directions for managed care, in: *Outcome measurement in the human services: Cross-cutting issues and methods* E.J. Mullen and J. L. Magnabosco eds, Washington, DC: NASW Press, 1997, pp. 113–123.

[22] V. Mellen and K. Danley, Special issue: Supported employment for persons with severe mental illness, *Psychosocial Rehabilitation Journal* **9**(2), (1987).

[23] K.T. Mueser, W.C. Torrey, D. Lynde, P. Singer and R.E. Drake, in press, Implementing evidence-based practices for people with severe mental illness, *Behavior Modification*.

[24] NASMHPD, *Five state feasibility study on state mental health agency performance measures: Draft Executive Summary*, Alexandria, VA: NASMHPD Research Institute, 1994.

[25] NASMHPD, Implementation of evidence–based services by state mental health agencies: 2001, *NASMHPD State Profile Highlights* **11** (2002), 1–4.

[26] J.H. Noble, *The benefits and costs of supported employment for people with mental illness and with traumatic brain injury in New York State* (C-0023180). Buffalo, NY: Research Foundation of the State University of New York, 1991.

[27] W.C. Torrey, R.E. Drake, L. Dixon, B.J. Burns, A.J. Rush, R.E. Clark and D. Klatzker, Implementing evidence-based practices for persons with severe mental illness, *Psychiatric Services* **52** (2001), 45–50.

[28] P. Wehman and M.S. Moon, eds, *Vocational rehabilitation and supported employment*, Baltimore: Paul Brookes, 1988.

[29] P. Wehman and G. Revell, Supported employment: A decade of rapid growth and impact, *American Rehabilitation* **24**(1) (1998), 31–43.