Assessing Fidelity to a Community-Based Treatment for Youth:

The *Wraparound Fidelity Index*

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In this article, the authors describe the development, psychometric characteristics, and potential utility of the *Wraparound Fidelity Index* (WFI), a multi-informant measure designed to assess providers' adherence during service delivery to the essential elements of wraparound. Results from 408 families across 16 sites in nine states indicated adequate psychometrics for use of the WFI as an overall fidelity measure. The psychometrics for individual element scores were less reliable, however. The authors discuss the implications for research and practice, identifying specific items to be revised and potential uses for the WFI. They also cover policy implications, including how to overcome challenges observed in implementing the wraparound approach nationally.

Over the past two decades, professionals in the children's services field have responded to numerous concerns regarding the inadequacy of service systems for children who are experiencing mental health problems. Responses have included a shift from institutional to less restrictive care settings; the development of integrated systems of care that are individualized, family-centered, and community-based; and significant improvements to the research base on interventions for these youth (Duchnowski, Kutash, & Friedman, 2002). More recently, this expansion of the research base has facilitated an emphasis on evidence-based practices, allowing knowledge about the dynamics of service delivery and their effects on outcomes to help guide selection and implementation of services and supports (Hoagwood, Schoenwald, Kiser, Ringeisen, & Burns, 2001).

Despite recent efforts to apply the research base to innovative treatments for children with mental health problems, several major trends in children's mental health treatment have occurred in the relative absence of systematic research. One prominent example is the allocation of vast amounts of public mental health dollars to restrictive service options, such as residential treatment and psychiatric hospitalization, despite a near absence of outcome data in support of such treatment choices (Burns, Hoagwood, & Maultsby, 1998). On the other end of the restrictiveness continuum, the wraparound approach for serving children and families has emerged as an enormously popular community-based approach, despite a history of inadequate model specification and a relative lack of rigorous outcome evaluation (Burchard, Bruns, & Burchard, 2002). In this article, we describe the development of a fidelity adherence measure for wraparound that is intended to improve the research base as well as help providers better understand and implement the model.

THE WRAPAROUND APPROACH

Wraparound is an approach to individualized service planning and case management for children with emotional and behavioral disorders (EBD) and their families. It is generally listed among the handful of promising community treatments for youth (Burns, 2002; Burns et al., 1998). In wraparound, a strengths-based team-planning process is used to create a unique set of community services and natural supports that are individualized for the child and family (Burns & Goldman, 1999). The wraparound model has been described as a primary vehicle for applying the system-of-care philosophy to individual families (Stroul, 2002), and the

number of youth engaged in wraparound has been estimated at more than 200,000 (Faw, 1999).

The wraparound process has been described in several monographs (Burchard, Burchard, Sewell, & VanDenBerg, 1993; Burns & Goldman, 1999; Kendziora, Bruns, Osher, Pacchiano, & Mejia, 2001), a recent book chapter on community-based interventions for children (Burchard et al., 2002), and in several prominent manuals for trainers (Eber, 2003; Grealish, 2000; VanDenBerg & Grealish, 1998). Like multisystemic therapy (MST; Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998) and multidimensional treatment foster care (MTFC; Chamberlain, 2002), wraparound is an integrated, community-based approach that is guided by a set of core elements and practice principles but administered in an individualized manner, depending on the needs of the child and family (Burchard et al., 2002; Burns & Goldman, 1999). Unlike MST and MTFC, nationally recognized standards and a definitive manual to guide specific service delivery activities are lacking.

This lack of specification has largely been the result of the historically grassroots development of the wraparound model, which has been guided by a diverse set of loosely affiliated providers, trainers, and family advocates (as opposed to an individual or a cohesive group). As a result, even though providers have used the term *wraparound* since the mid-1980s, the elements and practice principles that loosely define the process were not defined and codified until very recently. Moreover, although the delineation of these elements represented an important advance in our understanding regarding the wraparound philosophy, these elements have only been operationalized into specific provider behaviors by a few innovative sites and trainers (e.g., Rast & VanDenBerg, 2003).

Although many professionals embrace the flexibility of the wraparound approach, the lack of operationalization has created problems for service providers and hindered research that might otherwise advance the model. At the service delivery level, jurisdictions eager to implement a wraparound program may not deliver treatment in a manner that conforms to the elements because of a less than complete understanding of the necessary administrative requirements or provider activities. With respect to research, although a number of qualitative and quantitative studies have documented a range of positive outcomes associated with the approach, to date, these studies have neglected to document the specific approaches or degree of adherence to the intervention's principles (M. H. Epstein et al., 2003), making interpretation of outcomes difficult. In addition, the failure to measure adherence to the model's principles across evaluation studies hinders our ability to synthesize the body of extant research, for example, conducting analyses to determine which principles and processes are most important to improving outcomes (Bond, Evans, Salyers, Williams, & Hea-Won, 2000).

Measuring Fidelity

These challenges to research and practice illustrate the need for approaches to measure adherence to wraparound. *Fidelity assessment* is an essential, yet underemployed, component of health and mental health service delivery and research. When considered for complex, individualized, or multimodal treatments, such as community-based treatments for youth and families, however, fidelity assessment becomes particularly difficult. Whereas measuring fidelity within psychotherapy primarily requires attention to the therapist's behaviors, in community-based interventions, comprehensive fidelity assessment requires attention to provider behaviors as well as to multiple structural and administrative characteristics of both the program and the overarching system within which it is embedded (Bond et al., 2000; Bruns, Burchard, Suter, & Force, in press).

Despite the challenges, the evidence-based practice movement and the heightened recognition of the importance of treatment fidelity for both research and practice have significantly improved fidelity measurement of community treatments for youth. In addition, the recent consensus regarding the elements of wraparound has allowed for the development of several approaches for measuring fidelity.

Initially, these approaches largely relied upon caregiver and youth satisfaction instruments and record reviews (Bruns et al., in press). More recently, however, formal measures have been developed to assess providers' adherence to the wraparound elements, which provide the most fundamental and well-recognized explication of the model, and the fundamental expectations for a program using the wraparound model. One such measure is the *Wraparound Observation Form* (WOF; M. Epstein et al., 1998), which uses an observational approach to assess wraparound fidelity as applied during the team process. The WOF has demonstrated good interrater reliability and potential utility in assessing patterns of adherence to the wraparound approach for teams and the programs within which these teams operate (M. H. Epstein et al., 2003).

The Wraparound Fidelity Index

The *Wraparound Fidelity Index* (WFI; Suter, Burchard, Force, Bruns, & Mehrtens, 2002) is a second major fidelity measure. Designed to generate interpretable feedback for providers to aid them in training and supervision, the WFI was intended to be a cost-efficient method for assessing adherence to the wraparound elements via interviews with multiple stakeholders. The creation of the first version of the WFI (WFI-1), involved (a) the generation of items by providers, researchers, and family members and (b) the use of items from existing instruments, which were arranged to correspond with the philosophical elements of wraparound. Three different versions of the measure were then created for individual respondent types: resource facilitators (or case managers), caregivers, and youth. Considering scores across these informants allowed for the construction of profiles of adherence to the wraparound elements for individual families. In addition, these scores could be aggregated to the site or

program level to provide a profile of element scores and a total adherence score for the site.

Initial pilot studies on WFI-1 revealed that many items had low variability, in that the vast majority of respondents assigned the highest fidelity rating possible on the measure's 3-point scale. This in turn resulted in a number of individual element scores that showed a *ceiling effect,* with means approaching the maximum score possible. Nonetheless, WFI-1 demonstrated good test–retest reliability and adequate internal consistency for total fidelity scores. (For many of the individual element scores, however, alphas were found to be low. This perhaps is not surprising, given that these scores consisted of only four items.) Most important, construct validity tests found that an expert's overall fidelity ratings (based on in-depth interviews and record reviews) for individual families were significantly correlated with WFI Total Fidelity scores. In addition, for 7 of the 10 wraparound elements assessed by the WFI-1, the experts' ratings of fidelity significantly correlated with WFI element scores (Bruns, Ermold, & Burchard, 2001).

These results, along with positive feedback from providers and families who helped pilot the tool, provided evidence for the validity of the WFI approach. The researchers revised the index to better operationalize items for describing specific provider behaviors to achieve adherence to the philosophical elements being assessed. In addition, the researchers introduced reverse-scored items, split one element into two, added items to all of the respondent forms, and created a detailed manual containing scoring rules for all items. This revision became the WFI-2, and it was primarily intended to improve the measure by increasing variability, reducing the observed ceiling effect, and increasing the ability to comprehensively assess fidelity to the wraparound process by including items for all respondents for each wraparound element. In the current article, we report on this revision by presenting an assessment of the WFI-2, its structure, and its individual items based on data from 408 families in 16 wraparound program sites in nine states.

METHOD

Measure

The WFI-2 assesses the services and supports a family receives with respect to adherence to the essential elements of the wraparound approach. Completing the WFI involves interviews with three key respondents: the family's resource facilitator (sometimes referred to as a care manager or case manager), the primary caregiver, and the youth (who is only interviewed if he or she is 11 years of age or older). Interviewing different team members provides multiple perspectives for calculating fidelity scores for 11 WFI elements (see Note 1). Four items serve as indicators for each element. A sample item for each of the elements (taken from the caregiver version of the WFI-2) is presented in Table 1.

At the beginning of the WFI interview, the interviewer provides the following instructions: "I am going to ask you some questions about the services and supports the family [or your family] is receiving now and for the past 30 days. For each question you can answer *yes, sometimes or somewhat,* or *no*." Responses are assigned a score from 0 (*low fidelity*) to 2 (*high fidelity*). Some of the items are reverse-coded; thus, a "yes" response to a reverse-coded item (e.g., "Are important decisions about the youth and family made when the parent is not there?") would receive a 0, indicating low adherence to the wraparound principles. The four item scores for each element are summed to calculate an element score, which may range from 0 (*low fidelity*) to 8 (*high fidelity*).

Items for the resource facilitator and caregiver WFI-2 forms are nearly identical (see Note 2), but the youth form includes only 8 of the 11 elements. The elements of Collaboration, Flexible Resources, and Outcome-Based Services are not included. This decision was based on an assessment by caregivers, resource facilitators, and interviewers that youth often do not have enough information to be accurate reporters on these three elements. The resource facilitator and caregiver forms thus each contain 44 items, whereas the youth form consists of 32 items.

Procedure

Due to interest in using the WFI that was expressed by sites across the country, the WFI-2 was released to potential collaborators in 2001 as a means of collecting pilot data to aid in validation of the instrument. After each site reviewed the measure and decided to collaborate with our research team, site staff members completed a formal request for collaboration that provided information on the programs, population served, methodology, and consent procedure to be used in administering the WFI. Potential collaborating sites were also required to establish and describe methods for ensuring confidentiality of all participants.

Once programs had been accepted as collaborating sites, their representatives signed a formal memorandum of agreement and received a WFI-2 user's manual. Sites were free to use the WFI per the guidelines specified in the agreement (e.g., interviewers should not personally know the family or resource facilitator; interviews should be done in person or over the phone). Individual collaborating sites also agreed to train interviewers based on the research team's guidelines and the WFI manual and to ensure that interviewers had a good working knowledge of the user's manual and data collection forms. Each site also submitted a plan for providing interviewers with adequate ongoing supervision.

Once interviewers were trained, sites recruited families; administered interviews to caregivers, youth, and resource facilitators; entered data into a database provided by the research team; and forwarded these data, with identifying information deleted, to the research team. In return, the research team provided national collaborators with summary reports on their sites' fidelity profiles, describing the results for their site.

Participants

Sixteen agencies providing services for families with children experiencing EBD

TABLE 1
Philosophical Elements of the Wraparound Process

Element	Description	Sample WFI item
Voice and Choice	The youth and family must be full and active partners at every level and in every activity of the wraparound process.	Do team members "overrule" your wishes regarding your child?
Youth and Family Team	The wraparound approach must be a team-driven process involving the family, child, natural supports, agencies, and community services working together to develop, implement, and evaluate the individualized plan.	Is there a friend or advocate of your family or child who is a member of the team?
Community-Based Services	Wraparound must be based in the community, with all efforts toward serving the identified youth based in community residential and school settings.	Does the team help your child get involved with activities in the community? If yes, please give two examples of those activities.
Cultural Competence	The process must be culturally competent, building on the unique values, preferences, and strengths of children and families and their communities.	Do people providing professional services understand and respect your family's culture, traditions, lifestyles, and spiritual beliefs?
Individualized Services and Strength-Based Services	Services and supports must be individualized, built on strengths, and meet the needs of children and families across life domains to promote success, safety, and permanence in home, school, and community.	*Individualized:* Are the services and supports modified in a timely manner when your family's needs change? *Strength-Based:* Were the strengths of your child and family used in the planning and modification of services and supports?
Natural Supports	Wraparound plans must include a balance of formal services and informal community and family supports.	Does the team rely mostly on professional services?
Continuation of Care	There must be an unconditional commitment to serve children and their families.	Has the team helped your family develop or strengthen relationships that will support you when the team has been discontinued?
Collaboration	Plans of care should be developed and implemented based on an interagency, community-based collaborative process.	Do the professionals and nonprofessionals on the team work together and treat each other as partners?
Flexible Resources	Wraparound child and family teams must have flexible approaches and adequate and flexible funding.	Does the team try to find new and creative services that might be more helpful to your family instead of using services that already exist?
Outcome-Based Services	Outcomes must be determined and measured for the system, the program, and the individual child and family.	Has the team measured your satisfaction and your child's satisfaction with services in the past 3 months?

Note. Description of wraparound elements adapted from Burns and Goldman (1999). Sample items are from the caregiver form of the *Wraparound Fidelity Index* (Suter et al., 2002).

participated in the current study. The agencies were in Alaska, Arizona, California, Indiana, Kentucky, Missouri, Nebraska, North Carolina, and Vermont (see Table 2 for number of agencies in each state). There were two primary eligibility requirements:

1. the youth had to be identified as experiencing EBD (per criteria that he or she had a diagnosable emotional, behavioral, or mental health disorder that impaired functioning in family, home, or community), and

2. the youth and family had been receiving services for at least 1 month prior to data collection.

The goal of the current study was to sample all eligible youth and families at each of the collaborating sites; however, each collaborator used his or her own recruitment procedures. Participating sites did not report the number of families who refused to participate or the percentage of enrolled families from whom WFI data were collected. All sites did submit data collection protocols that contained plans to survey all enrolled families.

Collectively, the 16 agencies contributed WFI data for 408 families. When a site collected multiple WFI records for the same youth (such as for sites that administered the WFI at multiple points to track fidelity over time), only the WFI that had been administered first was included in the dataset. Furthermore, if more than one youth from a family was receiving services at the time of data collection, only one "target" youth, selected at random, was included in the current study.

The full WFI-2 dataset consisted of interviews with 317 caregivers, 222 youth, and 292 resource facilitators (see Table 2). At the time of the WFI administration, the families had been receiving wraparound for a mean of 13.85 months (SD = 10.57). Thirty-one percent of youth were in the custody of at least one biological parent, 29% were in state custody, 5% were in the care of a relative, and 4% were in adoptive or foster care (custody was unknown and/or not reported for 31% of the sample). Sixty-four percent of identified youth in the sample were boys and 36% were girls, with ages ranging from 4 years to 19 years (M = 13.03, SD = 3.32). Fifty-eight percent of the youth were identified as Caucasian, 18% as African American, 5% as Hispanic, 2% as Native American, 2% as biracial, and 1% as Asian/Pacific Islander (race was not known and/or identified for the remaining 15% of the sample). Thirty-two percent of the youth received diagnoses in the category of attention-deficit and disruptive behavior disorders, 20% for mood disorders, 9% for anxiety disorders, 2% for pervasive developmental disorders, 1% for schizophrenia and other psychotic disorders, and 1% for adjustment disorders. Two percent received other diagnoses, and for 33% of youth, a diagnosis was not reported.

TABLE 2
Number of Completed *Wraparound Fidelity Index* Interviews at Collaborating Sites

Site	# of families	# of interviews		
		RF	CG	Y
Total interviews	408	292	317	222
Alaska				
Site 1	14	13	12	6
Site 2	3	1	3	2
Arizona	34	26	22	24
California				
Site 1	1	1	0	0
Site 2	20	20	12	19
Site 3	25	24	23	11
Site 4	44	32	26	31
Indiana				
Site 1	11	11	11	6
Site 2	17	17	16	6
Kentucky	36	26	35	23
Missouri				
Site 1	40	40	30	19
Site 2	46	46	37	25
Nebraska	43	18	32	0
North Carolina	55	0	43	40
Vermont				
Site 1	5	3	3	0
Site 2	14	14	12	10

Note. RF = resource facilitator; CG = caregiver; Y = youth.

RESULTS

Administration Time

Mean administration time for the WFI-2 was found to average 17.5 min (SD = 14.6) for the resource facilitator form, 23.2 min (SD = 24.1) for the caregiver form, and 16.5 min (SD = 6.22) for the youth form. Mean administration times for the WFI-2 were found to be consistently longer than for WFI-1, for which administration times averaged 14.5 min, 17.3 min, and 11.1 min for the three forms, respectively. This was not surprising, given that the total number of items for the WFI-2 had increased from 32 to 44 for the resource facilitator form, from 16 to 44 for the caregiver form, and from 16 to 32 for the youth form.

Total and Element Scores

Descriptive Statistics. Table 3 presents descriptive statistics for the total WFI-2 and its elements, by respondent type. As shown, total WFI scores (summing all items and dividing by the total number of elements for that respondent,

TABLE 1
Descriptive Statistics and Internal Consistency Coefficients for *Wraparound Fidelity Index* Total and Element Scores

Element	RF[a]					CG[b]					Y[c]				
	M	*SD*	Skew	Kurtosis	α	*M*	*SD*	Skew	Kurtosis	α	*M*	*SD*	Skew	Kurtosis	α
Total WFI	**6.57**	**0.78**	**–0.75**	**0.51**	**0.78**	**6.19**	**1.35**	**–1.22**	**1.07**	**0.90**	**6.11**	**1.29**	**–1.32**	**1.97**	**0.88**
Voice and Choice	7.09	1.39	–1.83	3.20	0.54	7.18	1.35	–2.04	4.55	0.61	6.64	1.55	–1.30	1.77	0.48
Youth and Family Team	5.50	1.62	–0.08	–0.48	0.04	5.58	1.81	–0.36	–0.45	0.24	4.83	1.82	–0.08	–0.32	0.30
Community-Based Services	6.26	1.79	–0.96	0.31	0.36	5.79	1.85	–0.61	–0.30	0.25	5.64	1.82	–0.40	–0.34	0.12
Cultural Competence	7.32	1.28	–2.16	4.43	0.69	7.21	1.52	–2.27	5.24	0.66	6.90	1.69	–1.72	2.60	0.70
Individualized Services	7.26	1.23	–1.86	3.26	0.47	6.68	2.03	–1.62	1.71	0.71	6.08	1.91	–1.04	0.60	0.54
Strength-Based Services	6.85	1.16	–0.94	0.40	0.26	6.19	2.08	–1.07	0.28	0.66	6.47	1.83	–1.38	1.71	0.64
Natural Supports	5.32	2.12	–0.46	–0.64	0.64	4.44	2.71	–0.27	–1.20	0.72	5.61	2.40	–0.88	–0.15	0.72
Continuation of Care	7.16	1.09	–1.37	1.85	0.26	6.57	2.02	–1.68	2.41	0.64	6.80	1.72	–1.77	3.36	0.56
Collaboration	6.15	1.60	–0.96	1.01	0.30	6.27	1.80	–1.04	0.78	0.45					
Flexible Resources	6.34	1.62	–0.71	–0.27	0.49	5.74	2.33	–0.89	–0.18	0.70					
Outcome-Based Services	7.08	1.26	–1.27	0.97	0.32	6.82	1.79	–1.72	2.78	0.63					

Note. WFI = *Wraparound Fidelity Index* (Suter et al., 2002); RF = resource facilitator; CG = caregiver; Y = youth. Youth form does not assess the elements of Collaboration, Flexible Resources, and Outcome-Based Services.
[a]*n* = 292. [b]*n* = 317. [c]*n* = 222.

creating a possible range of 0–8) were 6.57 (*SD* = 0.78), 6.19 (*SD* = 1.35), and 6.11 (*SD* = 1.29) for the resource facilitator, caregiver, and youth forms, respectively. These mean scores and standard deviations reflect greater variation than those for the WFI-1 found in previous validation studies (Bruns et al., 2001). Nonetheless, for several element scores, WFI-2 variability continues to be compromised as mean scores approach the maximum possible score. Specifically, for 5 of 11 elements on the resource facilitator form (Voice and Choice, Cultural Competence, Individualized Services, Continuation of Care, and Outcome-Based Services) and 2 of the 11 elements on the caregiver form (Voice and Choice and Cultural Competence), means of greater than 7 out of the possible 8 were found. None of the mean element scores on the youth form exceeded 7.

Normality. In addition to the observed ceiling effect, several of the previously mentioned WFI elements demonstrated distributions that departed substantially from normality. Such conditions are important because they affect the utility of a scale. As shown in Table 3, examination of skewness and kurtosis for WFI element scores reveals that three element scores on the resource facilitator form demonstrated skewness or kurtosis outside of the traditionally acceptable range of –2.00 to 2.00 (as described in DeVellis, 1987). These three elements—Voice and Choice, Cultural Competence, and Individualized Services—also demonstrated ceiling effects. Similarly, for the caregiver form, both of the elements that showed ceiling effects (Voice and Choice and Cultural Competence) also demonstrated both nonnormal skewness and kurtosis, while two other elements (Continuation of Care and Outcome-Based Services), also showed nonnormal kurtosis. Finally, two element scores on the youth form also showed nonnormal kurtosis (Cultural Competence and Continuation of Care).

Unidimensionality. Unidimensionality, the assumption that items on a scale measure only one construct, is commonly considered an advantageous characteristic for an instrument (DeVellis, 1987). Although the WFI is intended to measure practitioners' degree of adherence to value-based principles that are not necessarily proposed to consistently co-occur in the field (see Note 3), the unidimensionality of the WFI total and element scores needed to be investigated to understand how they may behave when used in research.

Alpha coefficients (Cronbach, 1970) for the total WFI were found to be adequate to excellent for all three respondent groups. Specific values were .78 for the resource facilitator form, .90 for the caregiver form, and .88 for the youth form. However, as shown in Table 3, many alpha coefficients for individual element scores were found to be below .60, the lowest acceptable boundary for unidimensionality (DeVellis, 1987). Specifically, alphas of less than .60 were found for 9 of the 11 elements on the resource facilitator form, 3 of the 11 elements on the caregiver form, and 5 of the 8 elements on the youth form. Two WFI elements demonstrated alphas under .60 for both the resource facilitator and caregiver forms: Youth and Family Team and Community-Based Services. Because items on the resource facilitator and caregiver forms are parallel, this finding suggests the individual items selected for these two elements should be examined carefully to determine whether they are truly measuring the same construct.

Individual Item Scores

Descriptive Statistics. Mean scores on individual items ranged from 0.84 to 1.98 for the resource facilitator form, 0.80 to 1.90 on the caregiver form, and from 0.63 to 1.81 on the youth form. Mean item scores for the three respondents were 1.64 (*SD* = 0.27) for the resource facilitator form, 1.55 (*SD* = 0.26) for the caregiver form, and 1.53 (*SD* = 0.28) for the youth form.

Individual WFI items were examined for ceiling effect, lack of variability, and nonnormality. Not surprisingly, all elements that demonstrated these problems included one or more individual items that also demonstrated these problems. Specifically, for the resource facilitator form, 17 of the 44 items had means over 1.75 out of 2.00 (an arbitrary cutoff used to flag items that evidenced a ceiling effect), with an additional 5 items demonstrating nonnormality as evidenced by skewness and kurtosis outside the range of –2.00 to 2.00. For the caregiver form, mean scores for 11 of 44 items approached the maximum score, with an additional 5 items demonstrating nonnormality. Finally, for the youth form, mean scores for 7 of 32 items approached the ceiling, with an additional 3 items demonstrating nonnormality (see Note 4).

Item-Total Correlations. The final psychometric property investigated for individual items was corrected item-total correlations, as well as total WFI alpha coefficients if the item was removed. Because of the low alphas found for many WFI elements, we report only individual items that when deleted increased the internal consistency of the overall WFI (alphas which were found to be adequate to excellent) instead of each item's relationship to its specific element.

For the resource facilitator and caregiver forms, we found that the same three items, when deleted, produced a higher overall alpha for the total WFI. These items were as follows:

- "Is there a member of the school (or childcare provider) who is a member of the team?" (Youth and Family Team element)
- "Is your child attending a regular community school or job-training program (or working at a paying job)?" (Community-Based Series element)
- "Has your child lived with his or her biological family, with a relative, with a foster family in their community, or independently in an apartment approved by the team during the last 3 months?" (Community-Based Services element)

Three items on the youth form produced higher alphas when deleted; interestingly, the three youth form items found to reduce alpha when deleted are parallel to the three resource facilitator and caregiver items described previously. Only one additional

item was found on any of the three forms: For the resource facilitator form, deletion of the item "Is it possible for the youth or family to get kicked out of services?" (Continuation of Care element) was also found to produce a higher overall alpha. All the listed items also had very low item-total correlation coefficients.

When these listed items were removed, alpha coefficients for the total WFI tended to improve only slightly (e.g., from .78 to .80 for the resource facilitator form, from .90 to .91 for the caregiver form, from .88 to .89 for the youth form). At the same time, alpha coefficients for these items' element scores actually declined when deleted. Such decreases in alphas probably were due to the reduction in the number of items per element from four to three.

Discussion

We have attempted to present a rationale and procedure for measuring the implementation of the wraparound approach for children and families. Clearly, measuring fidelity to wraparound presents a challenge because the lack of a fully specified model and reliance on a set of elements—many of which are more philosophical than practical—means that wraparound is perceived as a philosophy as much as an intervention. Nonetheless, individual programs have adopted a myriad of specific provider approaches to conform to the wraparound philosophy (Walker, Koroloff, & Schutte, 2003), including methods for convening and running an interdisciplinary team, determining family strengths and needs, setting goals, leveraging the family's natural support system, determining indicators of success, measuring outcomes, and continually revising care plans based on evidence of success. Because neither national guidelines nor a comprehensive manual for wraparound against which to measure fidelity exist, the WFI was created as a means for programs to assess their success in performing such duties in a manner that conforms to the philosophical principles of wraparound.

The results of the current study suggest that although further revisions are needed, the WFI-2 is a considerable improvement over the WFI-1, and it probably would function well in assessing a program's adherence to the defined wraparound elements. Overall, the WFI-2 demonstrated acceptable variability for total scores for each respondent, as well as for most of its element scores. This likely is due to improved clarity and operationalization of the items. In addition, the overall WFI-2 seems to be measuring a unidimensional construct, because it clearly demonstrates adequate internal consistency as measured via Cronbach's alpha. These results, in combination with previous research demonstrating the construct validity of the WFI (Bruns et al., 2001), suggest that WFI-2 scores may be used in research studies as an overall measure of fidelity.

Despite these encouraging overall findings, however, our results also point to specific areas needing further improvement. Perhaps most important, respondents continued to endorse WFI-2 items within some elements at very high levels, in a pattern that mirrored patterns of general service satisfaction measures. Such ceiling-effect patterns were found to result in nonnormal distributions for a substantial percentage of items (e.g., 17 of 44 items for the caregiver form), and for two to three elements for each respondent form. Similarly, although all respondent forms of the WFI-2 were found to possess good internal consistency for all items, alphas for many individual elements were low. This probably was due in part to the small number of items in each element, but it also might have been a result of the low variability found for some items.

Limitations

Our approach to recruiting participating sites presents a major limitation of the current study. Self-selection into the national WFI sample by programs that wished to use the index for their own monitoring and quality-improvement processes is likely to have yielded a sample of quality sites that would not necessarily be representative of wraparound programs nationally. Moreover, the presumed quality of wraparound programs in the sample is likely to have been a contributing factor to the low variability and ceiling effect of many items, as well as the considerable skewness and kurtosis of many individual elements. Finally, the study's reliance on sites to train and supervise their own interviewers (albeit within guidelines mandated by the investigators) is likely to have hindered the quality of the data collected. The ideal would have been to provide training via standardized protocols to interviewers across all sites and to have certified interviewers only after they had met reliability criteria.

Future Research

The construct validity of the WFI still needs to be fully considered. Future studies might consider how well WFI scores are associated with an external criterion, such as an external expert's ratings of fidelity. A validity study of this type was undertaken with the WFI-1 (Bruns et al., 2001) and showed positive associations between total WFI-1 scores and an expert's ratings; however, future studies should include a more stringent external criterion than a single expert's rating.

Another approach to testing the measure's construct validity would be to determine how well the WFI discriminates programs or jurisdictions that differ distinctly from one another. Preliminary studies have demonstrated that mean overall WFI-2 scores are higher for sites that have organizational and system supports conducive to high-quality wraparound (e.g., low caseloads, mandated percentages of natural supports for teams, the presence of an interagency committee in the jurisdiction; Bruns, Suter, Burchard, & Leverentz-Brady, 2003). Studies of this type could provide a validity test for the WFI as well as test assumptions about necessary supports for the wraparound process.

Finally, researchers need to investigate the hypothesized association between WFI scores and child outcomes. Although two preliminary studies point to such associations (Bruns, Suter, Force, Burchard, & Dakan, 2003; Hagan, Noble, Schick, & Nolan, 2003), both of these studies associated WFI and outcome data for individual families at a single site. More advanced research on the link between

implementation and outcomes must incorporate multiple sites and providers and experimental manipulation of how wraparound is delivered. Such studies will provide validity tests for the WFI while also investigating what components of the model may be most important to achieving good outcomes for families.

Implications

WFI Utility. Despite its limitations, the findings from this assessment, along with results of previous reliability and validity studies, suggest that total WFI-2 scores can be used with confidence as an overall measure of adherence to the wraparound elements in both research and quality assurance. These results also indicate that we must continue to use individual element scores cautiously because of concerns about their normality and unidimensionality. These concerns may compromise element scores' utility as subdomains in fidelity research (particularly in between-group comparisons). Nonetheless, we believe that grouping items within the proposed philosophical elements of wraparound is valuable, especially in facilitating the use of WFI results in quality-improvement activities. Sites can use the structure of the WFI to indicate whether specific provider activities indeed reflect the principles of wraparound.

WFI Revision. The current assessment also facilitates our examination and revision of individual items within the WFI-2. For example, items within the Voice and Choice and Cultural Competence elements are of particular concern because they were found to be consistently skewed for both the resource facilitator and caregiver forms, resulting in nonnormal element scores that showed a ceiling effect. To improve these and other WFI items that have been found to have problematic psychometrics, we have consulted extensively with parents and providers to suggest new items that are better operationalized and more stringent tests of the philosophic principles they are intended to reflect. For example, within the Cultural Competence element, one caregiver item has been changed from "Do people *understand and respect* your family's culture, traditions, lifestyle, and beliefs?" to "Do family members *have frequent opportunities to share* their family's rules and beliefs?" Participants believed that this revision better operationalized the construct expressed in the item. Similarly, within the Voice and Choice element, another caregiver item has been changed to indicate that the team should not merely refrain from "mak[ing] important decisions" about the family in its absence but also not "make important decisions *nor have important discussions* about the family" in the family's absence. This revision provides a more stringent test of the concept of family voice and choice.

Wraparound Implementation. With its large national sample, the current study also provides a window through which we may examine service provision within the wraparound approach, such as highlighting certain philosophical principles that may be more difficult to achieve than others. Examination of element scores (see Table 3) revealed that the Youth and Family Team and Natural Supports elements were consistently lower than total WFI scores for all respondents, and caregiver and youth data also indicated that Community-Based Services and Flexible Resources also were relatively more difficult to achieve. Examination of individual items with low means revealed specific provider behaviors that may be compromising fidelity to the Wraparound ideal. Major examples include the following:

- failure to incorporate a full complement of important individuals on the individualized services team, especially school personnel and friends and advocates of the family;
- failure to engage the youth in community activities, activities the youth does well, or activities that will allow him or her to develop appropriate friendships;
- failure to use family and community strengths to plan services;
- lack of flexible funds to help implement innovative ideas that emerge from the ongoing team planning process; and
- inconsistent measurement of consumer satisfaction.

Although the current study did not use a representative sample per se, it is likely that these patterns of service provision are common among sites nationally. As such, providers, trainers, and policymakers may wish to consider the best ways to support programs and systems so that such prominent shortcomings may be overcome. These efforts may be important factors in improving the quality of services families receive. In the meantime, the data in the current study reinforce the challenges inherent in measuring fidelity of complex community treatments but also suggest that these measurement approaches are improving and can be quite useful. Continued refinement and consistent use of such measures holds the promise of aiding individual sites, clarifying research findings, and—in the case of wraparound—helping to determine the ideal characteristics of the intervention.

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Authors' Notes

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Notes

1. To increase specificity, the wraparound element of Individualized and Strengths-Based Services was split into two WFI elements (Individualized Services and Strength-Based Services), yielding a total of 11 WFI elements.
2. Items were reworded slightly to fit the respondent's point of view. For example, the resource facilitator item "Does the parent express his or her opinions even if they are different from the rest of the team?" was rewritten as "Do you express your opinions even if they are different from the rest of the team?" for the caregiver form.
3. Because the wraparound principle of "team-based" poses that a full range of professional and informal supports should be present on a youth and family team, presence of both school personnel and a family friend on the team was assessed via items within the Youth and Family Team element of the WFI. It has been shown, however, that there is not necessarily a statistical association between the presence of these two types of individuals on teams in practice.
4. For a copy of a table that includes each WFI item and its descriptive and psychometric information by respondent type, please contact the lead author.

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