# *Chapter Five*

## Fidelity Measurement for Wraparound

# *Pilot Test of the Wraparound Fidelity Index, Version 4: Psychometrics and Profiles from Seven Sites*

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## Introduction

Wraparound is a care management process that has evolved over the past 15 years through efforts to help families with the most challenging children function more effectively in the community. More specifically, it is a definable planning process that results in a unique set of community services and natural supports that are individualized for a child and family to achieve a positive set of outcomes. Wraparound has been implemented in the mental health, education, child welfare and juvenile justice sectors (Burchard, Bruns, & Burchard, 2002).

As wraparound has become a more widely implemented option for coordinating care for youth with serious and complex mental health issues, programs, communities, and states have been increasingly interested in measuring implementation fidelity, or how well a specific program conforms to its defined program model, protocol, or standards. Recent empirical studies have begun to examine the relationship between treatment fidelity and client outcomes, with studies finding positive relationships at the individual family level (e.g., Bruns, Suter, Force, & Burchard, 2005) and the provider level (Bruns, Rast, Walker, Peterson, & Bosworth, 2006). Other studies have shown that community and system conditions affect wraparound fidelity (Bruns, Suter, & Leverentz-Brady, 2006). Such research, as well as the need to help support high-quality implementation, have pressed for the availability of reliable and valid methods to assess fidelity.

The Wraparound Fidelity Index (WFI) is a measure that assesses implementation of the wraparound process through brief interviews with multiple respondents. These respondents include caregivers, youths, and wraparound facilitators. Previous versions of the WFI (v. 1, 2, 3) have been used in research on wraparound and even more widely as a quality assurance mechanism by wraparound programs. Prior versions were found to possess good psychometric characteristics, test-retest reliability, inter-rater agreement, and internal consistency. In addition to relationship to outcomes, studies using the WFI also have showed a relationship with measures of system support for wraparound, discrimination between wrap and non-wrap groups, and improvements in scores for providers over the course of receiving quality improvement activities (e.g., training and coaching) (Bruns, Suter, Force, Sather & Leverentz-Brady, 2006).

Studies have also shown certain limitations of the WFI-3. While it assesses adherence to principles, it does not assess fidelity to a model or set of specific activities. Some items show limited variation, and some sites have found little sensitivity to quality improvement efforts. To account for these limitations, a new version of the WFI was created, with items generated from a newly specified model (Walker & Bruns, 2006) and reviewed by multiple experts. Items on the WFI-4 are intended to assess adherence to the 10 defined wraparound principles as well as completion of specific activities in each of the four phases of wraparound. Sample items are listed below:

Phase 1: Engagement & Team Preparation – *Did you select the people who would be on your youth and family team?*
Phase 2: Initial Plan Development – *Does the plan include strategies for helping your child get involved with activities in her or his community?*
Phase 3: Plan Implementation – *Does the team evaluate progress toward the goals in the wraparound plan at every team meeting?*
Phase 4: Transition – *Will some members of your team be there to support you when formal wraparound is complete?*

The current study presents data from an initial pilot test of the WFI-4, presenting data from seven participating sites across six states.

## Method

***Measure.*** The WFI-4 is a structured interview that measures adherence to the principles and primary activities of the wraparound process on an individual child, youth, or family basis. The WFI is completed through brief, confidential telephone or face-to-face interviews with respondents such as youth, caregivers, wraparound facilitators, or other team members. The WFI assesses fidelity by having the interviewer assign a score to each of 40 items on the Caregiver, Facilitator, and Team Member forms. (There are 32 items on the Youth form.) These 40 items are organized by the four phases of wraparound mentioned above, and in addition, each of the 40 items assesses adherence to one of the 10 principles of wraparound. Fidelity to each principle is assessed by four items. For each item, the interviewer assigns a score of 0 (low fidelity) to 2 (high fidelity), for a total possible score of 80 for Wraparound Facilitator and Caregiver forms, and 64 for the 32-item Youth form. Total scores (including scores for individual principles and phases) are calculated as a percentage of the total possible score, to facilitate interpretation.

***Procedures.*** The seven collaborating sites each received the WFI-4 User's Manual and associated training materials. They each enrolled and received consent from participating families, collected all the WFI-4 data, and then forwarded the data to the Wraparound Evaluation and Research Team at the University of Washington. Data were received for WFI-4 administrations on $N = 194$ families across seven sites in six states (Nevada, Maryland, California, Oklahoma, Oregon, and New York). The total number of wraparound facilitators interviewed by site ranged from 0-54, the total number of caregivers assessed by site ranged from 5-52, and the number of youth interviewed ranged from 0-30. Analyses focused on examining the variability in individual item scores, internal consistency, and profiles of total scores by respondent, including overall WFI-4 scores (all items combined) as well as scores for individual phases and principles. We also assessed the degree of between-site differences, including differences between sites with different levels of development support for their wraparound initiatives. Specifically, we examined the hypothesis that total WFI-4 scores are higher in sites with more extensive supports for wraparound implementation.

## Results

***Study participants.*** The children in this study were reported as 64% male, with a mean age of 12.9 years ($SD = 3.75$). The children ranged in age from 4 to 18 years. Racial and ethnic differences varied across sites; overall, 54% were reported as Caucasian, 23% African American, 20% Hispanic, 1% American Indian or Alaska Native, and 1% Asian and Pacific Islander. Many (44%) of the children were currently in the custody of the state, 41% in the custody of at least one biological parent, 8% were in the custody of relatives, 5% were with an adoptive parent, and 2% lived with a foster parent. Most (64.9%) children were reported to have previously been in state custody. Families participating in this study were found to have been enrolled in wraparound for a mean of 8.76 months ($SD = 4.74$).

***Administration time.*** The mean reported WFI-4 administration time demonstrated surprising feasibility, with the adult forms taking an average of 19.6-20.6 minutes to administer, and the youth form averaging 10.1 minutes.

***Individual item scores.*** Mean item score for the Wraparound Facilitator form was found to be 1.61 on the 0-2 scale, with individual item scores found to range from 0.73-1.95. The mean item score for the Caregiver form was found to be 1.45 (range 0.53-1.92) and the mean item score for the Youth form was found to be 1.45 (range 0.47-1.92). Compared to the WFI-3 national sample, variability in the WFI-4 total scores has increased, with the mean standard deviation of all WFI-4 items found to be 0.62 for the Wraparound Facilitator form, 0.75 for the Caregiver form and 0.72 for the Youth form. Fewer items were found to have a score > 1.8, suggesting that the "ceiling effect" of the WFI-3 has been reduced through revision to the WFI-4.

***Internal consistency.*** Internal consistency as assessed via Cronbach's *alpha* was adequately high per most conventions, ranging from .73 for the Wraparound Facilitator form to .88 for the Youth form and .89 for the Caregiver form. As shown in Table 1, coefficients were also above .60 for most Phase scores. However, internal consistency was found to be low for most principle scores, likely a result of the small number of items for individual principles ($n$ = 4).

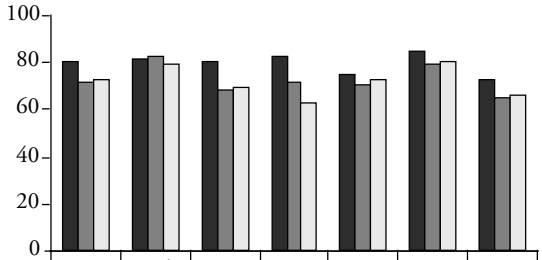
**Table 1**
**Internal Consistency Results for WFI-4 Total Scores and Phase Scores**

| | *Respondent* | | |
|---|---|---|---|
| | *WF* | *CG* | *Y* |
| All Items | | | |
| # of items | 40 | 40 | 32 |
| *Alpha* | .73 | .89 | .88 |
| Engagement Phase | | | |
| # of items | 6 | 6 | 6 |
| *Alpha* | .25 | .62 | .69 |
| Planning Phase | | | |
| # of items | 11 | 11 | 8 |
| *Alpha* | .56 | .68 | .75 |
| Implementation Phase | | | |
| # of items | 15 | 15 | 13 |
| *Alpha* | .59 | .78 | .76 |
| Transition Phase | | | |
| # of items | 8 | 8 | 6 |
| *Alpha* | .57 | .73 | .62 |

***Total scores and differences across sites.*** Comparison across participating sites using one-way analysis of variance showed significant between-site differences for Caregiver and Youth forms, but not the Wraparound Facilitator form. In keeping with our hypothesis, total scores were higher for two sites selected a priori for employing intensive quality assurance procedures such as specialized wraparound training and intensive coaching of facilitators. However, again, this effect was found for the Caregiver and Youth forms, but not for the Wraparound Facilitator form.

***Wraparound implementation profiles across sites.*** Overall interpretation of implementation profiles indicate that communities and programs find challenges adhering to certain components of the proposed wraparound process model. Some of these include: affording families choices in assembling wraparound teams; achieving a mix of formal and informal supports; engaging youths in community activities and activities they like and do well; systematically tracking progress on measurable outcomes and toward goals; ensuring that wraparound will be implemented until the family is ready for formal transition; ensuring that friends, advocates, and natural supports participate on teams and in the wraparound process; and planning purposefully for transition out of wraparound. These findings largely replicate results of previous studies.

**Table 1**
**WFI-4 Total and Phase Scores by Respondent for all Study Sites and WFI-4 Total Scores for Sites with and without Intensive Quality Assurance**




| | Total | With QA | No QA | Eng | Plan | Impl | Trans |
|---|---|---|---|---|---|---|---|
| ■ Wrap Facilitator | 80.42 | 81.3 | 80.2 | 82.61 | 74.9 | 84.66 | 72.48 |
| ■ Caregiver | 71.93 | 82.3 | 67.8 | 71.32 | 70.69 | 78.67 | 65.00 |
| □ Youth | 72.1 | 78.6 | 69.5 | 62.94 | 72.77 | 79.86 | 65.94 |

## Discussion

The results of this study suggest that administration of the WFI-4 continues to be feasible and that the psychometrics of the new version are improved somewhat over previous versions. In addition, the measure seems to be sensitive to between-site differences, at least for the Caregiver and Youth forms. This may indicate that the measure's utility in research studies will primarily be driven by the responses of these two informants. Pilot testing in collaborating communities will continue, including interviews with program evaluators and directors about WFI-4 feasibility and usefulness. Tests of test-retest and inter-rater reliability are also underway.

The reliability and validity of the WFI-4 will be improved through the refinement of training materials, including audio-taped sample interviews to use in training and train interviewers to criteria of competence. Ultimately, the validity of the WFI-4 will be tested through its ability to discriminate across conditions in several controlled studies of wraparound now underway across North America, and through its ability to point to the components of wraparound implementation that are more critical to achieving child and family outcomes.

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# *Utilizing the Participant Rating Form to Assess Child and Family Team Functioning and Enhance Wraparound Fidelity*

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## Introduction

Wraparound, a process for planning and providing services to children with serious emotional disturbances (SED), has been viewed as a promising practice (Burns & Goldman, 1999; U.S. Public Health Service, 2001) with potential for improving service delivery. Growing evidence suggests that children and families served through wraparound have better outcomes than those served through more traditional processes (Peterson & Rast, 2005; Rast, O'Day & Rider, 2005).

Although wraparound implementation varies tremendously (Walker & Schutte, 2005), the National Wraparound Initiative has taken steps to delineate a clearer practice model, including minimum standards for practice and core process elements (Burns, Osher, Walker, & Rast, 2005; Walker & Bruns, 2006). This has led to the advancement of efforts to assess wraparound processes, essential for better understanding of how, why, and under what circumstances wraparound is beneficial, and critical for providing regular feedback for quality improvement.

Perhaps the most commonly used method for assessing wraparound process is the Wraparound Fidelity Index (WFI; Suter, Bruns & Burchard, 2003), which assesses 11 different aspects of wraparound from the perspectives of resource facilitators (case managers), parents/caregivers, and youth. This measure is typically administered within a month after wraparound begins and at six-month intervals. In a national normative study, Bruns, Suter, Burchard, Force & Leverentz-Brady (2004) found that providers tend to struggle with the following wraparound elements:

- incorporating important members on the team
- engaging youth in community life and relationships
- using family strengths in planning
- using natural supports
- availability of flexible funds
- assessing outcomes

Although the WFI provides relevant information, respondents report on services and supports received over the past 30 days. Although 30 days is a relatively brief time period, memory of specific behaviors/instances of the constructs assessed may deteriorate over that time.

A different approach has been to assess processes as they take place using, for example, the Wraparound Observation Form (WOF; Epstein et al., 1998; 2003) and its variants (e.g., Davis, Dollard, & Vergon, 2005), which rely on "real time" observations of child and family (wraparound) team meetings by trained observers. While external raters can provide detailed information, such observation requires extensive training and is also time intensive and therefore quite costly to implement. A more economical method has been the use of brief survey measures that ask team members to assess the functioning of team meetings immediately after it meets. The Participant Rating Form (PRF) is one such measure, with five separate, overlapping forms (parent, youth, facilitator, service provider, and informal support), that include 21 to 28 items and take 5-7 minutes to complete. Included are items assessing team *Access*, *Participants*, *Process*, and *Accomplishments*, which primarily focus on the participants' perceptions of team functioning and practices assessed via their reports of what took place at the meeting (e.g., the parent felt heard; participants know what they are to do) as opposed to readily observable characteristics of the meeting (e.g., the presence of a written agenda).

The PRF has been found to provide information that is consistent with the ratings of observers at the same meetings (Cook, Kilmer, DeRusso, Vishnevsky, & Meyers, 2006), and with findings from other studies that have assessed wraparound fidelity (Davis & Dollard, 2004; Epstein et al., 2003; Suter et al., 2003; Walker, Koroloff, & Schutte, 2003). Because of its simplicity and ease of use, the PRF can help (a) provide prompt feedback to child and family teams (CFTs) on how they are functioning relative to the team's prior functioning and to other teams in the same system (Cook et al., 2006), and (b) identify "actionable" steps for improving their ability to meet the needs of children and families.

This paper describes the steps taken in one system of care site to:

1. collect regular data regarding team functioning,
2. address challenges in the data collection process,
3. provide feedback to teams,
4. help case managers and teams use data to improve performance, and
5. identify changes in team functioning as a result of feedback.

## Method

The PRF was developed through an iterative, rational process, involving parents, line workers, administrators, and university personnel in its development. In the local, divested mental health service system, a combination of private agencies and a county-run organization provide case managers to serve families in the SOC and function as facilitators of wraparound processes. Each case management organization was asked to insure that the PRF data were collected from team members at each team meeting.

PRF data were collected from 40% to 60% of the team meetings each month. While regular feedback was provided to the local community collaborative (governing body) for the SOC about fidelity of implementation—and data were used to improve community training efforts and team functioning—the relatively low data collection rates resulted in the evaluation team taking a fairly conservative approach; that is, waiting several months for sufficient data to be gathered before it was viewed as providing a reliable and valid picture of wraparound fidelity within the local system.

To both address low compliance rates (despite regular reminders, a staff person assigned to regularly check with case managers about team meetings scheduled, etc.) and to help those teams/case managers who had been relatively more compliant with data collection, the evaluation team began providing individual team PRF findings to CFTs for whom sufficient data (i.e., three consecutive meetings of data) were available. Using 19 core items, graphs of the teams' ratings at its last meeting relative to ratings at the team's prior two meetings and relative to other teams in the same system (see Figures 1 and 2) were provided to those case managers at monthly cross-agency group supervision meetings, including copies of the graphs for all team members. The evaluation team offered case managers help in interpreting the graphs and using them with the team to help the team examine and improve its functioning. In monthly supervision meetings, case managers were provided opportunities to role play their sharing of the data with the teams, and to identify strengths and areas needing attention by the team. Handouts were provided to help teams interpret and utilize the data.

Challenges in implementation have included lower than desired levels of data collection, slow submission of the data to the evaluation team, the substantial time required to enter and report the data, and lack of utilization of the data by teams. Helpful responses to these challenges include monthly feedback to case management agencies regarding data collection by specific case managers, training for staff and parents regarding use of the data, and simplified data entry and increased automation of the data reporting. Supervisors for the case management agencies requested that, instead of a monthly report of case manager compliance, the evaluation team provide supervisors with mid-month reports, allowing them the opportunity to follow up with their staff and increase compliance. This has resulted in increased follow through by case managers.

**Figure 1**
**Sample Graph of Individual Team Meeting Ratings**
**Versus Ratings from Prior Three Team Meetings**

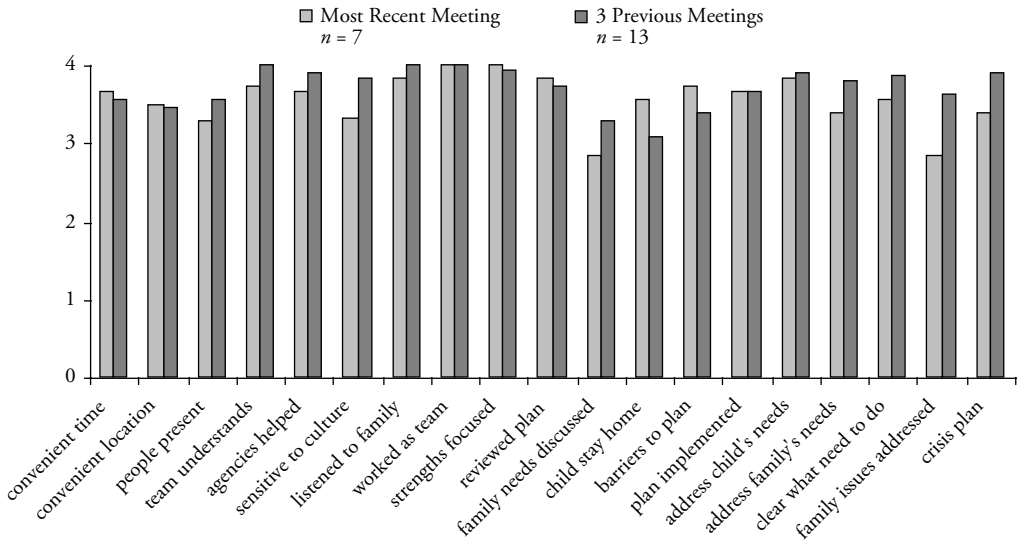
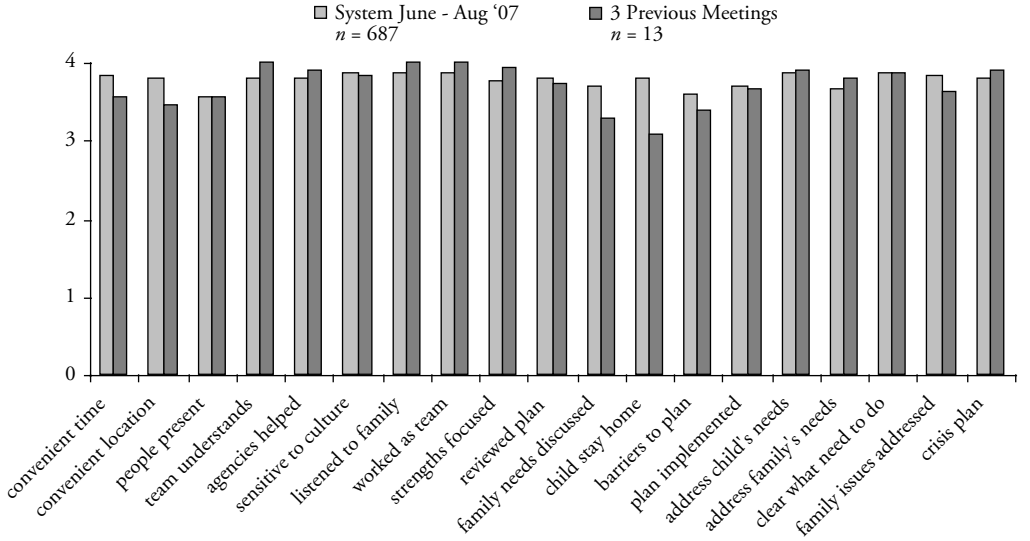



**Figure 2**
**Sample Graph of Past 3 Team Meeting Ratings**
**Versus Average Ratings from All Team Meetings in the System**



## Results and Discussion

Although the PRF provides a relatively simple way to assess wraparound fidelity at the CFT meeting level, multiple steps are needed to move from measure development/adoption to actual use of the data derived from them to effect changes in practice. Concerns about data reliability/validity issues versus the need for prompt feedback for teams need to be balanced, because better and more timely information can help stimulate more interest in and compliance with data collection. Similarly, without training, practice, and supervision, case managers have been reluctant to provide data to teams; however, when data have been provided, team functioning has improved in small, though notable, ways. Promising signs of progress in using the data include requests for data from team members, increased participation and interest by agency supervisors in training efforts, and the adoption of a shorter measure, containing a subset of the PRF items for two agencies for use with all clients, not just those within the SOC. This will allow a direct comparison of SOC teams with other teams in the system.

Next steps in the use of the PRF include a comparison of the ratings by team members with observer ratings, the use of PRF team ratings to predict child and family outcomes as assessed through the national evaluation, and an examination of PRF scores as a function of the stability of team attendance and membership. Ultimately, it is hoped that ongoing, data-driven feedback about team functioning can be provided such that all team members assume greater understanding of what teams should be doing and greater responsibility for teams' functioning. The PRF can help provide that feedback, and help enhance wraparound fidelity, which should improve system functioning in serving children and families.

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# *Results from a Center for Mental Health Services (CMHS) Demonstration of Integrated Wraparound and Multisystemic Therapy*

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## Introduction

Wraparound and Multisystemic Therapy (MST) are two contemporary, community-based interventions for children and adolescents with serious emotional disorders (SED). Both have seen widespread dissemination into community mental health settings around the United States over the last decade. MST is heavily based in both theory and research, and favorable outcomes have been reported from controlled evaluations involving juvenile offenders, youthful sex offenders, youth in psychiatric inpatient settings, and youth in child welfare (see Burns, Schoenwald, Burchard, Faw & Santos, 2000, for review). Wraparound has spread quickly as a promising intervention, but standards have been slow to develop, and controlled research has lagged as a result of this. Wraparound has been subjected to fewer controlled trials than MST, but has recently shown promise for youth with juvenile justice involvement and youth with emotional disturbances (Bickman, Smith, Lambert & Andrade, 2003; Bruns, Suter, Force & Burchard, 2005; Carney & Buttell, 2003; Pullman et al., 2006).

Both wraparound and MST target the child's ecology and aim to keep the child in his or her home community. While MST is a relatively brief (3-5 month) clinical intervention, wraparound is a process for planning and coordinating services in the child's community, and is premised upon an unconditional commitment to the child and family. As such, wraparound is typically a more long-term intervention. Similarities and differences between the two models are discussed at length by Burns et al. (2000). Based on their review, Burns and colleagues concluded that the two models are compatible in complex, multi-level service systems. The current study is a follow-up to that paper, focusing on data that were subsequently collected from a Center for Mental Health Services (CMHS) system of care site where both wraparound and MST were implemented simultaneously. Although not a controlled trial, the study is an attempt to measure the effects of wraparound and MST in a practical, real-world setting.

## Method

The study included children and adolescents who were enrolled in the National Evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program (Holden, Friedman, & Santiago, 2001). These youths participated in a CMHS system of care site from 1999 to 2003, and completed the longitudinal portion of the National Evaluation. The sample consisted of 320 children and adolescents ranging from 6 to 17 years old at the time of enrollment into the study. Their average age was 12.1 years at enrollment, and 73% were male. A majority of families (57%) reported gross household income below $25,000. More than two-thirds (71%) of families were Medicaid eligible.

Out of the entire sample ($N$ = 320), 213 participants received wraparound (wrap) only, 54 received MST only, and 53 received both treatments. Outcomes were assessed for the three groups at 6, 12, and 18 months past enrollment. Clinical outcomes were assessed using the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983), and functional outcomes were assessed using the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1996).

## Results

Initial analyses showed that all three treatment groups improved over time, both clinically and functionally. Paired $t$-tests indicated the change from baseline to 18 months was significant at the $p < .001$ level for all groups on both the CBCL and the CAFAS. To compare outcomes among groups, linear mixed models were subsequently run with random coefficients and random slopes using maximum likelihood

estimation with an unstructured covariance structure. Differences between treatment groups were examined over time on the CBCL and the CAFAS, controlling for baseline severity, gender, age, race, family income, and number of different placements at each six month follow-up. Tables 1 and 2 show results from the CBCL and CAFAS models. In each model, the wraparound-only group served as the comparison at each timepoint. Thus, the results reflect differences among groups in *change* in total scores from the previous timepoint.

Results from the CBCL model are shown in Table 1. The rate of decline across the 18-month study period was significantly greater for the MST-only group compared to the wrap-only group. There was no significant difference in change over time between the wrap+MST group and the wrap-only group. Family income negatively predicted CBCL scores. This effect was net of group membership, suggesting that family income impacted change in clinical symptoms over and above treatment group. An interaction between group and baseline CBCL score was included in the model to account for group differences in severity on outcome. As shown in Table 1, baseline severity in the MST-only group (MST-only X Baseline CBCL) did not predict outcome, suggesting that the finding of greater improvement in the MST group was not explained by any group differences in baseline clinical severity. In contrast, the baseline severity interaction was significantly predictive of outcome in the wrap+MST group, suggesting that this group should not be compared to the other two groups in terms of outcomes on the CBCL.

Results from the CAFAS model are shown in Table 2. There were no significant differences in CAFAS outcome scores between the wrap-only and the MST-only groups; however, the wrap+MST group score was significantly higher (worse) compared to the wrap-only group. The absence of a group X time effect suggests there was no difference in the rate of change over time, but that the difference was rather in overall mean score. Controlling for other variables, there were no differences in group outcomes by CAFAS baseline scores. As such, interaction terms for group by baseline CAFAS score are omitted from the model presented. While age, sex, race, and income did not independently predict CAFAS score, number of placements reported during the study was positively associated with CAFAS score at follow-up.

**Table 1**
**CBCL: Mixed Regression Model Results**

| *Variable* | β | *SE* | *95% CI* |
|---|---|---|---|
| MST-only v. wrap-only | 7.1 | 9.1 | -10.8 – 24.9 |
| wrap+MST v. wrap-only | -22.2 | 11.9 | -45.6 – 1.1 |
| Wave | -1.9*** | 0.4 | -2.7 – -1.1 |
| MST-only X wave | -2.2* | 0.9 | -4.0 – -0.3 |
| wrap+MST X wave | -0.9 | 0.9 | -2.6 – 0.8 |
| Baseline CBCL | 0.7*** | 0.1 | 0.5 – 0.8 |
| MST-only X Baseline CBCL | -0.1 | 0.1 | -0.3 – 0.2 |
| wrap+MST X Baseline CBCL | 0.3* | 0.2 | 0.0 – 0.7 |
| Age | 0.0 | 0.1 | -0.3 – 0.3 |
| Gender | 1.1 | 1.0 | -0.8 – 3.0 |
| Minority status | 1.0 | 1.5 | -1.9 – 4.0 |
| Family income | -0.4* | 0.2 | -0.8 – -0.1 |
| # placements | -0.1 | 0.6 | -1.3 – 1.2 |

*$p < .05$; **$p < .01$; ***$p < .001$

**Table 2**
**CAFAS: Mixed Regression Model Results**

| *Variable* | β | *SE* | *95% CI* |
|---|---|---|---|
| MST-only v. wrap-only | -10.3 | 13.8 | -37.4 – 16.8 |
| Wrap+MST v. wrap-only | 33.3** | 12.6 | 8.5 – 58.1 |
| Wave | -1.0*** | 2.0 | -14.0 – -6.0 |
| MST-only X wave | 1.6 | 4.6 | -7.4 – 10.7 |
| Wrap+MST X wave | -5.9 | 4.2 | -14.2 – 2.4 |
| Baseline CAFAS | 0.4*** | 7.1 | 0.3 – -0.5 |
| Age | -1.3 | 0.7 | 2.5 – 0.0 |
| Gender | -0.5 | -0.1 | -9.3 – 8.3 |
| Minority status | 5.3 | 7.0 | -8.3 – 19.0 |
| Family income | -0.7 | 0.9 | -2.5 – 1.1 |
| # placements | 8.2** | 3.1 | 2.1 – 14.3 |
| MST-only v. wrap-only | -10.3 | 13.8 | -37.4 – 16.8 |
| Wrap+MST v. wrap-only | 33.3** | 12.6 | 8.5 – 58.1 |

*$p < .05$; **$p < .01$; ***$p < .001$

## Conclusions

Findings from the study suggest that youth in all groups improved over time on both clinical symptoms and more generalized functioning. However, youth receiving only MST demonstrated more improvement in clinical symptoms than did those who received only wraparound over the 18-month follow-up assessment. Given that the study took place at one site where community resources were effectively held constant across groups, the immediate implication of the findings is that MST was more effective than wraparound. An alternative explanation for the positive MST finding is that youth in the MST-only group were more likely to improve because they met baseline criteria that specifically fit with the intended target population for MST. Results from the mixed models gave no indication that baseline clinical or functional differences contributed significantly to the difference in outcomes for youth who received only MST versus youth who received only wraparound.

Youth who received both wraparound and MST demonstrated significantly higher severity at baseline than did youth in the other two groups. Therefore, we were not able to draw any conclusions about outcomes for this group compared to the other two groups.

Lower family income predicted worse clinical outcomes regardless of treatment group membership. Family income is an aspect of socioeconomic status that has been shown to place youth at risk for disruptive behavior disorders during adolescence (Herrenkohl, Hawkins, Chung, Hill, & Battin-Pearson, 2001). Prior studies including this variable have focused on poverty at the community level. The extent to which family income is indicative of neighborhood resources was not known in the current study. More research is needed to tease out the elements of socioeconomic status that may independently contribute to risk.

Number of out-of-home placements was highly predictive of functional change, with more placements predicting less positive change. Moving a child in and out of placements may be severely damaging to his or her functioning, perhaps due to a repeated need to readjust and a lowered sense of personal security resulting from instability. One study with foster children showed an increase in problem behaviors over time for children who experienced multiple placements (Newton, Litrownik, & Landsverk, 1999). Conversely, youth with more severe behavior problems may be more likely to experience unsuccessful placements and thus expose themselves to multiple placements over time. Some longitudinal research has shown that children with externalizing problems are at greater risk for multiple placements than are children without such problems (Nugent & Glisson, 1999).

One of the criteria for a treatment to be considered evidence based is achievement of outcomes that are equivalent to those reported from an already established evidence-based treatment, in a direct group-comparison study (Lonigan, Elbert, & Johnson, 1998). In the current study, the wrap-only group did not improve clinically at a rate equivalent to that of the MST-only group. Accepting that there were no selection biases that impacted outcomes for these two groups, this finding suggests that targeted, evidence-based treatment models may offer significant benefits for youth with SED, beyond what can be expected from intervention at the service level alone.

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