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BRIEF REPORT

The Children's Psychosocial Rehabilitation Treatment Adherence Measure: Development and Initial Validation

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Abstract This paper reports on two studies designed to develop and validate a treatment adherence measure for Children's Psychosocial Rehabilitation (CPSR)—a home- and community-based treatment for youth with serious emotional disturbance. In Study 1, we derived CPSR treatment adherence and differentiation criteria from a treatment manual and evaluated their content validity via structured feedback from practitioners. In study 2 we assessed the reliability and validity of the resultant CPSR Treatment Adherence Measure (CTAM) in a clinical sample of youth receiving CPSR ($n = 11$) or outpatient psychotherapy ($n = 20$). Results from Study 1 revealed strong agreement among practitioners regarding the validity of the proposed adherence criteria (ICC = .82). Results from Study 2 indicated the CTAM had good internal consistency (parent- and supervisor report α's = .86 & .91) and high inter-rater reliability ($r = .87$, $P = .001$) in this pilot sample. CTAM scores reliably distinguished between children receiving CPSR versus psychotherapy ($z = -3.16$, $P = .002$) and between CPSR interventionists with reputations for high- ($n = 4$) or low- ($n = 7$) adherence to the model ($z = -2.47$, $P = .014$). Findings indicate the CTAM is worthy of further development as a practice and research instrument.

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Issues of treatment fidelity—that is, the degree to which clinicians and families implement program models as intended (Bond et al. 2000)—are gaining increased attention in the present era of managed care and evidence-based practice. This trend is particularly prominent among community-based treatments for children and youth with serious emotional disturbance or SED (Bruns et al. 2005). Home- and community-based program models for children with SED have proliferated in recent years leading to increased public expenditures and concerns over the quality and cost of care. Some program models were widely disseminated prior to evaluation in randomized controlled trials. For these programs, fidelity assessment is a crucial component of evaluating program outcomes and refining treatment protocols. Other program models were disseminated after demonstrating efficacy in multiple randomized controlled trials (e.g. Henggeler et al. 1997). For these programs, fidelity monitoring improves the transfer of technology from the laboratory to the practice setting (Henggeler et al. 1999). Increased treatment fidelity and increased fidelity monitoring are both linked to improved outcomes in children's mental health services (Henggeler et al. 1997; Weisz et al. 1995). In this paper we describe two exploratory studies designed to develop and preliminarily validate a treatment adherence measure for Children's Psychosocial Rehabilitation (CPSR)—one of a new wave of home- and community-based treatments for youth with SED (e.g. Burns and Hoagwood 2002).

CPSR is a downward extension of psychiatric rehabilitation for adults with severe and persistent mental illness

(Anthony et al. 2002). Based on system-of-care principles (Stroul and Friedman 1986), CPSR spans the treatment gap between psychiatric hospitalization and clinic-based outpatient psychotherapy (Williams 2009a). CPSR seeks to improve the daily functioning of children with SED through skill-building and community reintegration interventions. In the context of a therapeutic relationship with the child and family CPSR specialists teach children skills for symptom management and improved daily functioning while working to modify the child's environment to support more adaptive behaviors. CPSR treatment plans are individualized and draw on a host of empirically-validated cognitive and behavioral treatment techniques which are implemented in naturalistic settings. Readers interested in further information on CPSR are referred to Williams (2009a) and to the CPSR treatment manual used for this study (Williams et al. 2009).

CPSR faces the challenges of treatment specification, empirical validation, and quality assurance confronted by many children's mental health services targeting youth with SED (Pinkard and Bickman 2007). CPSR programs exist in at least six states and public expenditures for the program topped $30 million in 2006 in the state of Idaho alone (Williams 2009b). Despite this, we could locate no published CPSR outcome studies employing a comparison group and no treatment fidelity assessments to evaluate the quality of CPSR implementation. A unique treatment fidelity measure was needed for CPSR because it differs from other forms of treatment for children with SED such as wraparound (Walker and Bruns 2006)—which focuses on the procurement and coordination of formal and informal supports—and Multisystemic Therapy (Henggeler et al. 1997)—a home-based model of family therapy. The present studies are one component of a larger program evaluation designed to fill these gaps in the CPSR knowledge base. Study 1 describes how we derived and validated CPSR treatment adherence and differentiation criteria. Study 2 describes how we translated the criteria into a measure and tested it in a clinical sample of youth receiving CPSR or outpatient psychotherapy.

Study 1

One of the most crucial but often overlooked procedures in constructing a treatment adherence measure is the development and validation of treatment adherence *criteria* (Mowbray et al. 2003). In this study, we derived CPSR treatment adherence and differentiation criteria from a treatment manual (Williams et al. 2009) and through structured feedback from CPSR supervisors and CPSR specialists (i.e. front-line bachelor's-level providers who work directly with the children and their families) at the site where the model was developed. The CPSR manual came from a site that exhibited positive outcomes in two recent uncontrolled studies—a pre-post outcome evaluation involving 218 youth (Williams 2009a) and a dose–effect study involving a separate sample of 103 youth (Williams 2009b). Following an outline suggested by Carroll and Rounsaville (2008), the manual presents CPSR's causal theory, theory of change, intervention model, *unique and essential*, *essential but not unique*, *recommended*, and *proscribed* elements, and case examples to guide interventionists in implementation (Williams et al. 2009). We felt this manual offered an appropriate starting place for developing treatment adherence and differentiation criteria because of its relatively high degree of specification and the presence of preliminary positive outcomes supporting the program. CPSR supervisors and specialists were incorporated into the process of developing and validating the proposed criteria through a modified-Delphi procedure similar to those used in other mental health services fidelity studies (e.g. McGrew et al. 1994, 2003; Walker and Bruns 2006) .

The research questions for Study 1 were: (a) what activities and behaviors are necessary for CPSR specialists and families to implement the CPSR intervention model as intended? and (b) do the proposed CPSR treatment adherence and differentiation criteria adequately reflect the essential and proscribed elements of the CPSR intervention model?

Method

Participants

Two groups of practitioners participated in Study 1. The first was a group of five CPSR supervisors at the study site who provided structured feedback to develop a list of preliminary CPSR treatment adherence and differentiation criteria. All CPSR supervisors at the study site were invited to participate and all agreed to do so. CPSR supervisors were practicing master's-level clinicians (e.g. Licensed Clinical Social Workers, Licensed Professional Counselors) who specialized in the treatment of children and their families, maintained full-time caseloads of clients, and who supervised bachelor's-level CPSR specialists at the clinic where the CPSR program was developed. On average, the supervisors had two-and-a-half years of experience supervising CPSR specialists and over 9 years experience working with youth with emotional and behavioral disorders and their families. Four of five of the supervisors were male with a mean age of 35 years. Most supervisors were of Caucasian ethnicity with one supervisor not reporting.

The second group of participants included 54 bachelor's-level CPSR specialists who were employed at the CPSR site and who were asked to evaluate the content validity of the proposed CPSR adherence criteria. A total

of 23 specialists provided informed consent to participate in the study by completing and returning the survey for a response rate of 43%. On average, respondents had just over 22 months of experience as a CPSR specialist; two-thirds had over a year's experience as a specialist, suggesting more experienced specialists were more likely to respond. The majority of respondents in this sample were female (57%) and of Caucasian ethnicity (83%) with an average age of approximately 27 years.

Procedure

Following approval from the Institutional Review Board at Boise State University we used a three-step process to develop and evaluate the proposed CPSR treatment adherence and differentiation criteria. In step one, the research team—which included the primary author of the treatment manual—used the CPSR manual (Williams et al. 2009) to develop a list of proposed treatment adherence and differentiation criteria. Adherence criteria were designed to measure the degree to which parents, children, and the CPSR specialist implemented the six components of the CPSR intervention model as intended. The six components of the CPSR intervention model include: relationship (building a positive working alliance with the child and family), orientation (socializing the child and family to the CPSR process, the worker's role, their roles), insight/awareness (providing the child and caregiver with knowledge they need to improve the child's functioning—for example, identifying triggers, antecedents, consequences, diagnosis-specific information), skill-building (teaching skills useful for managing symptoms or improving functioning), rehearsal & mastery (rehearsing skills to the point of mastery in target environments), and environmental modification (modifying the child's environment to support desired behaviors and discouraged negative behaviors). Sample adherence items included: "The PSR worker should help the client practice skills in 'real life' situations," "PSR should teach clients better ways of solving problems," "The PSR worker should ask the client to practice his or her new skills at home," Differentiation criteria were designed to assess whether specialists and children spent time engaged in non-adherent behaviors during sessions. These were based on the CPSR manual which restricts certain behaviors such as psychodynamic interpretations and engaging in recreational activities with no skill-building component. Sample differentiation criteria included: "The PSR worker should run errands and take care of personal business during PSR sessions," and "The child and his or her PSR worker should spend time just 'hanging out' or playing." At this step we intentionally over-sampled potential criteria as a means of obtaining a random sample of potential items for our measure. We did this by including several criteria intended to tap the same construct but worded in different ways. This process resulted in a list of 55 proposed CPSR treatment adherence and differentiation criteria which were included in a survey titled *Proposed CPSR Activities/Components* (PCAC).

In step two we administered the PCAC survey to CPSR supervisors at the study site and analyzed their ratings of the proposed criteria. The PCAC consisted of basic demographic questions, the list of 55 proposed adherence and differentiation criteria, and one open-ended question that asked supervisors to identify additional "essential CPSR activities" that were not listed in the survey. Following the example of other treatment adherence studies (e.g. Walker and Bruns 2006) we asked respondents to rate each of the proposed criteria as either "essential," "optional," or "inadvisable"—indicating the degree of compatibility between the proposed item and the CPSR intervention model. Respondents' answers were subsequently evaluated for the percent agreement among the supervisors (number of agreements divided by the number of agreements plus the number of disagreements $\times$ 100; Epstein et al. 1998) and whether the supervisors' ratings conformed to our theoretical expectations (i.e. whether adherence criteria were rated "essential" and differentiation criteria rated "inadvisable"). Based on the supervisors' feedback we revised the PCAC into the PCAC-R which we administered to the CPSR specialists.

In step three we asked CPSR specialists to complete the PCAC-R and analyzed their ratings in an effort to content validate the proposed criteria. The PCAC-R asked specialists to provide basic demographic data, to rate the importance of 35 proposed CPSR treatment adherence and differentiation criteria, and to respond to an open-ended question that sought additional "ingredients of children's PSR that you feel are important for its success." Based on feedback from the PCAC the response choices for the PCAC-R were expanded to allow greater heterogeneity in respondents' answers. The PCAC-R asked respondents to rate how important each proposed criteria was for implementing CPSR on a 5-point Likert-scale anchored as: *not recommended* (1), *not important* (2), *neutral* (3), *important* (4), or *very important* (5). Specialists' responses to the PCAC-R were analyzed for inter-rater agreement using the Intraclass Correlation Coefficient (ICC). We also analyzed descriptive statistics of each criterion to assess whether specialists' ratings conformed to our theoretical expectations.

Results

Ratings of CPSR Supervisors

Inter-rater agreement among the five CPSR supervisors was unanimous or near-unanimous (only one dissenter) for

41 of 55 proposed CPSR treatment adherence criteria on the PCAC (75% of the items). Of the criteria with unanimous or near-unanimous inter-rater agreement, 93% were rated as either *essential* or *inadvisable* by the majority of raters, reflecting a clear statement as to the degree of fit between the proposed criteria and the CPSR intervention model. Raters agreed unanimously on the inadvisability of 5 of 7 differentiation criteria; no differentiation criteria were rated as *essential* by any rater. These findings supported the proposed CPSR treatment adherence and differentiation criteria proposed by the research team.

The CPSR supervisors suggested two additional criteria to differentiate CPSR from psychotherapy or non-treatment activities. One criteria assessed whether CPSR specialists had attempted to explain the child's unconscious needs and wishes to the caregiver(s); the other criteria assessed whether the caregiver felt like CPSR was "just babysitting" rather than a therapeutic service. Both of these were added to the PCAC-R as potential treatment differentiation criteria.

Ratings by CPSR supervisors guided our decisions about which criteria to retain and which to drop for the PCAC-R. Criteria designed to assess the parent-specialist or child-specialist relationship were dropped because of their poor ratings by supervisors and because they tap an essential but not unique feature of CPSR. Similarly, both items designed to assess the degree to which the *child* implemented skills outside of CPSR sessions were rated as *optional* by a large percentage of supervisors and were therefore deleted. Specific treatment targets such as suggesting the parent implement a contingency behavior plan also received mixed ratings and were dropped. Most likely this reflected the individualized nature of CPSR in which certain activities are common but may not be essential or present on every child's treatment plan. Other criteria were dropped because of redundancy and some criteria were reworded. Of the 41 criteria with unanimous or near-unanimous agreement on the PCAC, 33 were retained for the PCAC-R. The PCAC-R also included two new differentiation criteria recommended by CPSR supervisors.

Ratings of CPSR Specialists

Ratings from the CPSR specialists at the study site indicated strong agreement regarding the acceptability of the 35 proposed CPSR treatment adherence and differentiation criteria on the PCAC-R. The Intraclass Correlation Coefficient (ICC) using a two-way random effects model for the 23 raters was .82, $F(31.0, 682) = 102.25$, $P < .001$, indicating strong agreement among the specialists. Assessment of the item-level means indicated a high level of agreement among CPSR specialists that 24 of the 26 adherence criteria were "important" for implementing CPSR as intended; conversely, all nine items on the differentiation subscale had means in the "not important" ($n = 4$) or "not recommended" ($n = 5$) range. Overall, these ratings from the specialists supported the content validity of the proposed CPSR treatment adherence and differentiation criteria.

Study 2

In study 2 we sought to (a) translate the CPSR treatment adherence and differentiation criteria into a treatment adherence measure, and (b) preliminarily assess the reliability and validity of the measure in a clinical sample of youth receiving CPSR or outpatient psychotherapy. Several priorities informed the nature and format of our treatment adherence measure. First, we wanted a clinically-feasible and cost-effective measure of the CPSR treatment process. With third-party payers increasingly demanding evidence of quality care, yet unlikely to pay for data collection, providers need low-cost tools to demonstrate their competent practice (Manderscheid 1998). This decision precluded observation of CPSR sessions or video- or audio-taping (Pinkard and Bickman 2007). Second, we wanted to obtain molar-level data about the degree to which CPSR providers and children's families adhered to the CPSR intervention model during staff-client interactions and outside of CPSR sessions. In their seminal paper on the measurement of treatment fidelity in PSR programs, Bond et al. (2000) asserted that molar-level data describing the treatment process are adequate for identifying major protocol violations in PSR services—a claim borne out by empirical studies (Schoenwald et al. 2000). Third, we wanted to minimize social desirability biases to the largest extent possible. Accordingly, we did not rely on CPSR specialists' progress notes or other program documentation to assess adherence. As is common in many managed-care environments, CPSR sites typically place a heavy emphasis on appropriate documentation of services, making progress notes poor candidates for revealing variations in the treatment process. Expert coding of progress notes would likely produce minimal between-interventionist variation and may inadvertently measure constructs other than treatment adherence—for example, interventionists' ability to "write to expectations."

In light of these priorities we chose to elicit parent- and supervisor-reports of the family's and CPSR specialist's level of adherence to the CPSR intervention model. Work by Henggeler et al. (1997) demonstrated that parents can reliably report on the treatment process in community-based services for youth with SED. CPSR supervisors were tapped because they are program experts who are intimately familiar with the week-to-week course of clients' treatment and specialists' use of the CPSR intervention

model. The Oregon Social Learning Center's Treatment Foster Care program successfully implemented a similar approach in which they relied on case managers to assess the treatment adherence of treatment foster parents (Bruns et al. 2005).

Our research question for Study 2 was: is the *Children's Psychosocial Rehabilitation Treatment Adherence Measure* (CTAM) a valid and reliable measure of workers' and families' adherence to the CPSR intervention model?

Method

Participants

Study 2 employed a purposive sample of 42 consecutive clinic-referred youth who enrolled in CPSR or outpatient psychotherapy at the study site from February 2009 through May 2009 and whose parents provided written informed consent to participate in the study. Youth who were evaluated and referred out were not recruited to participate; however, no other restrictions were placed on the sample. Of the youth who participated, complete parent-report CTAM data was available for 31 children—20 in the psychotherapy group and 11 in the CPSR group. Supervisor-report CTAM data was available for 13 children who received CPSR. Children in the study were primarily male ($n = 26$; 62%) and of Caucasian ethnicity ($n = 29$; 69%) with a mean age of 10.64 (SD = 3.79) years. Parents, children, and CPSR supervisors were volunteers and were not compensated for their participation in the study.

Measures

Based on the CPSR treatment adherence and differentiation criteria generated in Study 1, we developed the *Children's Psychosocial Rehabilitation Treatment Adherence Measure* (*CTAM*). The CTAM is designed to provide a clinically-informative and cost-effective snapshot of the degree to which CPSR specialists and families of youth with SED implemented the CPSR intervention model as intended. The elements of CPSR assessed by the CTAM include: orientation to treatment, insight/awareness, skill-building, rehearsal & mastery, and environmental modification (see "Study 1" for definitions of the elements). The CTAM is a 35-item, paper-and-pencil survey completed by parents of youth who receive CPSR services and by supervisors of CPSR specialists. Parent- and supervisor-report forms ask identical questions with minor variations in wording to account for the relationship of the respondent to the treatment process (e.g. "My child…" versus "The PSR worker…"). The behaviorally-specific items on the CTAM are designed to assess adherent (e.g. "The PSR worker taught my child skills for dealing with emotions") and non-adherent (e.g. "My child watched movies with his/her PSR worker") behaviors spanning the month prior to administration. Respondents are asked to rate the degree to which they agree or disagree with the statements on a 5-point Likert scale. Participants' item responses are summed (differentiation items are reverse scored) for a total CPSR treatment adherence score which can range from 35 to 175 with higher scores indicating greater adherence. The CTAM takes approximately 10 min to complete.

In order to use the CTAM with youth receiving outpatient psychotherapy we modified the parent-report items to reflect the fact that services were delivered by a "counselor" rather than a "PSR worker." This was the only change to the CTAM administered to comparison youth.

Procedures

Three months after children initiated treatment at the clinic, research assistants contacted their parents and recruited them to participate in the study; children were enrolled if their parents provided written informed consent. Parents of children receiving CPSR or comparison services were asked to complete the CTAM as part of a battery of outcome measures at a 3-month post-intake assessment. The outcome measures were part of a larger study designed to assess the effectiveness of the CPSR program as compared to treatment-as-usual. Once a youth was enrolled in the study, research staff contacted the supervisor of the child's CPSR specialist and asked him or her to complete the CTAM rating the CPSR services provided by his or her supervisee.

In October 2009, following completion of the entire sample's 3-month follow-up period, we used sociometric nominations (e.g. Coie et al. 1982) from CPSR supervisors to identify CPSR specialists who conducted CPSR with high or low treatment adherence. Supervisors ($n = 4$) were given a list of all CPSR specialists who provided services to children in the study ($n = 11$). Supervisors were asked to rank the top four and bottom four specialists based on the supervisors' knowledge of each specialist's "work and reputation for consistently implementing the CPSR model" with either high or low treatment adherence and quality. Positive and negative ranks were summed for each specialist and standardized producing an *interventionist adherence score*. We conducted a median split on this variable to form high- and low-adherence groups.

Analyses

Cognizant of the limitations posed by our small pilot sample, we addressed our research question through a number of analyses. First, we assessed the normality and

variability of the CTAM total scores. Second, we evaluated the reliability of the CTAM by examining (a) internal consistency (i.e. Cronbach's alpha), and (b) inter-rater reliability between parent- and supervisor-reports (CPSR condition only). Third, we used a Kruskal–Wallis test with follow-up Mann–Whitney U tests to assess the criterion-related validity of the CTAM. The Kruskal–Wallis test assessed for an overall difference in parent-report CTAM scores between children receiving psychotherapy, low-adherence CPSR, and high-adherence CPSR. The Mann–Whitney tests assessed (a) whether CTAM scores differed significantly between children receiving CPSR versus those receiving outpatient psychotherapy, and (b) whether CTAM scores differed significantly between children receiving high- versus low-adherence CPSR. This combination of known-groups analyses was designed to assess the CTAM's ability to distinguish between groups (i.e. CPSR vs. psychotherapy) and within groups (i.e. low- vs. high-adherence CPSR). Lastly, we evaluated whether supervisor-report CTAM scores differed significantly between children receiving high- versus low-adherence CPSR.

Results

Normality and Variability

The parent-report CTAM total scores were normally distributed and sufficiently variable for the sample as a whole and for the CPSR and psychotherapy groups independently. Visual inspection of the frequency distributions and Shapiro–Wilk tests indicated the parent-report CTAM scores met normality assumptions for the full sample and for the CPSR and psychotherapy groups separately, all P's $> .05$. The supervisor-report CTAM scores (CPSR only) reasonably approximated a normal distribution upon visual inspection and did not violate normality assumptions according to a Shapiro–Wilk test, $P = .327$.

Reliability

Cronbach's alpha was excellent on the parent-report CTAM for the full sample ($\alpha = .91$, $n = 31$), the CPSR-only group ($\alpha = .86$, $n = 11$), and the psychotherapy-only group ($\alpha = .91$, $n = 20$), indicating the CTAM had good internal consistency reliability in this pilot study. The supervisor-report CTAM also showed excellent internal consistency ($\alpha = .91$, $n = 13$).

Because of the small sample size, we used Spearman's rho to assess inter-rater reliability between parent- and supervisor-report CTAM scores for children in the CPSR condition. Four of the children had one or more missing responses on either the parent- or supervisor-report CTAM leaving a sample of $n = 10$ for this analysis. Parent- and supervisor-report CTAM scores were significantly correlated, $r = .87$, $P = .001$, indicating good inter-rater reliability in this pilot sample. Follow-up analyses using imputed data (mean of the nearest two points) for the four cases with missing responses revealed similar results, $r = .82$, $P < .001$.

Known-Groups Validity

A Kruskal–Wallis test indicated parent-report CTAM scores differed significantly between children receiving psychotherapy ($n = 20$), low-adherence CPSR ($n = 7$), and high-adherence CPSR ($n = 4$), $\chi^2(2) = 12.55$, $P = .002$. Follow-up Mann–Whitney U tests indicated children receiving CPSR ($n = 11$) scored significantly higher on the CTAM ($M = 135.09$, SD $= 11.18$) than children receiving outpatient psychotherapy ($n = 20$, $M = 116.45$, SD $= 16.58$), $z = -3.16$, $P = .002$. Similarly, children receiving CPSR from workers with reputations for high-adherence ($n = 4$) scored significantly higher ($M = 146.75$, SD $= 8.96$) than children receiving CPSR from specialists with reputations for low adherence ($n = 7$, $M = 128.43$, SD $= 5.09$), $z = -2.47$, $P = .014$. Children receiving CPSR from specialists with reputations for high adherence also scored significantly higher on the supervisor-report CTAM ($n = 7$, $M = 148.14$, SD $= 7.67$) when compared to children receiving CPSR from specialists with reputations for low adherence ($n = 6$, $M = 128.50$, SD $= 16.72$), $z = -2.15$, $P = .032$.

Discussion

With increasing pressure for accountability and outcomes in the behavioral healthcare sector, clinicians, administrators, and consumers need tools to assess the quality and implementation of services provided. In these exploratory studies we attempted to advance the measurement of treatment adherence in CPSR by developing and evaluating a CPSR treatment adherence measure. Feedback from CPSR practitioners in Study 1 supported the content validity of the proposed CPSR treatment adherence and differentiation criteria. The results suggested that despite being individualized, CPSR consists of a set of molar-level treatment processes that are essential to implementing CPSR with high adherence and quality. Conversely, certain activities indicate poor implementation. These criteria can be tapped via behavioral descriptions of practitioner and family behaviors.

Although tempered by the small sample size, findings from Study 2 provided preliminary evidence of the reliability and validity of the CTAM. Inter-rater reliability between parents and CPSR supervisors was high and

internal consistency was good for the parent- and supervisor-report versions of the measure. The CTAM's criterion validity was supported by two known-groups analyses. In the first, parent-report CTAM scores were significantly higher for children receiving CPSR versus those receiving outpatient psychotherapy. This finding suggests the CTAM measures adherence to CPSR and not more generic treatment features. In the second analysis, services provided by CPSR specialists with reputations for high adherence were rated significantly higher on the parent- and supervisor-report CTAM than services provided by specialists with reputations for low adherence. This finding supports the ability of the CTAM to parse out finer-grained distinctions of adherence to the model.

The studies presented here represent only a first step in the process of developing and validating the CTAM. An important strength of the present research is the use of a comparison group to validate the measure (Mowbray et al. 2003). The primary weakness of this research is the small sample in Study 2. Another limitation was our inability to validate the supervisor sociometric nominations. Replication studies using large samples are needed to further assess the psychometric characteristics of the CTAM. Larger samples will permit investigators to examine the factor structure of the CTAM and to assess the relationship between theorized key ingredients of CPSR and treatment outcome. Studies are need to assess whether CTAM scores predict clinical outcomes in CPSR and whether the CPSR adherence and differentiation criteria on the CTAM generalize to other CPSR program models and sites. Notably, the CTAM is not designed to measure treatment adherence for other SED-targeted interventions such as the system-of-care model, wraparound, or school-based services; accordingly, the CTAM should not be applied to these services without further research.

The CTAM holds considerable promise for advancing practice and research in CPSR if further studies corroborate its reliability and validity. The CTAM could be used to train CPSR specialists who are learning the model, to provide feedback to CPSR practitioners on their performance, and to assist program sites to identify areas that require further staff development or training. For example, if a program finds CTAM scores are consistently low on items reflecting parental involvement this may indicate the need to modify the program's client orientation procedures, increase staff training in this area, or otherwise modify program operations. Mental health authorities could use the CTAM to monitor the quality of CPSR services system-wide, identifying programs that perform exceptionally well or those in need of intervention to improve the quality of care (Bond et al. 2000). Treatment adherence measures like the CTAM are attractive as a means of increasing provider accountability because they document the quality and integrity of services but do not penalize providers for negative outcomes associated with case mix.

The CTAM should serve as only one component of a comprehensive multi-method assessment of treatment fidelity in CPSR. Reports from volunteer participants (i.e. parents, supervisors) are susceptible to erroneous recall, social desirability biases, and are known to be influenced by factors other than treatment adherence (Mowbray et al. 2003). Accordingly, assessment of treatment fidelity in CPSR should include qualitative appraisal of interventionists' competence and consideration of structural, organizational, and service delivery components of CPSR programs (McGrew et al. 1994). These aspects of treatment fidelity have been successfully evaluated in community-based interventions via chart reviews and ratings by visiting experts—for example in the National Implementing Evidence-based Practices Project (McHugo et al. 2007). With further validation, the CTAM may be one tool stakeholders use to improve services for children with SED.

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