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Establishing Treatment Fidelity in Evidence-Based Parent Training Programs for Externalizing Disorders in Children and Adolescents

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Abstract The current review evaluates the use of treatment fidelity strategies in evidence-based parent training programs for treating externalizing disorders. We used a broad framework for evaluating treatment fidelity developed by the National Institutes of Health Treatment Fidelity Workgroup that includes the aspects of treatment design, treatment delivery, training providers, and assessment of participant receipt of treatment and enactment of treatment skills. Sixty-five articles reporting outcome trials of evidence-based parent training programs met inclusion criteria and were coded for treatment fidelity strategies. The mean adherence to fidelity strategies was .73, which was higher than two previous review studies employing this framework in the health literature. Strategies related to treatment design showed the highest mean adherence (.83), whereas training of providers and enactment of treatment skills had the lowest (.58). In light of an increasing emphasis on effectiveness and dissemination trials, the broader treatment fidelity framework as applied in this review focuses needed attention on areas often overlooked in fidelity practices, such as training providers and generalization of treatment skills. We discuss the strengths and limitations of fidelity practices in parent training studies, implications of these findings, and areas for future research.

Keywords Treatment fidelity · Treatment integrity · Parent training · Child · Adolescent

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Introduction

The national agenda for funding of mental health research is undergoing a monumental shift, from efforts at promoting the development of efficacious psychosocial treatments over the past several decades, to current efforts aimed at promoting effectiveness trials and dissemination of evidence-based treatments (EBTs; Chorpita et al. 2011; Godley et al. 2011; National Institutes of Mental Health Strategic Plan 2008). Concurrent with this shift in funding policy is an increase in awareness of the crucial role treatment fidelity plays in psychotherapy research trials, particularly as treatments are increasingly implemented in real-world settings (Barber et al. 2007; Carroll et al. 2007; Helmond et al. 2012; Hogue et al. 2008; Schoenwald and Garland 2013). With greater emphasis placed on bridging the gap between research and practice, treatment outcome researchers are challenged to think more broadly about what constitutes fidelity to an established treatment model, particularly when a trial involves training providers or testing an adapted version of an EBT.

Within the area of child and adolescent psychosocial interventions, parent training has a robust efficacy literature spanning decades of research that provides the opportunity for a review of treatment fidelity strategies across time. Given that a majority of children treated in community mental health (CMH) settings are diagnosed with externalizing (i.e., disruptive behavior) disorders (Garland et al. 2001; Jensen and Weisz 2002), there is a great need for dissemination of effective treatments for behavior problems to be more widely available in community settings. In efforts to address this need, researchers are currently testing methods for increasing transportability and fidelity of efficacious models for the treatment for behavior disorders in community settings (Chorpita et al. 2005; Garland et al.

2008; McHugh et al. 2009). This is a crucial time for researchers to take stock of traditional practices used for evaluating and promoting the use of treatment fidelity strategies across both efficacy and effectiveness trials (Schoenwald and Garland 2013). To date, there is no review of treatment fidelity strategy use in trials of parent training programs. The purpose of the current review was to evaluate the use of treatment fidelity strategies in evidence-based parent training programs. This paper reviews existing definitions of treatment fidelity in the literature, methodologies used for measuring and promoting treatment fidelity, and the role that treatment fidelity has played in the parent training literature for externalizing disorders.

Treatment Fidelity and Outcome

Treatment fidelity has become widely accepted among psychosocial intervention researchers as an important methodological construct related to both internal and external validity of study outcomes (Moncher and Prinz 1991). Assessment of treatment fidelity is necessary to help researchers identify variables that may account for discrepancies in replication and to verify that the independent variable was manipulated as intended with sufficient differentiation between conditions. For example, in a trial of Multisystemic Therapy (MST) in a CMH setting with usual care providers, Henggeler et al. (1997) demonstrated the importance of assessing treatment fidelity in order to provide a more complete interpretation of treatment outcomes found across different settings and conditions. Although MST showed greater improvement over usual care, outcomes were less favorable than in prior MST trials that included more comprehensive therapist training and follow-up support (Henggeler et al. 1997). In the CMH application, a positive association was found between MST treatment adherence and child outcomes. Having a measure of treatment fidelity allowed researchers to differentiate whether successful or attenuated client outcomes were attributable to the efficacy treatment model, or to the characteristics of its application (Schoenwald et al. 2011).

An essential, yet understudied, theoretical element in the broader picture of treatment fidelity includes identifying "core" components, or active ingredients, of interventions. Core components relate to an operationalization of the theoretical underpinnings and the supporting activities of a treatment that are necessary to achieve outcomes (Blase and Fixsen 2013; Borrelli et al. 2005). At the minimum, studies should report on the theorized active ingredients of the intervention being tested. At best, these ingredients would be directly studied in relation to outcomes. Recently, there have been calls for evidence-based interventions to more explicitly include and test core components as part of treatment fidelity measurement (Blase and Fixsen 2013; Fixsen et al. 2013).

Despite the long-standing theoretical basis for the relationship between treatment fidelity and treatment outcome, the empirical nature of the relationship, i.e., direct, indirect, and nature of causality, still requires further study. Although a number of studies have found evidence for a direct relationship between adherence and outcomes (Feeley et al. 1999; Hogue et al. 2008; McHugo et al. 1999; Schoenwald et al. 2008), other studies have shown indirect effects (Huey et al. 2000). In general, studies testing the relationship between treatment fidelity and outcomes of EBTs have shown inconsistent findings, likely stemming from the variety of ways in which treatment fidelity has been defined and measured (McHugh et al. 2009) as well as dearth of studies measuring the relationship between outcome and fidelity (Schoenwald and Garland 2013).

A number of programs with parent training components have developed their own measures for therapist competence and adherence, and have found varying results between fidelity and outcome. Forgatch et al. (2006) developed a measure to assess therapist adherence and competent execution of Parent Management Training Oregon (PMTO), a parent training program for treating disruptive behavior disorders. High overall ratings on the fidelity measure predicted improvements in parenting practices. Similarly, a measure of group leader behavior was developed for use with the Incredible Years parent training program. Positive group leader behavior was linked to changes in positive parenting in observations and on self-reports (Eames et al. 2009). On the other hand, Hogue et al. (2008) did not find therapist competence to predict outcome or to moderate the adherence–outcome relationship in a study comparing cognitive behavioral therapy and multidimensional family therapy for adolescent behavior problems. These inconsistencies may be a function of the type of disorder being treated, the treatments being tested, or the heterogeneous tools and definitions used for assessing fidelity quantity and quality. Without a uniform measure of treatment fidelity, it is difficult to draw clear conclusions about the relationship between fidelity and outcome in the current literature.

Definitions of Treatment Fidelity in the Literature

Over the past several decades, there have been several advances in the definition, conceptualization, and measurement of treatment fidelity (Bellg et al. 2004; McHugh et al. 2009; Moncher and Prinz 1991; Perepletchikova and Kazdin 2005; Perepletchikova et al. 2007). With the advent of treatment manuals in the 1970 and 1980s came greater opportunity to use fidelity strategies such as adequate

adherence checks and supervision of treatment delivery to enhance treatment fidelity (Luborsky and DeRubeis 1984; Moncher and Prinz 1991). Since then, aspects beyond treatment delivery and adherence have been added to the conceptualization of treatment fidelity (Borrelli et al. 2005).

Early definitions of treatment fidelity focused on whether treatment was delivered as intended, also called *treatment integrity*, and whether treatment conditions sufficiently differed from each other, known as *treatment differentiation* (Kazdin 1986; Moncher and Prinz 1991). Since the introduction of the construct of treatment fidelity in the psychosocial treatment literature in the late 1980s and early 1990s, its definition has expanded as a variety of additional factors were theorized to play a part in the assessment and establishment of treatment fidelity (McHugh et al. 2009). For instance, Lichstein et al. (1994) extended the notion of treatment integrity beyond treatment delivery and therapist adherence by including the assessment of how therapists present treatment and how a client or participant uses treatment. Lichstein et al. referred to these constructs as *treatment receipt* and *treatment enactment*. Receipt refers to the participant's demonstration of having understood and received the prescribed treatment, whereas enactment describes the participant's illustrated ability to use the treatment in a generalized manner. Specifics about how these constructs can be assessed in psychosocial treatments will be provided in subsequent sections.

More recently, others have conducted studies using variations on these definitions, and some have presented alternative frameworks and constructs for defining and assessing treatment fidelity. In a review of treatment fidelity in trials of psychosocial treatments, Perepletchikova et al. (2007) defined treatment integrity as the extent to which an intervention was implemented as intended, which they described as encompassing three aspects: therapist treatment adherence, therapist competence, and treatment differentiation. The authors made a clear differentiation between therapist competence and adherence because a therapist could be adherent to a protocol while poorly delivering the treatment. Therapist competence is an especially important consideration in effectiveness studies. In efficacy studies, it is often not as necessary to consider therapist competence when the treatment providers, frequently doctoral students, are well trained by the treatment creator or highly competent research staff (Weisz et al. 2006). Methodology for training providers and assessing competence in treatment delivery becomes a higher priority when treatment agents are usual care providers in community settings.

As part of an alternative framework, Bellg et al. (2004) offered a comprehensive definition of treatment fidelity that builds on all the aspects of treatment fidelity discussed previously in this section. This broader conceptualization of treatment fidelity facilitates applications across efficacy and effectiveness research because of its inclusion of implementation elements beyond treatment design and delivery, such as training providers and generalization of treatment skills. Bellg and colleagues define treatment fidelity as a set of methodological strategies researchers use to monitor and enhance the reliability and validity of a behavioral or clinical intervention. Based on this definition, the current review employs the framework designed by Bellg and colleagues for assessing treatment fidelity and will be discussed in detail in a subsequent section. Other authors have also offered extensive recent reviews on the evolution of treatment fidelity definitions and practices in the literature (e.g., Bellg et al. 2004; Carroll et al. 2007; McHugh et al. 2009).

Other Reviews of Treatment Fidelity

Given the heterogeneity in the conceptualization of treatment fidelity, it is not surprising that methodologies for assessing treatment fidelity have also varied a great deal. Early efforts to measure and promote treatment fidelity within the psychosocial intervention literature were focused on elements related to treatment delivery, such as assessing for the use of treatment manuals, checking adherence to a protocol, and assessing whether treatment agents were supervised (Moncher and Prinz 1991). In their review of treatment fidelity in mental health treatment outcome studies published in the 1980s, Moncher and Prinz (1991) found the use of treatment manuals to be the most common strategy for promoting treatment fidelity, with <6 % of studies using all three strategies of providing treatment manuals, checking adherence, and providing supervision. However, there were significant increases over time for use of supervision and adherence measures, possibly reflecting a heightening of awareness across the decade regarding the importance of using treatment fidelity strategies in treatment outcome studies.

Perepletchikova et al. (2007) examined the quality of procedures used by the researchers to establish, assess, evaluate, and report treatment integrity in randomized-controlled psychotherapy efficacy trials published between 2000 and 2004 in six high-impact psychiatric and psychological journals. Their overall results indicated that only 3.5 % of studies sampled adequately addressed treatment fidelity, and a large proportion of studies failed to report any evidence of systematic implementation of integrity procedures. Strategies assessed in the current review fall into the "establishing integrity" category proposed by Perepletchikova and colleagues. This category

refers to the aspects of fidelity such as operational definitions of treatment, training provider, supervision, use of treatment manuals, and adherence strategies. Perepletchikova et al. (2007) found that 15.8 % of studies sampled used strategies defined by the authors as "adequate" for establishing treatment fidelity. In a recent review of adherence measurement methods, Schoenwald and Garland (2013) found similar trends in their expanded sample that included routine clinical care settings. Only 35 % of studies in their sample included information about psychometric properties of measurement methods.

There is clearly a great need for the standardization and improvement of measurement methods used for assessing treatment fidelity. Although considering the quality of treatment fidelity procedures is of high importance in this field of research, the current study is focused on summarizing which fidelity strategies have been used in the parent training literature as a means to better understand the current state of the literature, rather than assessing the quality of strategies implemented. In light of the low usage rates of fidelity strategies found in previous reviews, the goal of the current paper was to provide greater understanding about strategies that may promote increased usage and flexible inclusion of fidelity strategies in both efficacy and effectiveness implementations.

Development of the Intervention Fidelity Assessment Checklist

In an effort to provide a comprehensive tool for the uniform assessment of treatment fidelity, the Treatment Fidelity Workgroup of the National Institutes of Health Behavior Change Consortium (BCC) developed an Intervention Fidelity Assessment Checklist (IFAC), composed of 25 specific strategies for establishing, promoting, monitoring, and verifying treatment fidelity in behavior change studies (Bellg et al. 2004). The strategies are categorized into five sections: treatment design, training provider, delivery of treatment, receipt of treatment, and enactment of treatment skills. Checklist items are designed to promote the use of treatment fidelity strategies at the study design level and improve transparency in reporting methods in an effort to support reliable treatment delivery and increase validity of trial results. Members of the BCC workgroup have published clear and measurable guidelines for employing and evaluating each of the treatment fidelity strategies listed in their checklist in the context of behavior change studies (Bellg et al. 2004; Borrelli 2011; Resnick et al. 2005).

In a pilot test of the IFAC, the workgroup reviewed 342 articles from the health behavior change literature published between 1990 and 2000 (Borrelli et al. 2005). The studies included in the Borrelli et al. (2005) review targeted health behaviors in adults (e.g., smoking cessation, seat belt use, weight loss, nutrition, substance abuse, and safe sexual practices), but no mental health outcomes were included. The BCC workgroup provided useful guidelines for evaluating treatment fidelity in studies of health behavior change with adults; however, a comparable review of treatment fidelity strategies used in mental health outcome studies is needed to fill in this gap in the literature and assess the IFAC's transportability to a sample of psychosocial treatment studies.

Evidence-Based Parent Training Programs

Parent training is an efficacious mode of treatment for childhood and adolescent externalizing disorders and includes a number of intervention models targeting a wide range of ages, diagnoses, and settings (Eyberg et al. 2008; Pelham and Fabiano 2008). Although various efficacious parent training programs have been developed, evidence-based parent training programs for externalizing disorders share several common characteristics, including a strong behavioral basis and a focus on transfer of skills to parents as the primary change agents in children's behavior. Consistent with a behavioral treatment approach, many of the programs reviewed in the current sample deliver content and build parents' skills through modeling, role-playing, and feedback or coaching.

Chambless and Ollendick (2001) proposed a framework for grouping treatments as *well established*, *probably efficacious*, or *possibly efficacious* based on their level and type of empirical support. We limited the current sample to parent training programs that have met criteria for one of these classifications as cited in Eyberg et al. (2008) and Pelham and Fabiano (2008)'s reviews of EBTs, denoting that they have demonstrated some level of empirical support. By evaluating the use of treatment fidelity strategies in efficacy and effectiveness trials testing EBTs, we seek to garner information about what the best-designed studies are using for establishing treatment fidelity and how studies promote fidelity to already-established treatment models.

Current Review

The review presented here evaluates treatment fidelity strategies used in the intervention trials of evidence-based parent training programs for the treatment for externalizing disorders. Studies are examined using a broad framework that encompasses traditional issues of treatment integrity as well as other study aspects that highly influence fidelity to a model, including treatment delivery, training provider,

participant receipt of skills, and participant enactment of treatment skills (Bellg et al. 2004; Borrelli et al. 2005). The primary purpose of the current review is to establish a baseline estimate of usage of treatment fidelity strategies across parent training programs by evaluating strategies reported in the outcome trials of evidence-based parent training interventions. We present the proportion of parent training EBTs that incorporate different fidelity strategies as evaluated by the IFAC, descriptively compare the results to the previous studies using this similar framework (e.g., Borrelli et al. 2005; McArthur et al. 2012; Preyde and Burnham 2011), and classify studies that meet criteria as demonstrating "high treatment fidelity."

Method

Sampling of Studies

To identify articles suitable for the review, we searched PsycInfo and Web of Science databases, which includes the Social Sciences Citation Index, for articles reporting on outcome studies with a parent training component. These databases allow researchers to target social science and psychology journals in their searches and represent the vast majority of journals containing psychological literature. Parent training programs were restricted to EBTs deemed possibly or probably efficacious, or well established, for treating externalizing problems in children.

Evidence-based treatments (EBTs) for children with externalizing disorders were identified through prior reviews of the efficacy of psychosocial interventions for disruptive behavior disorders (DBDs; Eyberg et al. 2008) and attention-deficit/hyperactivity disorder (ADHD; Pelham and Fabiano 2008). Treatments that included a parent training component for DBDs, and were classified as *well established*, *probably efficacious*, or *possibly efficacious,* were as follows: Incredible Years (IY); Multidimensional Treatment Foster Care (MTFC); MST; Helping the Noncompliant Child; Parent–Child Interaction Therapy (PCIT); PMTO; Positive Parenting Program (Triple P); Problem-Solving Skills Training and Parent Management Training (PSST + PMT). Behavioral Parent Training (BPT) was classified as a *well-established* treatment for ADHD. Although MTFC and MST differ from the other identified parent training programs in their broader, ecological foci, and community-based approaches, these treatments were included because they both specify the inclusion of parenting interventions as main components of their treatments (Henggeler and Schaeffer 2010; Smith and Chamberlain 2010).

Search terms were created using combinations of the names of identified EBTs and key words, including *parent*, *treatment*, *outcome,* and *training*. The term "parent" is used generically here; articles using samples including foster parents, adoptive parents, grandparents, or stepparents as caregivers were acceptable. In addition, throughout this paper, the term "children" will be used to refer to children and adolescents. Forward searches of known treatment outcome studies were also used to identify subsequent studies. As a method to further ensure comprehensive sampling, references listed on treatment program Web sites and in parent training review and meta-analytic papers (i.e., Eyberg et al. 2008; Kaminski et al. 2008; Pelham and Fabiano 2008; Reyno and McGrath 2005) were referenced as way to check for studies that may have been missed in keyword searches. All articles published in English through December 2011 were included in the search, and no restrictions were placed on the date of publication. All books, dissertations, theses, journals printed in languages other than English, and articles with non-English titles and abstracts were deleted from the documents retrieved in the keyword searches.

Selection Criteria

Inclusion criteria required articles to (a) be an empirical treatment outcome study; (b) test an evidence-based treatment as identified using the process previously discussed; (c) employ a control or comparison group; (d) include at least one condition that received parent management training; (e) use professionals or supervised students to deliver treatment; (f) be published in a peer-reviewed journal; (g) describe the sample as having behavior problems; (h) target youth 21 years old or younger; and (i) report original data using a sample not already represented in an article included in the current sample; and (j) provide a child behavioral outcome measure. The treatment fidelity checklist used to evaluate articles requests information about treatment dose in the control group in order to consider differentiation between conditions. Sufficient differentiation between control or comparison group(s) and treatment conditions is related to ensuring equivalent doses across conditions and assessing whether dosage is stipulated when dosages are not equivalent (Bellg et al. 2004).

After adding relevant articles from treatment program Web sites and review articles, the first and second authors independently reviewed the journal articles generated by the search. Articles were excluded when both reviewers agreed that they were missing an inclusion criterion in one or more categories. Most often, studies were excluded because they were not an empirical study, did not include a control or comparison group, did not target a clinical population with clearly stated behavior problems, or did not include a behavioral outcome measure. Studies drawing samples from populations that could exhibit concurrent behavior problems, such as children with autism or other developmental disabilities, or adolescent sex offenders, were only included

Table 1 Percentage of articles reporting the use of treatment fidelity strategies ($N = 65$)

	%	*n*	Cohen's kappa	Percent agree
Treatment Design				94.8
Information about treatment dose in the intervention group				
1. Length of sessions	63	41	.94	96.9
2. Number of sessions	80	52	.90	96.9
3. Content of treatment	91	59	.90	98.5
4. Duration of contact over time	88	57	.66	92.3
Information about treatment dose in the comparison group				
5. Length of sessions	77	50	.67	87.7
6. Number of sessions	82	53	.55	86.2
7. Content of treatment[a]	100	65	−0.02	93.8
8. Duration of contact over time	86	56	.58	90.8
9. Mention of provider credentials	83	54	1.0	100.0
10. Mention of a theoretical model or clinical guidelines on which the intervention is based	92	60	.82	96.9
Training Providers				90.8
11. Description of how providers were trained	65	42	.90	95.4
12. Standardized provider training	57	37	.75	87.8
13. Measured provider skill acquisition post-training	48	31	.75	87.8
14. Described how provider skills maintained over time	83	54	.77	92.3
Treatment Delivery				94.8
15. Included method to ensure that the content of the intervention was being delivered as specified	79	51	.87	95.4
16. Included method to ensure that the dose of the intervention was being delivered as specified	77	50	.83	93.8
17. Included mechanism to assess whether the provider actually adhered to the intervention plan	80	52	.86	95.4
18. Assessed nonspecific treatment effects (i.e., treatment perceptions or perceptions of provider, such as warmth and credibility)	52	34	.82	90.8
19. Used treatment manual or standardized protocol	79	51	.96	98.5
Receipt of Treatment Skills				94.6
20. Assessed subject comprehension of the intervention during the intervention period	69	45	.93	96.9
21. Included a strategy to improve subject comprehension of the intervention above and beyond what is included in the intervention (i.e., using active therapist-delivered strategies)	66	43	.87	93.8
22. Assessed subject's ability to perform the intervention skills during the intervention period	65	42	.90	95.4
23. Included a strategy to improve subject performance of intervention skills during the intervention period	66	43	.83	92.3
Enactment of Treatment Skills				83.1
24. Assessed subject performance of the intervention skills assessed in settings in which the intervention might be applied	77	50	.60	86.2
25. Assessed strategy to improve subject performance of the intervention skills in settings in which the intervention might be applied	40	26	.58	80.0

[a] Item 7 not reported as part of subsequent results due to insufficiently low kappa coefficient

if the article clearly stated that children displayed comorbid externalizing disorders and if the study used a behavioral outcome measure to evaluate the treatment.

Measures

Treatment Fidelity

We used the (IFAC; Bellg et al. 2004; Borrelli et al. 2005) to evaluate the treatment fidelity strategies used by studies in our sample. The checklist has been used in multiple studies, with percent agreement between raters ranging from 68 to 100 % in a review of psychosocial treatments for children with cancer (Preyde and Burnham 2011), 77–97 % in a review of health behavior change studies (Borrelli et al. 2005), and 83 % agreement using the Cochrane Collaboration's tool for assessing the risk of bias (Higgins and Green 2009) in an evaluation of treatment studies for children with comorbid mental health problems (McArthur et al. 2012).

Each category, or section, of the IFAC focuses on a specific area related to treatment fidelity in intervention

Table 2 Articles included in study sample

Study	Intervention type	Type of control condition	Behavioral child outcome measures
1. Bagner et al. (2010)	PCIT	WL	CBCL; DPICS; ECBI
2. Barkley et al. (2001)	BPT for ADHD	Comp Tx	CBCL; PT-CTS; DSM-IV ADHD scale
3. Barkley et al. (2000)	BPT for ADHD	Plac/No Tx	CBCL; HSQ; TRF
4. Berkovits et al. (2010)	PCIT	Other	ECBI
5. Borduin et al. (1995)	MST	Comp Tx	Revised behavior problems checklist
6. Bullard et al. (2010)	PMTO	Plac/No Tx	CBCL; TRF
7. Chacko et al. (2009)	BPT for ADHD	WL	DBD rating scale
8. Drugli and Larsson (2006)	IY	WL	ECBI; CBCL; Kiddie Sads
9. Drugli et al. (2007)	IY	WL	ECBI; CBCL
10. Fabiano et al. (2009)	BPT for ADHD	Comp Tx	SNAP; DBD; IRS
11. Forehand et al. (2011)	HNC	WL	ECBI; PRB
12. Fossum et al. (2009)	IY	WL	DPICS; ECBI; preschool behavior questionnaire; TRF
13. Gallart and Matthey (2005)	Triple P	WL	ECBI
14. Gardner et al. (2006)	IY	WL	DPICS; ECBI
15. Glisson et al. (2010)	MST	TAU	CBCL
16. Henggeler et al. (1997)	MST	TAU	Revised problem behavior checklist
17. Henggeler et al. (1999)	MST	Comp Tx	CBCL
18. Herman et al. (2011)	IY	WL	CBCL
19. Hoath and Sanders (2002)	Triple P	WL	ECBI; problem setting and behavior checklist; child attention problems rating scale
20. Hutchings et al. (2007)	IY	WL	ECBI; DPICS; SDQ; Conners; Kendall self-control rating scale
21. Ireland et al. (2003)	Triple P	Comp Tx	ECBI
22. Kazdin and Whitley (2003)	PSST + PMT	Comp Tx	CBCL; PDR; IAB
23. Kazdin et al. (1987)	PSST + PMT	Other	CBCL; school behavior checklist
24. Kazdin et al. (1992)	PSST + PMT	Comp Tx	CBCL; IAB; CATS; TRF; SRD
25. Larsson et al. (2009)	IY	WL	CBCL; ECBI
26. Lau et al. (2011)	IY	WL	CBCL
27. Lavigne et al. (2008)	IY	Other	CBCL; ECBI
28. Leung et al. (2003)	Triple P	WL	SDQ; ECBI; PDR
29. Leung et al. (2009)	PCIT	Plac/No Tx	DPICS; ECBI
30. Matos et al. (2009)	PCIT	WL	ECBI; DBDRS; BASC
31. McCabe and Yeh (2009)	PCIT	TAU	CBCL; DPICS
32. Morawska and Sanders (2009)	Triple P	WL	ECBI; SDQ
33. MTACG (1999)	BPT for ADHD	TAU	SNAP parent, teacher
34. Nixon et al. (2003)	PCIT	WL	ECBI; DPICS; HSQ
35. Ogden and Halliday-Boykins (2004)	MST	TAU	CBCL; self-report delinquency scale
36. Ogden, and Hagen (2008)	PMTO	TAU	CBCL; PDR; TRF
37. Owens et al. (2005)	BPT for ADHD	WL	DPICS; DBDRS
38. Patterson et al. (1982)	PMTO	Comp Tx	PDR; total aversive behavior
39. Plant and Sanders (2007)	Triple P	WL	DPICS; ECBI; developmental behavior checklist; caregiving problem checklist
40. Reid et al. (2007)	IY	Plac/No Tx	CBCL; DPICS; ECBI; CII
41. Roberts et al. (2006)	Triple P	WL	DPICS; developmental behavior checklist
42. Rowland et al. (2005)	MST	TAU	CBCL; self-report delinquency scale
43. Sanders et al. (2000)	Triple P	WL	DPICS; ECBI; PDR
44. Scahill et al. (2006)	BPT for ADHD	TAU	CBCL; DBDRS
45. Scherer and Brondino (1994)	MST	TAU	SRDS; revised behavior problem checklist

Table 2 continued

Study	Intervention type	Type of control condition	Behavioral child outcome measures
46. Schuhmann et al. (1998)	PCIT	WL	DPICS; ECBI
47. Scott et al. (2010)	IY	Control	ECBI; parent account of child symptoms
48. Solomon et al. (2008)	PCIT	WL	ECBI; DPICS; BASC
49. Sonuga-Barke et al. (2001)	BPT for ADHD	WL	PACS ADHD and conduct scales; observation
50. Sonuga-Barke et al. (2004)	BPT for ADHD	WL	PACS; Werry–Weiss–Peters hyperactivity scale; behavior checklist
51. Springer and Reddy (2010)	BPT for ADHD	Comp Tx	CBCL; Conners; TRF
52. Stambaugh et al. (2007)	MST	Comp Tx	CBCL
53. Sundell et al. (2008)	MST	TAU	CBCL; self-report delinquency scale
54. Thomas and Zimmer-Gembeck (2011)	PCIT	WL	CBCL; DPICS; ECBI; SESBI; TRF
55. Thompson et al. (2009)	BPT for ADHD	Plac/No Tx	DPICS; WWP; PACS; BCL; observation
56. Turner et al. (2007)	Triple P	WL	ECBI; SDQ
57. van den Hoofdakker et al. (2007a)	BPT for ADHD	TAU	CBCL; Conners
58. van der Oord et al. (2007b)	BPT for ADHD	Comp Tx	DBDRS
59. Webster-Stratton and Hammond (1997)	IY	WL	CBCL; DPICS; ECBI; PDR; Behar Preschool Behavior Questionnaire
60. Webster-Stratton et al. (2011)	IY	WL	CBCL; DPICS; ECBI; TRF; Conners parent, teacher
61. Webster-Stratton et al. (2004)	IY	WL	DPICS; ECBI; PCSC rating scale
62. Wells and Egan (1988)	HNC	Comp Tx	DPICS
63. Werba et al. (2006)	PCIT	WL	ECBI; DPICS
64. Wiggins et al. (2009)	Triple P	WL	CBCL; SDQ
65. Williford and Shelton (2008)	IY	Control	BASC

Comp Tx comparison treatment, *Plac/No Tx* placebo/no treatment, *TAU* treatment as usual, *WL* wait-list, *BASC* behavior assessment system for children, *BCL* behavior checklist, *CATS* children's action tendency scale, *CBCL* child behavior checklist, *CII* coder impression inventory, *DBD* disruptive behavior disorders, *DBDRS* disruptive behavior disorders rating scale, *DPICS* dyadic parent–child interaction coding system, *ECBI* Eyberg child behavior inventory, *HSQ* home situations questionnaire, *IAB* interview for antisocial behavior, *IRS* impairment rating scale, *PACS* parent account of child symptoms, *PCSC* rating scale, perceived competence scale for young children, *PDR* parent daily report, *PRB* parent-recorded behavior, *PT-CTS* parent–teen conflict tactics scale, *SRDS* self-report delinquency scale, *SDQ* strength and difficulty scale, *SESBI* Sutter–Eyberg student behavior inventory, *SNAP* Swanson, Nolan, and pelham, *SRD* self-report delinquency checklist, *TRF* teacher report form, *WWP* Werry–Weiss–Peters hyperactivity scale

studies. Specific items can be found in Table 1. Within the treatment design section, the checklist assesses strategies to increase confidence that the independent variable(s) has(have) been appropriately manipulated, this increasing confidence that the intervention was delivered as intended and in differentiation to controls. More specifically, the treatment design section evaluates whether strategies are reported for measuring dosing in the intervention and control groups, whether provider credentials are reported for the intervention group, and whether theory or clinical guidelines are stated as a basis for the intervention (Borrelli 2011). The training providers section assesses for strategies to promote providers' knowledge, skills, and abilities to deliver the intervention as prescribed, thus increasing the likelihood that the intervention will be delivered as intended to the consumer. This section covers whether authors report details regarding the training of providers, standardization of training, measurement of provider skill acquisition, and monitoring of provider skill over time to prevent drift.

The treatment delivery section contains items most traditionally associated with the measurement of treatment integrity, such as differentiation, competency, and adherence (Moncher and Prinz 1991; Perepletchikova et al. 2007). Treatment delivery focuses on strategies to check that the intervention was delivered as intended to the consumer. Items are largely focused on the assessment of variables related to the internal validity, including strategies used to ensure treatment was delivered as intended, including whether a treatment manual or written protocol was used, and whether studies assessed for nonspecific treatment effects.

The receipt of treatment skills section shifts from provider and study design issues to the effects of a treatment on study participants. This section assesses strategies to

check that the intervention is having intended effects during treatment, this increasing confidence that the intervention is being delivered as intended. Items in the receipt of treatment skills section cover strategies to check that the intervention is having intended effects during treatment, this increasing confidence that the intervention was originally delivered as intended. Items assess whether mechanisms are in place to assess and improve participants' comprehension and performance of intervention skills during the treatment period.

The last section, enactment of treatment skills, includes strategies to check that the intervention has had intended effects over time or across settings, thus increasing confidence that the intervention was originally delivered as intended. Items consider whether mechanisms are reported for assessing and improving participants' performance of intervention skills outside the typical treatment setting or in follow-up situation, as a check for the generalization of treatment skills.

Study Level Descriptors

We also tracked other study level data, including type of intervention provided in the intervention condition (e.g., Triple P, PCIT, IY), type of control or comparison condition employed (i.e., placebo/no treatment, wait-list, treatment as usual, or other intervention condition), type of child behavioral outcome measure(s) used, and whether the study tested an adaptation of an existing treatment. These data can be found in Table 2 for each study included in the sample.

Coding Procedures

A detailed coding manual was created by the first author (available upon request) to facilitate the reliable use of the checklist in evaluating BPT programs. For each checklist item, the codebook provided definitions and specific strategies drawn from prior descriptive publications on the IFAC (Bellg et al. 2004; Borrelli 2011; Borrelli et al. 2005), as well as examples drawn from studies that were included in the current sample. Since the original codebook was designed for evaluating public health studies, the current codebook operationalized definitions to be adapted for use with psychosocial intervention studies. Articles were coded for the presence or absence of items on the checklist. In coding for checklist items, coders detailed evidence from the article of the applicable strategy used in the each study. Although prior studies applying the checklist (Borrelli et al. 2005; McArthur et al. 2012; Preyde and Burnham 2011) used a "not applicable" category, we determined that all items were applicable to the implementation of evidence-based BPT programs, and therefore the "not applicable" option for coding was not used in the current study.

Examination of the codebook used by Borrelli and colleagues revealed definitions and examples from public health studies that were highly consistent with our codebook (B. Borrelli, personal communication, March 10, 2012). One addition to our codebook was the introduction of a more detailed procedure for coding intervention provider credentials (Item 9; treatment design). Our coding system for this item was based on Weisz et al. (2006) framework to coding for information about therapists, which included coding for therapist vocation (i.e., practicing health care provider, graduate student, postdoctoral professional, or researcher), discipline (i.e., social worker, psychologist, psychiatrist, or primary health care provider), and degree (bachelor's, master's, doctoral degree, or pursuing master's or doctoral degree). If authors provided a descriptor about providers or therapists that fit into at least one of these categories, Item 9 (mention of provider credentials) was coded as present.

When multiple intervention conditions existed in a study ($n = 22$), we chose the group to code as the intervention condition by using the condition that tested the simplest form of parent training. For example, if a study tested a parent training program with a supplemental new module against an existing parent training protocol, we used the existing parent training condition. We based this decision on our interest in coding for fidelity strategies used for established evidence-based parent training programs; therefore, additional content modules or conditions in which researchers added on a treatment to parent training, such as child therapy or teacher training, were not considered for our coding purposes. Even in circumstances when additional treatments were part of a condition we were coding, we focused on the procedures and content reported only for the parent training piece of the intervention. In studies containing more than one comparison condition, we chose the control group for coding by using the condition that received the least amount of intervention. For instance, if a study compared parent training, child therapy, and wait-list control conditions, we used the wait-list condition as the control group.

Coders

The first author coded all of the included studies using the IFAC. The second and third authors shared the double coding of all included articles for reliability purposes. Coders discussed coding at weekly meetings to prevent drift and to establish consensus codes for discrepant items. Consensus codes were reached through discussion among coders using the codebook and reviewing language in the articles. Consensus codes were used for all IFAC results presented.

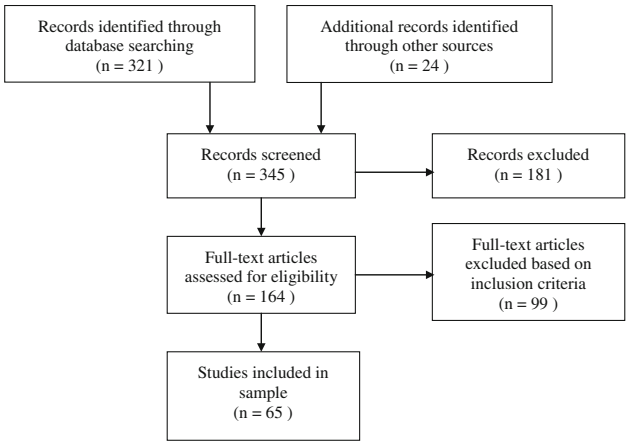

Fig. 1 Article sampling procedures

Reliability

Reliability was calculated for the IFAC coding on all articles included in the sample. Kappa coefficients and percent agreement for each item can be found in Table 1. Percent agreement was calculated by the ratio of the number of items coded the same by both coders, divided by the total number of items (i.e., 25) on the IFAC. Overall percent agreement ranged from 72 to 100 % ($M = 93$, SD = .08), with only two studies falling below 80 % agreement. Percent agreement for individual IFAC items ranged from 80 to 100 %.

Cohen's kappa was also calculated on individual checklist items to account for chance that can become inflated due to base rate biases in agreement rates. Kappa is considered a more conservative measure of agreement, and therefore, lower rates are acceptable than with percent agreement. According to Landis and Koch's (1977), standards for kappa strength of agreement are as follows: ≤0 = poor, .01–.20 = slight, .21–.40 = fair, .41–.60 = moderate, .61–.80 = substantial, and .81–1.0 = almost perfect. Kappa for individual checklist items was .55 or above for all items with the exception of one (Item 7). Due to the low kappa for Item 7, this item was removed from calculations of overall mean IFAC percent adherence and mean adherence for the treatment design section. Item 7 was endorsed as present in nearly all cases, which likely impacted its kappa coefficient, since kappa takes base rate of occurrence into account.

Results

Sample Descriptives

Sampling results are outlined in Fig. 1. The final sample of 65 articles and their descriptive statistics can be found in Table 2. Studies were classified into five categories based on the sample size: ≤50 participants ($n = 16$ articles), 51–99 participants ($n = 23$), 100–199 participants ($n = 21$), and ≥200 participants ($n = 5$). With regard to control or comparison conditions, most studies employed a wait-list control ($n = 32$), followed by a comparison condition ($n = 12$), treatment as usual or community services ($n = 11$), placebo or no treatment ($n = 5$), and other ($n = 5$), such as bibliotherapy. The majority of studies ($n = 43$) involved a trial of two conditions, i.e., intervention and control/comparison conditions; 14 studies involved three conditions; five studies tested four conditions; and the remaining three studies tested five or more conditions.

Mean Proportions on the IFAC

Table 1 displays results from the IFAC by the percentage of treatment fidelity strategies reported for individual items. Overall treatment fidelity adherence per item ranged from 40 to 92 %. The items with the lowest adherence were Item 13 (42 %) in the training providers section and Item 25 (40 %) in the enactment of treatment skills category. The highest items all fell in the treatment design category.

The overall mean proportion of treatment fidelity strategies reported was calculated by summing the item means on the IFAC and dividing by the total number of items (i.e., 25). The result of this calculation is the percentage of fidelity strategies used, which are also displayed in Table 1. Mean adherence to treatment fidelity strategies by IFAC category also can be found in Table 3. Across all articles in the sample, the overall mean proportion of adherence to treatment fidelity strategies was .73. The mean proportion for each category was calculated by summing mean adherence for all the items within a category and dividing by the number of items in the category. Mean proportions represent percent adherence in a category. Mean proportions ranged from .58 (enactment of treatment skills) to .83 (treatment design).

We compared the mean proportions of treatment fidelity adherence from our sample to those found in Borrelli et al. (2005) review of the adult health behavior change literature, which did not include mental health studies, and Preyde and Burnham's (2011) review of pediatric psychosocial oncology treatments (see Table 3). The higher overall mean in the current sample appears to be driven by higher mean proportions in the training providers, treatment delivery, and receipt of treatment skills categories compared to results in the Borrelli and Preyde studies. Adherence proportions in the treatment design and enactment of treatment skills categories generally remained consistent across the three studies.

Table 3 Mean adherence to treatment fidelity strategies by category

Category	Mean proportion[a] $N = 65$	Median	SD	Borrelli et al. (2005) means $N^b = 292–342$	Preyde and Burnham (2011) means $N = 28$
Tx design	.83	.89	.20	.80	.75
Training providers	.63	.75	.33	.22	.43
Tx delivery	.73	.80	.33	.35	.39
Receipt of tx skills	.67	1.0	.44	.49	.49
Enactment of tx skills	.58	.50	.38	.57	.56
Overall mean adherence	.73	.79	.20	.55	.57

Tx treatment

[a] The mean adherence for each category was calculated by summing mean adherence for all the items within a category and dividing by the number of items in the category. Mean proportions represent percent adherence in a category

[b] *N* refers to the number of studies in the sample. Sample size varied in the Borrelli et al's. (2005) study because for these calculations they only included the articles from the targeted journals they searched. Seventy-one articles from their final sample had referred readers to a different article for details regarding fidelity strategies used. These articles requiring additional articles be referenced outside the targeted journals were not included in the category means from Borrelli et al. displayed here

Table 4 Percentage of studies achieving high treatment fidelity

Category	%	*n*[a]	Borrelli et al. (2005) %	Borrelli et al. (2005) *n*
Tx design	63	41	68	231
Training providers	32	21	10	30
Delivery of tx	72	47	20	68
Receipt of tx skills	59	38	23	78
Enactment of tx skills	39	25	42	138
Overall mean[b]	45	29	15.5	53
≥.80 Adherence in all categories	8	5	6.5	22

Tx treatment

[a] *n* refers to the number of studies that met criteria for high treatment fidelity. We followed Borrelli et al's. (2005) criteria for defining "high treatment fidelity" as ≥80 % adherence

[b] Refers to the percentage of studies with an overall mean across categories of ≥.80

High Levels of Treatment Fidelity

In order to further compare our findings with Borrelli et al. (2005), we followed their criteria for defining "high treatment fidelity" as proportions equal to or > .80. We identified articles that demonstrated high treatment fidelity overall by category. Just under half the sample (45 %, or 29 out of 65 articles) showed overall high adherence to treatment fidelity strategies, i.e., greater than or equal to .80 adherence to the checklist. The percentage of the sample showing high use of treatment fidelity strategies by category are displayed in Table 4. According to the IFAC, five articles (8 % of the sample) demonstrated high fidelity within all five categories (i.e., Fossum et al. 2009; Kazdin et al. 1992; Morawska and Sanders 2009; Reid et al. 2007; Thompson et al. 2009).

The percentage of studies in the current sample that achieved high use of treatment fidelity strategies in all categories was comparable to the percentage found by Borrelli et al. (2005), i.e., both below 10 %. Consistent with the mean proportion results discussed previously, treatment design and enactment of treatment skills were comparable to Borrelli's findings. However, the percentage of articles with high use of treatment fidelity strategies in the current sample was greater for training providers and substantially greater for the delivery of treatment and receipt of treatment skills categories. Preyde and Burnham (2011) did not find any studies in their sample that met criteria for high treatment fidelity in those categories.

Discussion

This study evaluates the use of strategies for the promotion and establishment of treatment fidelity in outcome studies of evidence-based parent training interventions for child and adolescent behavior problems. By using a broad definition of treatment fidelity and a comprehensive framework for assessing fidelity strategies (Bellg et al. 2004; Borrelli et al. 2005), results from the current review provide data on practices used to promote and assess treatment fidelity in EBT trials beyond the traditional foci of treatment integrity and differentiation. Publication dates within the included sample span 29 years, which extended the most recent review of treatment fidelity practices in the mental health literature by five years (i.e., Preyde and Burnham 2011). The current study is innovative in reviewing treatment fidelity strategies in trials of parent training programs and

EBTs, as neither of these literatures has been the target of a review of treatment fidelity practices using the IFAC.

Overall use of treatment fidelity strategies in the evidence-based parent training treatment literature approached a mean of 75 % across the sample of studies reviewed. This finding is higher than previous reviews of use of treatment fidelity strategies in the psychosocial treatment (Moncher and Prinz 1991; Perepletchikova et al. 2007; Preyde and Burnham 2011) and health behavior change literatures (Borrelli et al. 2005). Nonetheless, patterns of fidelity strategy usage varied, and only 8 % of the sample adhered to fidelity strategies at ≥80 % in all five categories.

The treatment design category showed the strongest adherence to checklist items with a category mean adherence of 83 %. It is not surprising that strategies within the treatment design and delivery of treatment skills categories were the areas with the highest adherence in the sample. These areas are most consistent with the way treatment fidelity traditionally has been defined and reflect the emphasis that was placed on promoting internal validity when efficacy trials test interventions (McHugh et al. 2009; Moncher and Prinz 1991; Perepletchikova et al. 2007). Prior reviews using the IFAC (i.e., Borrelli et al. 2005; Preyde and Burnham 2011) found comparable results by item within the treatment design category as the current study, with a few exceptions. Results from the parent training literature showed higher adherence for Item 10 (mention of a theoretical model or clinical guidelines on which the intervention is based) than did the health behavior change literature in Borrelli et al's. (2005) study. This finding most likely reflects the extensive development that is inherent in EBT, but nonetheless parent training authors in the sample should be commended for their consistency in clearly reporting on the intervention's theoretical or clinical base of parent training interventions.

The training provider and enactment of treatment skills categories demonstrated the lowest mean adherence (58 and 63 %, respectively). These were the only two categories that contained individual items falling below 50 % adherence. In the training provider category, the highest item was Item 14 (83 %), which required studies to describe how provider skills were maintained over time. Ongoing supervision and feedback to therapists was the most common method used to maintain provider skill. Supervision has long been an emphasized area in the treatment fidelity literature because it promotes internal validity by minimizing provider drift and promoting uniformity in treatment delivery (Moncher and Prinz 1991). The other items in the training provider category (Items 11–13) were much lower (48–65 %) than Item 14. These items were focused on how providers were trained and how provider skill acquisition was assessed post-training. It is possible that studies may have had procedures in place but did not report them.

The enactment of treatment skills category only contained two items, which allowed the lower item to pull down the category average in a substantial way. Although 77 % of studies assessed participant performance in a treatment follow-up condition or generalized setting (Item 24), only 40 % of studies reported a strategy to use those data to improve participant performance in a generalized setting or outside of the intervention period, such as booster sessions or telephone follow-up. This finding may reflect a budget limitation for funded trials or a predominance of efficacy trials in the sample whose aims may have been most concerned with the active treatment period and possibly collecting follow-up data.

From an historical perspective, the training providers and enactment of treatment skills categories were areas less focused on in early efficacy trials when researchers were seeking to build evidence to support internal validity of treatments within laboratory settings. As a result, these types of treatment fidelity strategies have been less traditionally emphasized in outcome reporting. However, as the field of parent training is increasingly focused on the dissemination of programs to community agencies and demonstrating effectiveness (Sanders et al. 2002; McCabe and Yeh 2009; Webster-Stratton and Herman 2010), treatment fidelity strategies related to training providers and patient or client enactment of treatment skills serve as critical data needed for accurately interpreting outcomes and comparing community-based efforts with outcomes from efficacy trials or researcher-led interventions (Henggeler 2004).

The mean adherence for the treatment delivery category was surprisingly low (73 %) considering that issues related to delivery of treatment have been a long-standing focus of psychosocial treatment outcome research (Moncher and Prinz 1991; McHugh et al. 2009). Most items in this category hovered around 80 % except for Item 18 (52 %), which considered whether studies assessed for nonspecific treatment effects, such as perceived provider differences in warmth or credibility. Of the studies that provided a measure of nonspecific treatment effects, studies almost exclusively met this criterion by administering a consumer satisfaction survey that assessed for participants' perceptions of their providers. However, almost no studies included these data in their analyses to explore whether nonspecific treatment effects played a role in the study outcomes.

With regard to the receipt of treatment skills, the mean adherence was 67 % and results for items showed similar levels of reporting within this category. These items were often interconnected, such that if studies met criteria for assessing participant comprehension or performance, they also typically reported a method to improve participant

understanding or skill use during the intervention. Methods used by studies included the use of role play, discussing homework, discussing intervention content with parents, and observation and/or coaching of the parent. These strategies often overlapped and met criteria for assessing and improving both comprehension and performance of the intervention during the intervention period.

Another way to look at patterns of fidelity strategy use is to consider what percentage of studies used strategies at a high level. Approximately two-thirds of the parent training sample demonstrated high fidelity use in the treatment design (63 %) and delivery of treatment (72 %) categories. Conversely, just over half the sample met criteria for high fidelity use in the receipt of treatment skills (58 %) category. In the enactment of treatment skills category, only 38 % of studies reached high treatment fidelity use and one-third of the sample demonstrated high levels of fidelity strategy use in the training providers category (32 %). This pattern still shows room for improvement in the EBT literature to better use and reporting of treatment fidelity strategies, particularly when only five studies in the sample showed high fidelity practices across all categories.

In comparison with other studies using the IFAC, both Preyde and Burnham (2011) and Borrelli et al's. (2005) studies generally found lower means for items in the training provider, treatment delivery, and receipt of treatment skills categories compared to the current findings. As discussed previously, results in the treatment design category were generally similar, with some exceptions noted in individual items. Adherence results for the two items in enactment of treatment skills were strikingly similar for all three of the review studies. Since the samples used in each study were quite different, conclusions drawn about comparisons are limited. Differences in mean adherence to treatment fidelity strategies may have resulted from differences in characteristics of the samples, or they may reflect true differences among fidelity use in the literatures. One may expect treatment fidelity practices to be stronger in a sample of EBT. Given the little data available on treatment fidelity across literatures, these imperfect comparisons are the best tools we have at the current time to make sense of fidelity across literatures.

In their review, Perepletchikova et al. (2007) used a narrower definition of treatment integrity (i.e., treatment adherence, provider competence, and treatment differentiation) than is employed with the IFAC. Results of the current study showed that outcome trials in the parent training literature demonstrated high use of treatment fidelity strategies for establishing or promoting fidelity in 63–73 % of articles sampled in areas analogous to Perepletchikova et al. (2007)'s definition of integrity. By comparison, the studies included in Perepletchikova and colleagues' review of psychosocial treatments showed adequate establishment of treatment fidelity in only 16 % of sampled articles. This discrepancy may be explained by the types of articles sampled in the Perepletchikova et al's. study, which were limited to RCTs of psychosocial interventions (adult and child-focused) published in the top ten highest impact factor journals in psychology and psychiatry between 2000 and 2004. Their measurement tool also differed from the IFAC, which is dichotomous in its measurement of items, such that studies were rated along a continuum on how adequately they established fidelity.

Overall, the parent training literature appears to be using treatment fidelity strategies as assessed by the IFAC at higher levels overall than in the health behavior change literature than in other areas within psychosocial treatment research (e.g., pediatric psycho-oncology), although it is important to keep in mind the differences that existed among the samples in the previous studies of fidelity. The current study found that the parent training literature still reflects the same pattern of weakness as in other reviews in reported use of fidelity strategies for training providers and promoting generalization of treatment skills beyond the treatment period and treatment setting.

Parent training interventions seem to have tackled issues related to monitoring and assessing treatment fidelity by developing their own program-specific processes in the literature. Schoenwald and Garland (2013) found that the parent training studies in their sample ($n = 31$) employed 33 different adherence measurement methods. This lack of uniformity may make it difficult to evaluate and compare practices more broadly within the child and adolescent treatment literature; however, there may also be nuances involved in each program that are best captured through program-specific assessment of fidelity strategies. In particular, MST has been a leader in the movement toward assessment and promotion of treatment fidelity as part of its outcome literature for decades (Henggeler et al. 1997; Huey et al. 2000; Schoenwald et al. 2000). As with most other studies of treatment fidelity, the MST intervention-specific tools for assessing integrity are highly focused on delivery adherence to their specific framework, but they do not take into account aspects inherent in a broader definition of treatment fidelity, such as assessing the receipt of treatment skills. Adopting a uniform, empirically based definition of treatment fidelity, perhaps in addition to program-specific tools, could promote improved fidelity practices and reporting within intervention studies, including child and adolescent psychotherapy outcome trials (Borrelli 2011).

There are several important limitations of this review to consider. First, it is possible that our inclusion criteria or search methods missed articles that should have been included. Our data were also limited by authors' reports that may have biased results. As a result of journal space

limitations and authors' perceived importance of details at the time of publication, many articles may not have reflected data that could have been incorporated into this review. When interpreting proportion results from the IFAC, it is also important to consider the uneven number of items in each category. Psychometrics have not been developed or tested for the IFAC, which limits its utility at the present time to a descriptive tool. Finally, this review did not include all parent training programs, but was limited to only treatments for externalizing behaviors.

It was beyond the scope of this review to measure the relationships between outcomes and fidelity procedures. We still need to learn more about the effects of varying treatment fidelity strategies on outcome such as the effect of lack of supervision after training and different methodologies for training providers (Henggeler et al. 1997). Also, this review was not designed to evaluate whether treatment fidelity practices were used in analyzing or interpreting results, such as whether adherence rates were reported or whether fidelity data were used as moderators of treatment outcome; however, this is an important area for future research. Perepletchikova et al. (2007) reviewed the quality of strategies used to establish, assess, evaluate, and report on the aspects of treatment fidelity in the psychosocial treatment literature, and they found poor rates of adequate implementation. The current study did not differentiate among the quality of treatment fidelity strategies but rather focused on whether a broad range of strategies were present in the parent training literature. Further research is needed to explore strategies and methods used by studies in parent training related to the implementation of treatment fidelity.

Although strides have been made in defining rigorous quality assurance criteria for psychotherapy trials and interventions (e.g., Kazak et al. 2010; Silverman and Hinshaw 2008), less attention has been paid to the provision of clear guidelines for the use of treatment fidelity strategies in intervention implementation research. Chambless and Hollon (1998) discussed the importance of using treatment manuals and reporting therapist training in intervention research reports; however, more specific guidelines are still needed to guide researchers in employing fidelity strategies as part of outcome studies for child and adolescent psychotherapies. For example, minimal guidance is provided in the most recent edition of reporting standards for research published by the American Psychology Association (APA 2008), and no operational definition of fidelity or discussion of suggested strategies is provided in the document. Medical research guidelines for randomized, control trials (i.e., Consolidated Standards of Reporting Trials; Moher et al. 2010; Schulz et al. 2010) do not provide any greater guidance. The sparse attention paid to treatment fidelity in reporting guidelines for outcome research likely reflects the lack of consensus in the literature regarding definitions and measurement strategies used for assessing fidelity.

Despite these limitations in reporting guidelines, the evidence-based parent training literature shows great promise in contributing strong examples of the use of treatment fidelity strategies in the field of psychosocial treatment outcome research. The IFAC appears to be a useful tool for researchers in considering treatment fidelity a priori at the study design level as well as for evaluating fidelity practices, although psychometric properties would need to be studied in order to move toward statistical research using the IFAC. Through the use of a uniform tools such as the IFAC that can provide standardized fidelity data across intervention types, the field can more broadly and consistently monitor treatment fidelity as part of dissemination efforts as well as efficacy trials. The current study aids in identifying the strengths and weaknesses in measuring and monitoring treatment fidelity in the existing parent training literature for externalizing disorders. Researchers and interventionists can continue to assist in moving the field of evidence-based parenting interventions toward increasingly more conclusive and replicable intervention trials by thinking broadly about treatment fidelity strategies when designing studies, reporting details related to fidelity, and in considering ways to use fidelity strategies in analytical stages of the therapy outcome research process.

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