

PREDICTING YOUTH IMPROVEMENT IN COMMUNITY-BASED RESIDENTIAL  
SETTINGS WITH PRACTICES DERIVED FROM THE EVIDENCE-BASE

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## Abstract

The scientific study of psychotherapy practices in treatment as usual helps to increase the understanding of which practices are associated with improvement rates. Recent researchers have begun investigating the use of practices derived from the evidence-based (PDEBs) to determine if their use predicts greater improvement. The current investigation had two aims for youth in community-based residential (CBR) settings: (a) conduct descriptive analyses on key youth and therapist variables, and (b) investigate the extent to which disruptive youth in the CBR setting improve based on therapists' reported alignment with using PDEBs for older disruptive youth. This study included clinical data for 341 youth who were between the ages of 13 and 17 with one or more disruptive behavior treatment targets. Results from the analyses for the first aim indicated that both PDEBs and practices with minimal evidence support (PMESs) were used with youth in the CBR setting. Additionally, PDEB-use was related to youth without diagnoses of attention deficit/hyperactivity disorder or bipolar disorder and for therapists in the medical or substance abuse fields. Across the majority of these descriptive analyses, the results varied significantly across the provider agencies included in this study, suggesting different populations served by each provider agency. For the multilevel modeling analyses for the second aim of the study, results suggested that the proportionate use of PDEBs (i.e., PDEBs divided by all practice elements (PEs), averaged across the treatment episode) was not significant in predicting rate of improvement or final average progress rating. However, the average number of PDEBs and PMESs used per month were significant at  $p < 0.05$  and  $p < 0.10$ , respectively, in predicting final average progress rating. Lower youth age at intake and longer length of treatment significantly predicted both final average progress rating and monthly rate of improvement. Finally, exploratory analyses regarding the extent to which individual PEs independently predicted improvement rates was examined, suggesting positive effects for some PEs but not others.

Findings are discussed as they relate to the importance of exploring various definitions of PDEB-use, investigating the use of PMESs, and continuing the study of treatment outcomes for CBR youth.

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## List of Abbreviations

AIC.....	Akaike information criterion
ANOVA.....	Analysis of Variance
CAFAS.....	Child and Adolescent Functional Assessment Scale
CAMHD.....	Child and Adolescent Mental Health Division
CBR.....	Community-Based Residential
CBR-III.....	Community-Based Residential-III
DBP.....	Disruptive Behavior Problem
EBP.....	Evidence-Based Practice
ICC.....	Intraclass Correlation
MLM.....	Multilevel Modeling
MTPS.....	Monthly Treatment Progress Summary
PDEB.....	Practice Elements Derived From the Evidence-Base
PE.....	Practice Element
PMES.....	Practices with Minimal Evidence Support
TAU.....	Treatment as Usual

## Chapter 1. Introduction

“It is difficult and perhaps foolhardy to try to improve what you do not understand” (Hoagwood & Kolko, 2009, p. 35). Applied to youth mental health system improvement efforts, numerous stakeholders may stand to benefit greatly from systematic and scientific study of large-scale public sector service systems. Although the United States spends a significant amount of money (i.e., several billions of dollars) on children’s mental health issues (Soni, 2009), research on the use of psychotherapy practices in treatment as usual (TAU) settings is scarce and TAU still tends to be an unexamined “black box” (Bickman, 2000; Hoagwood & Kolko, 2009). More research is needed to understand public youth mental health systems, therapeutic approaches that help youth improve in those settings, and factors that mediate and moderate quality improvement efforts (Garland, Bickman, & Chorpita, 2010; Margison et al., 2000; Weisz & Jensen, 2001). Support continues to grow for this type of research, and inquiry in this area has been increasingly recognized as an important and complimentary approach to more classic efficacy and effectiveness work for improving youth services and outcomes (Garland, Bickman, et al., 2010).

TAU research on therapeutic approaches carries several potential benefits, including: (a) developing a common language between researchers and clinicians for discussing and describing therapeutic practices; (b) describing services in community-based treatment settings; (c) increasing an exchange of ideas from community-based treatment settings to intervention developers; (d) helping to train clinicians; and (e) providing new methods to conduct quality improvement within organizations in addition to adopting brand-named structured treatment programs (e.g., modular approaches; Garland, Hurlburt, & Hawley, 2006). However, the systematic and scientific study of TAU has been difficult for many reasons, including the lack of

standardized reporting metrics for treatment strategies used by therapists in these settings (Bickman, 2000).

One reason for practice measurement difficulties in TAU settings centers on the various methods for defining evidence-based practices (EBPs; e.g., American Psychological Association, Society of Clinical Child and Adolescent Psychology, Substance Abuse and Mental Health Services Administration). For example, some researchers define EBPs at the level of brand-name treatment manuals (e.g., Defiant Children; Barkley, 1997). However, many therapists note that there are an overwhelming number of manuals from which to choose for any given problem type, that manuals do not allow therapists to flexibly tailor individual interventions, and that manuals are not able to fully address the complexity and diversity of usual care cases (Addis & Krasnow, 2000; Addis, Wade, & Hatgis, 1999; Nelson, Steele, & Mize, 2006). Other researchers define EBPs at the level of treatment families (e.g., Cognitive Behavior Therapy), defined as approaches that share the majority of their clinical components and theoretical underpinnings (Nakamura et al., 2014). However, exclusive use of this EBP definition seems too broad and not specific enough for deeply affecting quality improvement efforts within larger mental health systems. For example, training therapists, providing supervision, and conducting fidelity checks using a treatment family approach might be too time consuming and costly due to the multiple components within each treatment family that could require discussion and monitoring.

Another approach for defining youth EBPs that continues to gain support is anchored within the Distillation and Matching Model (Chorpita, Daleiden, & Weisz, 2005). Although a full discussion of this approach is beyond the scope of this manuscript, the model's first step describes the process of *distillation* as a "method whereby interventions are conceptualized not as single units of analysis, but rather as composites of individual strategies, techniques, or

components that can allow subsequent empirical grouping” (Chorpita et al., 2005, p. 2). These individual techniques are called practice elements (PEs), which Chorpita et al. (2005, p. 11) define as “a discrete clinical technique or strategy (e.g., “time out,” “relaxation”) used as part of a larger intervention plan (e.g., a manualized treatment program for youth depression).” Based on this definition, a treatment manual is conceptualized as being made up of several discrete PEs. For example, a manual for treating disruptive behavior problems (DBPs) in youth may be coded as containing the PEs of attending, commands, differential reinforcement of other behaviors, maintenance/relapse prevention, monitoring, praise, psychoeducation-caregiver, response cost, stimulus control or antecedent management, tangible rewards, and time out.

Distilling large numbers of empirically-supported youth mental health treatment protocols into patterns of technique commonalities has proven fruitful for numerous quality improvement strategies, such as the creation of modular treatment approaches for youth with comorbid conditions (Chorpita et al., 2005; Weisz et al., 2012), service system feedback efforts (Higa-McMillan, Powell, Daleiden, & Mueller, 2011), and therapist training efforts (Nakamura et al., 2014; Southam-Gerow et al., 2013). More importantly for the current study, defining EBPs at the PE level has helped researchers recently investigate discrete technique level implementation in TAU settings (e.g., Garland, Hawley, Brookman-Frazee, & Hurlburt, 2008; Love, 2014; Orimoto, Mueller, & Nakamura, 2013), and build upon studies that previously characterized such work as highly eclectic in nature (Cook, Biyanova, Elhai, Schnurr, & Coyne, 2010; Jensen, Bergin, & Greaves, 1990; Norcross & Karpiak, 2012; Weersing, Weisz, and Donenberg, 2002).

There is no prevailing consensus for any one PE-focused measurement strategy in TAU settings, and several researchers have developed instruments to document these practices. For

example, Weersing and colleagues (2002) developed the Therapy Procedures Checklist, a therapist-report survey that assesses the extent to which therapists use specific techniques in the treatment of their clients. This measure factors into the three therapy approaches of psychodynamic, cognitive, and behavioral. The Therapy Procedures Checklist has demonstrated good content validity, internal consistency, and test-retest reliability, and has been utilized in a number of wide-ranging TAU investigations on therapists' behaviors (e.g., Baumann, Kolko, Collins, & Herschell, 2006; Weersing & Weisz, 2002). Another example of a PE-based TAU measurement strategy is the Monthly Treatment Progress Summary (MTPS; Child and Adolescent Mental Health Division [CAMHD], 2005). The MTPS is a therapist-report form designed to collect ongoing information on a monthly basis regarding service formats, settings, service dates, treatment targets, PEs, client progress ratings, medications and dosage, and discharge information for every client registered within the state of Hawai'i's CAMHD. The MTPS has also demonstrated good stability and validity, and has been used in TAU investigations on therapists' behaviors and improvement rates for youth throughout multiple levels of care (e.g., Love, 2014; Mueller, Daleiden, Chorpita, Tolman, & Higa-McMillan, 2009; Orimoto et al., 2013).

### **Measuring and Identifying Practice Elements Derived from the Evidence-Base**

When investigating PE treatment patterns and associations within TAU settings, researchers sometimes focus on a subset of PEs that have been commonly referred to as practices derived from the evidence-base (PDEBs; Higa-McMillan, Nakamura, Morris, Jackson, & Slavin, 2014). PDEBs are typically defined as PEs found in a significant proportion of larger empirically-supported manualized approaches for any given problem area of interest (Higa-McMillan, et al., 2014). For example, the PE of exposure is considered a PDEB for the problem

area of anxiety given that it is present across 86% of study groups for all empirically supported manualized approaches for that particular problem area. One method of identifying PDEBs in this fashion that has been steadily gaining momentum since 2009 (e.g., Bernstein et al., 2013; Mueller et al., 2009; Southam-Gerow et al., 2013) is through the PracticeWise, LLC Evidence-Based Youth Mental Health Services coding system. PracticeWise, LLC is a private corporation specializing in the analytics and reporting of the youth mental health outcome literature and training for a variety of your EBP approaches.

PracticeWise, LLC routinely codes and summarizes the treatment outcome literature along both efficacy (e.g., PE aggregate summaries across numerous empirically supported treatment manuals for a given problem area) and contextual (e.g., gender, age, ethnicity, and settings associated with any given therapeutic approach) parameters (Bernstein et al., 2013). PracticeWise, LLC defines treatment support for these manuals along five Levels. Levels-One and -Two correspond closely to the American Psychological Association's (1995) guidelines for empirically-supported treatments, with Level-One ("Best Support") defined as a minimum of two different investigatory teams conducting a minimum of two randomized controlled trials for a manualized treatment approach, with demonstrated efficacy against a placebo (i.e., a non-active treatment) or another treatment; and Level-Two ("Good Support") defined as either (a) two experimental studies showing that a treatment is better than a waitlist or control group or (b) one between group design that demonstrated that a treatment is better than a placebo or another treatment. Level-Three ("Moderate Support") is defined as a between group design which demonstrated that a treatment is better than a placebo or another treatment; Level-Four ("Minimal Support") is defined as an experiment showing that a treatment is better than a waitlist or control group receiving no services; Level-Five ("No Support") is defined as a



treatment that failed to meet the criteria for Levels-One through –Four (Chorpita & Daleiden, 2009).

The field’s youth mental health treatment outcome literature can be summarized and aggregated through various reports via the Evidence-Based Youth Mental Health Services Literature Database search engine (Chorpita et al., 2005). For example, a user may define their search parameters in terms of problem area (e.g., disruptive behavior), treatment support level (e.g., Level-Two or better), age (e.g., 15 years old), gender (e.g., male) and setting (e.g., community-based residential), and the search engine would then produce a list of empirically supported treatment families and PEs associated with this specific combination of factors (PracticeWise, LLC, 2014). When distilled across empirically-supported treatment approaches (usually defined as Level-Two support or better), PEs are said to aggregate into “profiles” (see Table 1 for an example; cf. Higa-McMillan et al., 2011; Izmirian, Nakamura, Hill, Higa-McMillan, & Slavin, 2016). In this way, such a profile notes the percent of empirically supported treatment groups containing any given one PE (PracticeWise, LLC, 2014).

Table 1.

*Percent of Evidence-Based Treatment Study Groups that Included the Listed Practice Elements and had Level-Two or Better Support for Youth 13 Years and Older with Disruptive Behavior Problems (Regardless of Setting)*

<b>Practice Element</b>	<b>Percent</b>
<b>Problem Solving</b>	<b>52</b>
<b>Maintenance/Relapse Prevention</b>	<b>44</b>
<b>Goal Setting</b>	<b>44</b>
<b>Response Cost</b>	<b>44</b>
<b>Cognitive</b>	<b>40</b>
<b>Communication Skills</b>	<b>40</b>
<b>Family Therapy</b>	<b>40</b>
<b>Social Skills Training</b>	<b>40</b>
<b>Monitoring</b>	<b>36</b>
<b>Relationship/Report Building</b>	<b>36</b>
<b>Modeling</b>	<b>32</b>
<b>Praise</b>	<b>32</b>

Table 1. (continued)

*Percent of Evidence-Based Treatment Study Groups that Included the Listed Practice Elements and had Level-Two or Better Support for Youth 13 Years and Older with Disruptive Behavior Problems (Regardless of Setting)*

<b>Practice Element</b>	<b>Percent</b>
<b>Self-Monitoring</b>	<b>32</b>
<b>Therapist Praise/Rewards</b>	<b>32</b>
<b>Tangible Rewards</b>	<b>32</b>
Family Engagement	28
Caregiver Coping	28
Psychoeducation – Caregiver	28
Educational Support	24
Natural and Logical Consequences	24
Functional Analysis	24
Marital Therapy	24
Assertiveness Training	20
Crisis Management	20
Insight Building	20
Psychoeducation – Child	20
Talent or Skill Building	20
Individual Therapy for Caregiver	20
Self-Reward/Self-Praise	16
Peer Pairing	12
Relaxation	12
Guided Imagery	12
Moral Education: Guided Discussions of Moral Dilemmas	12
Stimulus Control or Antecedent Management	8
Interpretation	8
Behavioral Contracting	8
Anger Management	8
Exposure	4
Differential Reinforcement of Other Behavior	4
Commands	4
Milieu Therapy	4
Attending	4
Case Management	4
Enactment or Take Performance: Role Play	4
Moral Education	4
Positive Peer Culture	4
Enactment or Task Performance	4
Coping or Emotion Regulation Not Specified	4
Consultation: Psychiatric	4
Joining	4

*Note.* This was calculated from a PracticeWise, LLC data pull dated April 2015. Bolded items indicate practice elements that were included in 30% or more of the study groups that examined evidence-based treatments.

As can be seen in Table 1, the percentages associated with each PE can vary widely, and there currently is no standard agreed-upon percentage cut point at which a PE should be classified as a PDEB. Prior researchers have classified PEs as PDEB in a variety of ways, including practices that occur in at least 30% of treatment protocols with Level-One support (cf. Orimoto et al., 2013) or practices which occur in at least 10% of treatment protocols with Level-Two or better support (cf. Nakamura, Higa-McMillan, Okamura, & Shimabukuro, 2011; Okamura, Nakamura, Mueller, Hayashi, & Higa-McMillan, 2014).

### **Previous TAU Research on Therapeutic Practices**

Previous TAU research has investigated the associations between PE utilization patterns and therapist characteristics, youth and parent characteristics, and youth outcomes. Regarding therapist information, one study used the Therapy Procedures Checklist and found that their sample of 77 therapists reported using PEs from all of the subscales of the Therapy Procedures Checklist (i.e., behavioral, cognitive, psychodynamic, and the newly revised family therapy subscale; Baumann et al., 2006). Focus groups from this study also found that therapists reported using family therapy, case management, and cognitive-behavioral therapy more frequently than other practices, and were more likely to use EBPs if they had more favorable attitudes toward manuals (Baumann et al., 2006). An additional study on DBP youth aged 4 to 13 years found that 82 therapists in community mental health settings were more likely to use child-targeted EBPs (e.g., problem-solving, anger management, affect education, positive reinforcement, limit setting, psychoeducation, assigning and reviewing homework, role-playing, modeling, establishing and reviewing goals) if their theoretical orientation was cognitive-behavioral or behavioral, and parent-targeted EBPs (e.g., principles of positive reinforcement, principles of limit setting, parent-child relationship building, problem-solving, anger management, psychoeducation,

assigning and reviewing homework, modeling, establishing and reviewing goals) if they had less months of experience (Brookman-Frazee, Haine, Baker-Ericzén, Zoffness, & Garland, 2010). Finally, another study with 74 therapists found that those with a psychology or psychiatry specialty used PDEBs more than those with a social work specialty, and that those with a behavioral or cognitive-behavioral theoretical orientation used more PDEBs than those with an eclectic theoretical orientation (Higa-McMillan et al., 2014). Overall, it seems like the practices used by therapists in TAU settings are related to therapists' theoretical orientation, attitudes toward EBPs, and experience level.

Additionally, research has begun to examine PE treatment patterns as they relate to youth and parent characteristics. For example, the same study mentioned above on DBP youth aged 4 to 13 years found that more child-targeted EBPs (e.g., problem-solving, anger management, affect education, positive reinforcement, limit setting, psychoeducation, assigning and reviewing homework, role-playing, modeling, establishing and reviewing goals) were used with older children, caregivers with higher educational levels, and caregivers with more alcohol use, while parent-targeted EBPs (e.g., principles of positive reinforcement, principles of limit setting, parent-child relationship building, problem-solving, anger management, psychoeducation, assigning and reviewing homework, modeling, establishing and reviewing goals) were marginally used more for children with severe symptoms (Brookman-Frazee et al., 2010). Research using Hawai'i's MTPS found that DBP youth with more than two diagnoses were provided with a more diverse number and greater dosage of PEs (i.e., higher mean number of PEs applied per month) than youth with one or two diagnoses (Orimoto, Mueller, Hayashi, & Nakamura, 2014). In addition, these youth with more than two diagnoses were also more likely to receive an eclectic array of practices, including elevated levels of coping and self-control PEs

(e.g., supportive listening or client centered, problem solving, emotional processing, cognitive; Orimoto et al., 2014). Similarly, another group of researchers found that certain PDEBs for DBP youth (e.g., affect education, problem solving skills, use of positive reinforcement, psychoeducation) were observed more frequently with oppositional clients, while other PDEB strategies were observed infrequently (e.g., assigning/reviewing homework, role-playing with parents, modeling; Garland, Brookman-Frazee, et al., 2010). Finally, a study of 519 youth in Hawai'i found that PDEB-use was predicted by longer lengths of treatment, while the use of practices with minimal evidence support (PMES) was predicted by older age, males, out-of-home levels of care, and youth not receiving evidence-based programs (e.g., Functional Family Therapy, Multisystemic Therapy, Multidimensional Treatment Foster Care; Higa-McMillan et al., 2014). Taken together, this group of studies suggests that PDEB and PE utilization patterns can be associated with a wide variety of youth level characteristics, and that no unifying or coherent picture has yet emerged.

An important area of TAU research concerns the relationship between PE utilization patterns and youth improvement. One study compared outcomes of depressed youth from 13 randomized controlled trials that used cognitive behavior therapy to 67 depressed youth in TAU settings (Weersing & Weisz, 2002). The TAU therapists in this sample reported using significantly more psychodynamic techniques from the Therapy Procedures Checklist, as compared to the cognitive or behavioral techniques. Results from this study suggest that the depressed youth from the randomized controlled trial group had more steep declines in depression symptoms within three months and maintained those improvements during follow-up, as compared to the TAU group (Weersing & Weisz, 2002). Another study on 402 depressed youth seen within an intensive in-home setting in Hawai'i found that the average proportion of

PDEBs used per month for depressed youth (i.e., the number of PDEBs divided by the total number of PEs used per month) did not predict rates of improvement, although several variables predicted end of treatment progress/improvement ratings (e.g., time, functional impairment score, and number of diagnoses), including total number of PDEBs used by the therapist (Love, 2014). Hence, the practices used by TAU therapists (e.g., PDEBs, psychodynamic techniques) likely impacts the improvement of depressed youth.

Similar youth improvement TAU research with PDEBs has been conducted with externalizing youth (e.g., oppositional defiant disorder, conduct disorder, attention-deficit/hyperactivity disorder). One study within Hawai'i's intensive in-home level of care found that 103 youth with primary attention-deficit/hyperactivity disorder diagnoses had higher rates of improvement if the therapeutic practices they received were PDEB for inattention and hyperactivity as compared to those whose services were not PDEB (Mueller et al., 2009). Another study used multilevel modeling and found that the proportion of PDEBs used from protocols for DBP youth 13 years and older was marginally significant ( $p \leq 0.05$ ) in predicting improvement rates for 720 youth who had DBPs (Orimoto et al., 2013). Additionally, follow-up analyses found that the PEs of communication skills, self-monitoring, maintenance or relapse prevention, self-rewards or self-praise, skill building, assertiveness training, therapist praise or rewards, and mindfulness were significantly related to positive improvements in these youth, while line of sight supervision and supportive-listening/client-centered practices were significantly related to a lack of improvement in these youth (Orimoto et al., 2013). Furthermore, another study compared 171 youth with conduct disorder who received Multisystemic Therapy (Henggeler & Borduin, 1990) to 171 youth with conduct disorder who received intensive in-home services to examine their improvement rates in relation to the number of PDEBs (i.e., EBP

content) they received during treatment (Denenny & Mueller, 2012). These researchers found that Multisystemic Therapy improvement rates surpassed those associated with intensive in-home services. Follow-up analyses also suggested that Multisystemic Therapy's greater use of PDEBs partially mediated the difference between these programs in predicting improvement rate. Although the results from these studies have only marginal effect sizes, they collectively suggest that there is some influence of PDEB-use on youth improvement in intensive in-home settings.

A commonality across the majority of studies reviewed above centers on treatment setting, such that research in this area has been almost wholly conducted on youth placed in lower levels of care, such as intensive in-home (i.e., the setting in which youth are most commonly referred in Hawai'i's public mental health service system). Building upon this type of work, the extent to which these types of results can generalize to the other levels of care within mental health systems remains open to empirical inquiry. Systematic study of youth placed into higher levels of care such as out-of-home settings is an essential next step endeavor for several reasons. First, the Adoption Assistance and Child Welfare Act of 1980 (P.L. 96-272) notes that, if at all possible, it is important to maintain youth within their natural environment (i.e., home). Therefore, it seems important to deepen the field's understanding of therapist practices and youth improvement patterns in out-of-home settings, in hopes of returning these youth to their homes as soon as possible. Second, findings from previous research in this area suggests that youth requiring a higher level of care (e.g., out-of-home services) have larger functional impairment at baseline than the youth that did not, arguably making them a higher priority in the beginning phase of treatment for scientific study (Daleiden, Pang, Roberts, Slavin, & Pestle, 2010). Third, operating costs for out-of-home services frequently require the majority of states' budgets for

youth mental health services, despite the fact that only a minority of youth are served there (Lyon & McCulloch, 2006; Peterson & Scanlan, 2002). Finally, the research on youth placed in the out-of-home setting is scarce, suggesting the need to gain a better understanding of the practices that lead to faster improvement rates in these settings.

### **Community-Based Residential Services**

Although it is arguably important to study all out-of-home treatment settings, the population of focus for this study was youth placed into CAMHD<sup>1</sup>'s Community-Based Residential-III<sup>2</sup> (CBR-III) setting. Youth from the CBR-III setting were chosen compared to those from other programs (e.g., hospital-based residential, juvenile justice system, CBR-I, CBR-II, therapeutic foster home) due to their length of stay and high referral rates. Regarding length of stay, youth in the CBR-III setting reside at their facilities for approximately three to six months at a time (Hair, 2005; Orimoto, Jackson, Keir, Ku, & Mueller, 2012). This longer length of treatment allowed for the collection of more month-to-month data than is typically seen in other out-of-home settings (e.g., the hospital-based residential setting, which prioritizes quick transitions out of this level of care). In addition, of the out-of-home services provided within the CAMHD system of care, CBR-III treatment referral rates consistently remain the highest amongst all other out-of-home settings (Keir, Jackson, Mueller, & Wilkie, 2014), thus allowing for the maximization of the sample size for this study. Based on the factors outlined above,

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<sup>1</sup> More information about CAMHD's system and levels of care will be discussed in the "System of Care" section of the Methods below.

<sup>2</sup> Youth from the Community-Based Residential-I and -II settings were not included in this study due to their treatment needs being very specialized (e.g., sexual deviance), as compared to the broad difficulties faced by CBR-III youth.



further investigation of treatment services provided to youth in the CBR-III setting seems warranted.

The body of literature on youth mental health randomized controlled trials (i.e., six) conducted in the CBR setting is limited.<sup>3</sup> With the context of this smaller literature base, classifying PEs as PDEBs presents a challenge. That is, creating a list of PDEBs based only on the CBR setting (even being overly inclusive through ignoring problem area) through distillation and PE profiles that leverage large amounts of treatment outcome findings would most likely have non-generalizable findings because of the limited number of randomized controlled trials currently completed in this setting. In addition, previous research suggests that a majority of real-world clients can have PE profiles created for them based on PracticeWise searches that use their age, gender, and problem area (without treatment setting), indicating that setting might not be as crucial as other characteristics in creating a PE profile (Bernstein et al., 2013). This suggests that a broader approach for defining PDEBs may be more appropriate for this study. As was done in previous TAU studies (Love, 2014; Orimoto et al., 2013), a list of PDEBs were compiled for youth from all levels of care to provide a broader, less nuanced, list of practices.

However, PDEBs were narrowed down by the problem area and age that are most commonly referred to CBR-III services. Regarding problem area, previous demographic data on youth in the CBR-III setting suggests that approximately 50% have a primary DBP diagnosis (e.g., conduct disorder) and approximately 75% have a DBP diagnosis somewhere on their diagnostic profile (e.g., secondary or tertiary diagnoses; Keir, Jackson, Mueller, et al., 2014).

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<sup>3</sup> One of these studies is based in the setting of Multidimensional Treatment Foster Care, which in CAMHD is categorized as a separate level of care. The remaining five randomized controlled trials are about therapy practices to address youth with sexual aggression, physical aggression, anger, developmental disorders, and depression.

These findings are consistent with the extant literature, which suggests that DBPs are the most frequently referred population in public mental health systems (Kazdin, 1995; Lahey, Miller, Gordon, & Riley, 1999). In addition to the large percentage of the CBR-III sample having DBPs, it is important to study DBP youth due to the substantial and far reaching impact their behaviors have on society. For example, youth with conduct disorder spend up to 10 times the total costs of public services (via theft, incarceration, mental health services) as compared to youth without a diagnosis of conduct disorder by the time they are approximately 28 years old (Scott, Knapp, Henderson, & Maughan, 2001). Furthermore, youth who have DBP diagnoses are projected to have continued difficulties with delinquency, violence, and criminal behaviors into adulthood if left untreated (Byrd, Loeber, & Pardini, 2012; Pardini, & Fite, 2010). Given the large proportion of CBR-III youth with DBPs and their substantial impact on society, the study of factors that relate to the rate of improvement for DBP youth seemed warranted.

In terms of age, youth referred to the CBR-III setting are typically between the ages of 12 and 17 (CAMHD, 2012). Previous research has indicated that there are differences in evidence-based practice patterns for DBP youth between the age-ranges of 12 and below and 13 and above (Chorpita & Daleiden, 2009). For the younger DBP group, interventions focus on the use of parent strategies (e.g., praise, tangible rewards). For the older DBP youth, interventions emphasize youth-directed practices (e.g., problem solving, goal-setting, communication skills). Since CBR-III youth are between the ages of 12 to 17 and there is a distinct difference between the practices used among these two age groups, it seemed more informative to create a PE profile for older DBP youth across all settings. Hence, the PE profile was created for youth 13 years and older, which then limited the sample in this study to be youth 13 to 17 years old.

The current investigation focused on the improvement rate of disruptive behavior youth within the CBR-III setting in Hawai'i's youth mental health system of care (i.e., CAMHD). Given the sparse research in this area, the first aim of this study was to conduct descriptive analyses (e.g., means, standard deviations, frequencies, proportions) on key youth and therapist clinical indices (e.g., targets, practices, demographic information) to gain a better understanding of the youth typically served in the CBR-III setting. Due to the exploratory nature of this question, no *a priori* hypotheses were offered for these analyses. The second aim of this study was to use multilevel modeling (MLM) to investigate the rate at which disruptive youth in the CBR-III setting improve based on therapists' reported alignment with using PDEBs for older disruptive youth across all settings. It was hypothesized that greater alignment with the PDEBs (i.e., a "PDEB profile" discussed above) would be associated with greater rates of improvement on progress ratings for disruptive youth 13 to 17 years of age in the CBR-III setting.

## Chapter 2. Methods

### System of Care

Within the Hawai‘i system of care, mental health services are provided to youth and families through the Department of Education’s school-based programs and an additional array of services contracted by the Department of Health’s CAMHD (CAMHD, 2012). Upon meeting eligibility requirements for such services, CAMHD assigns youth and their families a youth mental health Care Coordinator (sometimes referred to as case managers in other systems), who assists in the management, planning, and coordination of treatment (e.g., monitoring of treatment progress; CAMHD, 2012). These therapeutic services are contracted through various youth mental health provider agencies and include multiple levels of care. From least to most restrictive, these levels of care include: outpatient therapy, intensive outpatient, intensive in-home, Functional Family Therapy, Multisystemic Therapy, community mental health shelter, therapeutic foster home/transitional family home, Multidimensional Treatment Foster Care, therapeutic group home, CBR, crisis services, partial hospitalization, hospital based residential, and acute hospitalization. Consistent with principles set forth by Stroul and Friedman (1986), CAMHD services aim to treat youth in the “least restrictive environment” possible. Although the majority of CAMHD youth are placed into the intensive in-home level of care upon first beginning their services (Hill, Selbo-Bruns, & Nakamura, 2013), approximately 17 to 30% of CAMHD youth eventually require treatment at more intensive and restrictive levels of care (Daleiden et al., 2010; Keir, Jackson, Mueller, et al., 2014).

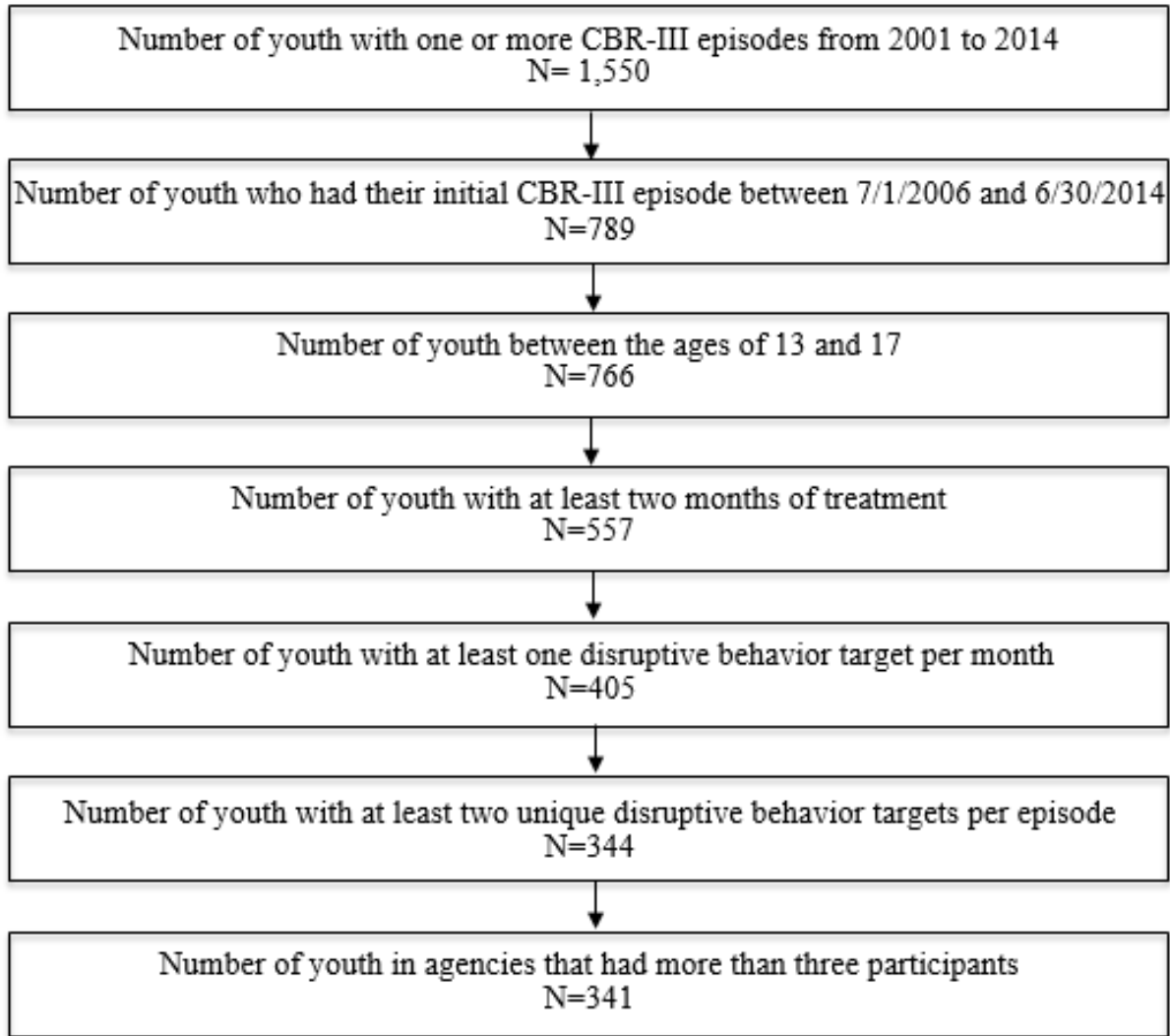
CBR-III programs provide 24-hour residential treatment for behavioral, emotional, and/or family problems in supervised, safe, and therapeutic environments (CAMHD, 2012). All CBR-III programs have the resources to treat both mental health and substance abuse symptoms, and

some specialize in these and other areas as well. These programs include onsite youth education, diagnostic, and therapy services aimed at providing social and daily living skills (CAMHD, 2012). Relying on archived MTPS service records (see “Measures” section below), the entire study dataset spanned from 2001 to 2014 for 10 different contracted agencies providing CBR-III services throughout the state of Hawai‘i. After limiting the sample to include the clients that met the inclusion criteria (discussed further below), only six agencies remained in the sample. Of these six contracted agencies, three are currently in operation and three are closed. The three private agencies currently in operation specialize in substance abuse problems (Agency A), males with conduct disorder, chemical dependence, and other emotional or behavioral problems (Agency B), and females with emotional and behavioral issues (Agency C). The three CBR-III contracted agencies currently not open (i.e., Agency D, Agency E, and Agency F) were closed for various reasons, including: labor shortages, contract modifications, and reductions in funding from CAMHD. Agency E’s specialty is similar to Agency B’s specialty, but with both genders; yet, little information is known about the specific populations served by Agency D and F. Of these closed agencies, one agency was removed for consideration from analyses due to the low sample size of youth that met inclusion criteria associated with that agency (i.e., Agency F,  $n = 3$ ), leaving a remaining five agencies for analyses in the current study (i.e., Agencies A through E).

## **Participants**

**Youth Participants.** Participants were included in the study if they were (a) between the ages of 13 to 17, (b) received services between 2006 and 2014, (c) completed at least two months of treatment in a CBR-III level of care, (d) had at least one of seven disruptive behavior targets (i.e., aggression, anger, fire setting, oppositional/non-compliant behavior, runaway, sexual

misconduct, and willful misconduct/delinquency; discussed further below) endorsed on the MTPS for each reporting month while placed in the CBR-III agency, and (e) had at least two unique disruptive behavior targets of the seven listed above endorsed at any time within the youth's treatment episode (e.g., aggression during month one and anger during months two to six; aggression and anger during month one and runaway during months two to six, etc.) to obtain a sample with diverse DBPs (cf. Orimoto et al., 2013). Figure 1 provides more detailed information about the exclusion of youth based on inclusionary criteria at various cutoff points, which resulted in a final sample size of 341 youth. Table 2 provides the demographic information for the youth included in this study broken down by each agency and by the total sample.



*Figure 1.* Flow diagram of sample identification and selection among youth receiving community-based residential-III (CBR-III) services (i.e., having a CBR-III episode) from the Child and Adolescent Mental Health Division. CBR-III episodes were limited to after July 1, 2006 due to the completion of the Monthly Treatment Progress Summary forms being required for financial reimbursement after this date (discussed in more detail in the “Monthly Treatment Progress Summary” section below).

Table 2.

*Youth Demographic and Clinical Information Broken Down by Agency and Total Sample Size (n = 341)*

Variable	Agency A	Agency B	Agency C	Agency D	Agency E	Total Sample
Sample Size <sup>a</sup>	98 (28.7%)	158 (46.3%)	13 (3.8%)	46 (13.5%)	26 (7.6%)	341 (100.0%)
Age	16.0 (1.1)	15.9 (1.0)	15.4 (1.3)	15.2 (1.4)	15.8 (1.0)	15.8 (1.2)
Gender (Male) <sup>a</sup>	57 (58.2%)	158 (100.0%)	0 (0.0%)	43 (93.5%)	13 (50.0%)	271 (79.5%)
Length of CBR-III Episode (days)	172.2 (61.9)	196.8 (88.5)	122.5 (42.7)	226.8 (90.3)	156.6 (74.4)	187.9 (82.5)
Race <sup>a</sup>						
American Indian or Alaska Native	1 (1.0%)	0	0	0	0	1 (0.3%)
Asian	8 (8.2%)	13 (8.2%)	0	0	0	21 (6.2%)
Black	2 (2.0%)	0	0	0	1 (3.8%)	3 (0.9%)
Multiracial	56 (57.1%)	93 (58.9%)	9 (69.2%)	30 (65.2%)	19 (73.1%)	207 (60.7%)
Native Hawaiian or Other Pacific Islander	17 (17.3%)	30 (19.0%)	3 (23.1%)	10 (21.7%)	1 (3.8%)	61 (17.9%)
White	6 (6.1%)	15 (9.5%)	0	6 (13.0%)	5 (19.2%)	32 (9.4%)
Other	1 (1.0%)	1 (0.6%)	0	0	0	2 (0.6%)
Not Available	7 (7.1%)	6 (3.8%)	1 (7.7%)	0	0	14 (4.1%)
Any Diagnosis Present <sup>a</sup>						
Adjustment	0	2 (1.3%)	1 (7.7%)	1 (2.2%)	0	4 (1.2%)
Anxiety	1 (1.0%)	0	1 (7.7%)	0	0	2 (0.6%)
Attention Deficit/ Hyperactivity Disorder	5 (5.1%)	12 (7.6%)	0	5 (10.9%)	3 (11.5%)	25 (7.3%)
Bipolar	1 (1.0%)	0	1 (7.7%)	4 (8.7%)	3 (11.5%)	9 (2.6%)
Depression	5 (5.1%)	11 (7.0%)	2 (15.4%)	3 (6.5%)	5 (19.2%)	26 (7.6%)
Disruptive Behavior	16 (16.3%)	75 (47.5%)	0	9 (19.6%)	10 (38.5%)	110 (32.3%)
Substance Use	22 (22.4%)	63 (39.9%)	3 (23.1%)	8 (17.4%)	5 (19.2%)	101 (29.6%)
Trauma	2 (2.0%)	3 (1.9%)	3 (23.1%)	1 (2.2%)	1 (3.8%)	10 (2.9%)
Other	22 (22.4%)	52 (32.9%)	2 (15.4%)	11 (23.9%)	11 (42.3%)	98 (28.7%)
Missing	71 (72.4%)	75 (47.5%)	8 (61.5%)	32 (69.6%)	13 (50.0%)	199 (58.4%)



Table 2. (continued)

*Youth Demographic and Clinical Information Broken Down by Agency and Total Sample Size (n = 341)*

Variable	Agency A	Agency B	Agency C	Agency D	Agency E	Total Sample
Number of Diagnoses	3.3 (1.0)	2.8 (0.9)	2.8 (0.4)	3.4 (0.9)	3.2 (0.7)	3.0 (0.9)
Discharge Situation <sup>a</sup>						
Foster Home	7 (7.1%)	9 (5.7%)	0	6 (13.0%)	2 (7.7%)	24 (7.0%)
Group Care	1 (1.0%)	0	0	1 (2.2%)	0	2 (0.6%)
Home	59 (60.2%)	68 (43.0%)	6 (46.2%)	15 (32.6%)	4 (15.4%)	152 (44.6%)
Homeless/Shelter	3 (3.1%)	9 (5.7%)	0	0	0	12 (3.5%)
Institution/Hospital	0	2 (1.3%)	1 (7.7%)	1 (2.2%)	2 (7.7%)	6 (1.8%)
Jail/Correctional Facility	2 (2.0%)	4 (2.5%)	0	0	2 (7.7%)	8 (2.3%)
Other	21 (21.4%)	30 (19.0%)	6 (46.2%)	9 (19.6%)	11 (42.3%)	77 (22.6%)
Residential Treatment	0	4 (2.5%)	0	0	0	4 (1.2%)
Missing	5 (5.1%)	32 (20.3%)	0	14 (30.4%)	5 (19.2%)	56 (16.4%)
Discharge Status <sup>ab</sup>						
Success	69 (70.4%)	72 (45.6%)	2 (15.4%)	20 (43.5%)	4 (15.4%)	167 (49.0%)
Insufficient Progress	3 (3.1%)	8 (5.1%)	1 (7.7%)	2 (4.3%)	8 (30.8%)	22 (6.5%)
Family Relocation	0	0	0	1 (2.2%)	0	1 (0.3%)
Runaway	16 (16.3%)	37 (23.4%)	4 (30.8%)	5 (10.9%)	11 (42.3%)	73 (21.4%)
Refused Treatment	3 (3.1%)	9 (5.7%)	6 (46.2%)	0	2 (7.7%)	20 (5.9%)
Eligibility Change	1 (1.0%)	0	0	0	0	1 (0.3%)
Other	3 (3.1%)	9 (5.7%)	0	7 (15.2%)	5 (19.2%)	24 (7.0%)
Missing	4 (4.1%)	32 (20.3%)	0	13 (28.3%)	5 (19.2%)	54 (15.8%)

*Note.* Any Diagnosis Present represents the percent of youth who had a diagnosis in each category anywhere on their diagnostic profile, regardless of order (primary, secondary, tertiary etc.). <sup>a</sup>Represents frequencies and percentages. <sup>b</sup>It should be noted that there were occasionally multiple discharge statuses marked off for one youth (e.g., runaway and refused treatment). All other variables represent means and standard deviations. CBR = Community-based residential.

A small series of exploratory one-way analysis of variance (ANOVA) tests were conducted to evaluate the relationship between Agencies A through E on several continuous demographic variables that would be examined within the MLM analyses below. Significant differences between agencies were found on the youth variables of age ( $F(4, 336) = 4.72, p = 0.001$ ), length of CBR-III episode ( $F(4, 336) = 7.39, p < 0.001$ ), and number of diagnoses ( $F(4, 137) = 3.26, p = 0.014$ ). A follow-up Tukey test was conducted to evaluate pairwise differences among the means of the agencies for each of these significant continuous variables. With regard to age, there was a significant difference in the mean ages between Agency D ( $M = 15.2, SD = 1.4$ ) and Agency A ( $M = 16.0, SD = 1.1; p = 0.001$ ), and Agency D ( $M = 15.2, SD = 1.4$ ) and Agency B ( $M = 15.9, SD = 1.0; p = 0.002$ ). Although little information is known about Agency D, Agency A and B might have had older ages due to the populations served by these agencies being associated with older youth (e.g., youth with substance use and males with emotional concerns, respectively). Regarding length of CBR-III episode, there was a significant difference in the mean length of treatment episode between Agency D ( $M = 226.8, SD = 90.3$ ) and Agency A ( $M = 172.2, SD = 61.9; p = 0.001$ ), Agency C ( $M = 122.5, SD = 42.7; p < 0.001$ ), and Agency E ( $M = 156.6, SD = 74.4; p = 0.003$ ). In addition, there was a significant difference in average length of CBR-III episode between Agency B ( $M = 196.8, SD = 88.5$ ) and Agency C ( $M = 122.5, SD = 42.7; p = 0.012$ ). Little information is known about Agency D to assist with the interpretation of this finding. Yet, the difference in length of CBR-III episode between Agencies B and C may be due to the difference in the genders that these agencies serve (i.e., Agency B = males, Agency C = females). Finally, there was a significant difference in the average number of diagnoses between Agency A ( $M = 3.3, SD = 1.0$ ) as compared to Agency B ( $M = 2.8, SD = 0.9$ ;

$p = 0.046$ ), which might be due to Agency A serving youth with substance use issues and the high commodity of multiple substance use diagnoses for these youth.

A small series of exploratory chi-square analyses were performed to evaluate the relationship between Agencies A through E on several categorical demographic variables that seemed relevant to the two aims of this study. The three categorical variables of interest were gender (i.e., male or female), any disruptive behavior diagnosis in their diagnostic profile (i.e., yes or no), and discharge status of success (i.e., yes or no). Agency was found to be significantly related to gender (Pearson chi-square (4,  $n = 341$ ) = 137.79,  $p < 0.001$ ). The proportion of males in Agencies A through E were 58.2%, 100.0%, 0.0%, 93.5%, and 50.0%, respectively. Follow-up pairwise comparisons were conducted to evaluate the difference among these proportions and found that the difference was significant between Agency A and B, Agency A and C, Agency A and D, Agency B and C, Agency B and D, Agency B and E, Agency C and D, Agency C and E, and Agency D and E. The probability of the client being a male was about 1.72 times (100/58.2) more likely for youth in Agency B as opposed to A, 1.61 times (93.5/58.2) more likely for youth in Agency D as opposed to A, 1.07 times (100.0/93.5) more likely for youth in Agency B as opposed to D, 2.00 times (100.0/50.0) more likely for youth in Agency B as opposed to E, and 1.86 times (93.5/50.0) more likely for youth in Agency D as opposed to E. The odds ratios were not calculated for comparisons with Agency C due to their denominator being 0 (e.g., 58.2/0).

In addition, Agency and any diagnosis of disruptive behavior were significantly related to one another (Pearson chi-square (4,  $n = 142$ ) = 31.62,  $p < 0.001$ ). The proportion of any disruptive behavior diagnosis in Agencies A through E were 59.3%, 90.4%, 0.0%, 64.3%, and 76.9%, respectively. Follow-up pairwise comparisons were conducted to evaluate the difference among these proportions and found that the difference was significant between Agency A and B,

Agency A and C, Agency B and C, Agency B and D, Agency C and D, and Agency C and E. The probability of the client having any diagnosis related to disruptive behavior on their diagnostic profile was about 1.52 times (90.4/59.3) more likely for youth in Agency B as opposed to A, and 1.41 times (90.4/64.3) more likely for youth in Agency B as opposed to D. The odd ratios were not calculated for comparisons with Agency C due to their denominator being 0 (e.g., 59.3/0).

Finally, Agency and discharge status of success were significantly related to one another (Pearson chi-square (4,  $n = 287$ ) = 32.09,  $p < 0.001$ ). The proportion of youth who were discharged successfully in Agencies A through E were 73.4%, 57.1%, 15.4%, 60.6%, and 19.0%, respectively. Follow-up pairwise comparisons were conducted to evaluate the difference among these proportions and found that the difference was significant between Agency A and B, Agency A and C, Agency A and E, Agency B and C, Agency B and E, Agency C and D, and Agency D and E. The probability of the client being discharged successfully was about 1.29 times (73.4/57.1) more likely for youth in Agency A as opposed to B, 4.77 times (73.4/15.4) more likely for youth in Agency A as opposed to C, 3.86 times (73.4/19.0) more likely for youth in Agency A as opposed to E, 3.71 times (57.1/15.4) more likely for youth in Agency B as opposed to C, 3.01 times (57.1/19.0) more likely for youth in Agency B as opposed to E, 3.94 times (60.6/15.4) more likely for youth in Agency D as opposed to C, and 3.19 times (60.6/19.0) more likely for youth in Agency D as opposed to E. These results suggest that there are some significant differences between agencies when it relates to gender, diagnosis of disruptive behavior, and discharge status. This likely relates to the specific populations that each agency serves (e.g., Agency C serves females).

**Therapist Participants.** Clinical data was provided by MTPS reporters (henceforth, defined as “therapists”). Therapists at CBR-III programs typically include licensed registered nurses, Certified Substance Abuse Counselors or consultants, paraprofessional residential counselors, and other qualified professionals and specialists as needed, who are formally registered within CAMHD’s Credentialing Office as Qualified Mental Health Professionals (licensed), Mental Health Professionals (unlicensed), or Paraprofessionals (CAMHD, 2012). Since typically there are multiple therapists working with a youth in CBR-III settings (CAMHD, 2012), the therapist that was tied to the “Clinician ID” on the MTPS form (the person who actually filled out and submitted the form to CAMHD central offices) was considered the lead therapist for each youth. When multiple therapists were tied to one youth’s MTPS forms, the therapist that was most frequently linked to the MTPS forms was chosen for analyses with regard to examining the effects of therapists’ characteristics on youth outcome. When multiple therapists were tied to one youth’s MTPS forms and the therapists had the same number of MTPS forms completed, the initial therapist was chosen. This decision was made because the length of the treatment episodes studied was limited to a maximum of the youth’s first nine months of treatment (length examined for this study is discussed in detail below) and previous research suggests that a youth typically improves at higher rates earlier in treatment as compared to later in treatment (Orimoto, Jackson, et al., 2012), thereby suggesting at least some importance of therapist-patient interactions during the initial phases of treatment. Forty-seven unique therapists were associated with the sample of 341 youth mentioned above. Archival therapist data was retrieved from the Credentialing Database housed within CAMHD. Within this database, the only relevant therapist data that was available included therapist’s degree (i.e., number of degrees, highest degree, and professional specialty), licensure status, and

credentialing position within CAMHD (i.e., Qualified Mental Health Professional, Mental Health Professional, and Paraprofessional). This therapist information is provided in Table 3 for the entire sample and by agency.

Table 3.

*Therapist Information Broken Down by Agency and Total Sample Size for Both Clients (n = 341) and Therapists (n = 47)*

Variable	Agency A (n = 98)	Agency B (n = 158)	Agency C (n = 13)	Agency D (n = 46)	Agency E (n = 26)	Total Client Sample (n = 341)	Total Therapist Sample (n = 47)
Number Of Degrees	1.0 (0.0)	1.0 (0.0)	1.0 (0.0)	1.1 (0.2)	1.0 (0.0)	1.0 (0.1)	1.0 (0.15)
Highest Degree <sup>a</sup>							
High School Diploma or GED	1 (1.0%)	0	0	0	0	1 (0.3%)	1 (2.1%)
Associate/Vocational/Certificate	2 (2.0%)	0	0	0	0	2 (0.6%)	1 (2.1%)
Bachelors (BA, BS)	10 (10.2%)	0	0	0	0	10 (2.9%)	4 (8.5%)
Masters (MA, MS, MSW, MFT)	79 (80.6%)	88 (55.7%)	13 (100.0%)	43 (93.5%)	26 (100.0%)	249 (73.0%)	38 (80.9%)
Doctorate of Psychology (PsyD)	6 (6.1%)	0	0	0	0	6 (1.8%)	1 (2.1%)
Medical Degree (MD)	0	70 (44.3%)	0	0	0	70 (20.5%)	1 (2.1%)
Juris Doctor (JD)	0	0	0	3 (6.5%)	0	3 (0.9%)	1 (2.1%)
Professional Specialty <sup>a</sup>							
Clinical Psychology	7 (7.1%)	0	0	0	0	7 (2.1%)	2 (4.3%)
Counseling Psychology	28 (28.6%)	19 (12.0%)	1 (7.7%)	26 (56.5%)	8 (30.8%)	82 (24.0%)	11 (23.4%)
Marriage and Family Therapy	6 (6.1%)	69 (43.7%)	5 (38.5%)	17 (37.0%)	12 (46.2%)	109 (31.9%)	12 (25.5%)
Law/Political science	8 (8.2%)	0	0	3 (6.5%)	0	11 (3.2%)	3 (6.4%)
Social Work	33 (33.7%)	0	0	0	1 (3.8%)	34 (10.0%)	12 (25.5%)
Substance Abuse Counseling	2 (2.0%)	0	0	0	0	2 (0.6%)	1 (2.1%)
Other (due to High School)	1 (1.0%)	0	0	0	0	1 (0.3%)	1 (2.1%)
Psychology	13 (13.3%)	0	7 (53.8%)	0	5 (19.2%)	25 (7.3%)	4 (8.5%)
Medicine	0	70 (44.3%)	0	0	0	70 (20.5%)	1 (2.1%)
Licensed <sup>a</sup>	20 (20.4%)	83 (52.5)	0	5 (10.9%)	0	108 (31.7%)	8 (17.0%)
Position <sup>a</sup>							
Qualified Mental Health Professional	10 (10.2%)	83 (52.5%)	0	6 (13.0%)	0	99 (29.0%)	6 (12.8%)
Mental Health Professional	75 (76.5%)	75 (47.5%)	13 (100.0%)	40 (87.0%)	26 (100.0%)	229 (67.2%)	35 (74.5%)
Paraprofessional	13 (13.3%)	0	0	0	0	13 (3.8%)	6 (12.8%)

*Note.* <sup>a</sup>Represents frequencies and percentages. All other variables represent means and standard deviations.

## Measures

**Monthly Treatment Progress Summary (MTPS; CAMHD, 2005).** The MTPS is a locally-created therapist-report form designed to collect ongoing information on service formats, settings, service dates, treatment targets, PEs, client progress ratings, medications and dosage, reasons for discharge, and discharge living situation. Each section of the MTPS has predefined responses and open-ended fields to provide therapists with the opportunity to write-in their responses. CAMHD has previously provided statewide trainings (and videos of these trainings) on how to complete the MTPS and created the “Instructions and Codebook for Therapist Monthly Summaries” available to therapists online (CAMHD, 2012). Since 2006, contracted therapists within CAMHD have been required to complete MTPSs each month for all youth in order to receive financial reimbursement for their services (Nakamura, Higa-McMillan, & Chorpita, 2012). Due to this requirement, MTPS completion rates have been near perfect since then, suggesting that missing data is limited (Keir, Jackson, Izmirian, Mueller, & Sender, 2014). In the current study, only 33 MTPSs (1.4% of the total 2419 MTPSs) were missing, and of the remaining 2386 MTPSs, only nine MTPSs (0.4% of the total 2386 MTPSs) did not have complete data. Missing data was defined as an MTPS service month within the CBR-III episode (preceded and followed by completed MTPSs) that did not have a fully completed MTPS form (i.e., PEs, treatment targets, and progress ratings completed). Reasons for these missing MTPSs are unknown (e.g., therapist forgot to submit MTPS, MTPS was rejected by the billing department and was not considered as an “accepted” record). Incomplete data was defined as MTPSs that had some data present (e.g., progress rating on treatment targets) and some data missing (e.g., PEs endorsed).



In the event that multiple therapists provide services for a client within the month reflected by the MTPS, the therapist that was most familiar with the youth, family, and services provided during the month is responsible for completing the MTPS, after consulting with the other therapists (CAMHD, 2012). Within the CBR-III level of care, this might signify that although several therapists may work with a youth, only one completes the MTPS form. A qualified provider then verifies the accuracy of the information, signs and dates the MTPS, and sends the form to the Care Coordinator by the fifth day of each month for the previous month's services. All statewide MTPS data is entered into the Child and Adolescent Mental Health Management Information System through standardized procedures at the various Family Guidance Centers. The Child and Adolescent Mental Health Management Information System is a data management system that is compliant with the standards set by the Health Insurance Portability and Accountability Act.

***Treatment targets and progress ratings.*** On the MTPS, therapists are instructed to identify up to ten treatment targets addressed during each reporting month, from a list of 48 predefined responses and two write-in fields. They then assign progress ratings to each of the identified targets, based on the degree of progress achieved between the child's baseline level of functioning and the goal for that target. Progress ratings are ranked on a seven-point Likert scale (i.e., 0 to 6) with the following anchors: 0 being Deterioration (<0%), 1 being No Significant Change (0 to 10%), 2 being Minimal Improvement (11 to 30%), 3 being Some Improvement (31 to 50%), 4 being Moderate Improvement (51 to 70%), 5 being Significant Improvement (71 to 90%), and 6 being Complete Improvement (91 to 100%), with higher numbers indicating greater improvement.

Treatment targets have evidenced convergent and divergent validity with respect to diagnoses related and unrelated to those targets, respectively (Daleiden, Lee, & Tolman, 2004). In addition, Nakamura, Daleiden, and Mueller (2007) found that one-half to two-thirds of target selections were stable from intake to treatment follow-up and Daleiden and colleagues (2004) found moderate stability with regard to therapists choosing the same treatment targets at baseline as compared to one-month ( $k = 0.66$ ) and three-months ( $k = 0.52$ ) into treatment. Finally, Love, Orimoto, Powell, and Mueller (2011) conducted an exploratory factor analysis of the treatment targets and found evidence for a five-factor structure corresponding to the areas of Withdrawal, Conduct Problems, Disinhibition, Neurobiological Issues, and Negative Affect.

With regard to progress ratings associated with these treatment targets, Nakamura et al. (2007) found significant correlations between progress ratings on MTPS forms completed by therapists and other measures of clinical functioning. For example, with the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1994), where higher scores indicate more impairment, MTPS progress ratings were found to have significant negative correlations ( $r = -0.22$  to  $-0.44$ ) at one-, three-, and nine-month follow-ups, suggesting strong convergent validity for the MTPS' progress ratings.

***Intervention strategies.*** Each month, therapists are also instructed to indicate intervention strategies (i.e., PEs) utilized with the youth in the given MTPS month from a list of 63 predefined responses and three write-in options. Daleiden et al. (2004) noted a moderate one-month ( $k = 0.65$  to  $0.67$ ) and three-month ( $k = 0.5$ ) stability of choosing the same PEs on the MTPS since the start of treatment. An exploratory factor analysis of the PEs suggested a three-factor structure, including Behavioral Management (15 PEs), Cognitive/Self-Coping (19 PEs), and Family Interventions (13 PEs; Orimoto, Higa-McMillan, Mueller, & Daleiden, 2012).

Factors were found to be correlated ( $r = 0.46$  to  $0.52$ ) and have adequate to good internal reliability ( $\alpha = 0.81$  for Behavioral Management;  $\alpha = 0.82$  for Coping and Self-Control;  $\alpha = 0.78$  for Family Interventions; Orimoto, Higa-McMillan, et al., 2012). Additionally, both inter-rater reliability (Intraclass correlations [ICCs] =  $0.6$  or higher for some PEs) and convergent validity between therapist reports and coded observations (i.e., independent blind raters coding audio-recorded treatment sessions for the presence or absence of reportedly utilized PEs) have been established (Borntrager, Chorpita, Orimoto, Love, & Mueller, 2013; Daleiden et al., 2006).

***Remaining Sections of the MTPS.*** Therapists are also required to complete the remaining sections of the MTPS, which have several options regarding service format, settings, medication, and discharge information. Service format options include individual, group, parent, family, teacher, or other. Service setting options include home, school, community, out-of-home, clinic/office, or other. Medication information includes psychiatric medications, daily dose, dose schedule, and descriptions about changes in the medication. Discharge living situation options include home, foster home, group care, residential treatment, institution/hospital, jail/correctional facility, homeless/shelter, and other. Reasons for discharge include success/goals met, insufficient progress, family relocation, runaway/elopement, refuse/withdrawal, eligibility change, and other. Discharge reason and living situation fields should be completed for the last MTPS associated with that treatment episode.

**Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1994).** The CAFAS is a 200-item clinician report scale that measures level of functional impairment. Using their experience and knowledge of the child, the clinician evaluates the child on behavioral descriptions of their level of impairment across eight domains of functioning. The eight domains include School Role Performance, Home Role Performance, Community Role Performance,

Behavior Toward Others, Mood/Emotions, Mood/Self-Harmful Behavior, Substance Use, and Thinking. The therapist scores the child on their highest level of impairment (i.e., severe = 30, moderate = 20, mild = 10, no/minimal = 0) based on the specific items in each domain and impairment level. The total CAFAS score (range = 0 to 240) is calculated by summing the highest level of impairment across the eight domains. Within CAMHD, the Care Coordinators complete this measure for all clients on a quarterly basis and enter their scores into CAMHD's data management system. For the purposes of this study, a client's baseline CAFAS score (i.e., the CAFAS that was within plus or minus 45 days from the start date of their CBR-III episode) was entered as a covariate in the study at the client-level (c.f., Orimoto et al., 2013).

The CAFAS has evidenced acceptable internal consistency across items ( $\alpha = 0.63$  to  $0.68$ ), adequate convergent validity with other related measures (e.g.,  $r = 0.42$  to  $0.49$  with the Child Behavioral Checklist; Achenbach & Rescorla, 2001), and good inter-rater reliability ( $r = 0.92$  to  $0.96$ ) across different samples of raters (Hodges & Gust, 1995; Hodges & Wong, 1996). Concurrent validity studies with the CAFAS have also established a relationship between this measure and intensity of care provided, restrictiveness of living settings, contact with the law, juvenile justice involvement (odds ratio = 1.35 to 8.88), social relationship difficulties (odds ratio = 1.43 to 5.71), school-related problems like absenteeism (odds ratio = 1.02 to 5.98), and risky behaviors (odds ratio = 1.20 to 8.38; Hodges & Kim, 2000; Hodges & Wong, 1996). CAFAS scores at intake have also demonstrated predictive relationships with both service utilization and costs of services (Keir, Jackson, Mueller, et al., 2014). Finally, convergent validity has been established with other assessments of youth progress within systems of care (e.g., Children's Global Assessment Scale and MTPS; Hodges & Gust, 1995; Mueller, Tolman, Higa-McMillan, & Daleiden, 2010; Nakamura et al., 2007). Table 4 reports the baseline total and

subscale CAFAS scores averaged across the total sample and each agency. An exploratory one-way ANOVA was conducted to evaluate the relationship between agencies and the total CAFAS score. The ANOVA was significant  $F(4, 336) = 6.90, p < 0.001$ , and a follow-up Tukey test was conducted to evaluate pairwise differences among the means. There was a significant difference in the means between Agency A ( $M = 141.26, SD = 27.03$ ) and Agency B ( $M = 125.27, SD = 25.55; p < 0.001$ ), Agency A ( $M = 141.26, SD = 27.03$ ) and Agency D ( $M = 125.58, SD = 32.00; p = 0.015$ ), and Agency B ( $M = 125.27, SD = 25.55; p = 0.044$ ) and Agency C ( $M = 147.93, SD = 22.69$ ). The higher total CAFAS score for Agency C may be due to this agency serving a different gender (Agency C = females, Agency B = males) or the large difference in the sample sizes between Agencies B and C. The higher total CAFAS score for Agency A compared to Agencies B and D may be due to the Agency A specializing in substance use issues and the different populations served by these three agencies.

Table 4.

*Average (and Standard Deviation) of Youth CAFAS scores (n = 341) within 45 Days of their CBR-III Episode Start Date*

Scale	Agency A	Agency B	Agency C	Agency D	Agency E	Total Sample
Total	140.2 (26.1)	126.0 (25.8)	145.8 (22.3)	125.5 (29.8)	133.3 (33.1)	131.5 (27.6)
School Role Performance	26.6 (6.8)	25.8 (7.5)	28.3 (3.9)	26.3 (8.2)	24.8 (10.8)	26.1 (7.5)
Home Role Performance	27.3 (5.6)	26.3 (6.6)	30.0 (0.0)	27.4 (5.5)	27.1 (7.2)	26.9 (6.1)
Community Role Performance	21.3 (6.7)	19.9 (7.4)	16.7 (7.8)	19.7 (9.1)	18.6 (8.5)	20.0 (7.6)
Behavior Toward Others	19.7 (5.8)	20.1 (5.4)	21.7 (3.9)	18.9 (6.5)	18.6 (6.5)	19.8 (5.7)
Moods/Emotion	16.3 (7.8)	14.9 (6.7)	21.7 (3.9)	16.6 (6.7)	18.1 (6.0)	16.0 (7.0)
Moods/Self- Harmful Behavior	3.4 (7.7)	1.2 (4.4)	9.2 (10.0)	2.4 (5.4)	4.8 (9.3)	2.6 (6.6)
Substance Use	24.0 (8.1)	15.4 (10.9)	10.8 (12.4)	11.8 (11.4)	19.5 (12.0)	17.6 (11.2)
Thinking	1.8 (5.4)	2.5 (5.7)	7.5 (9.7)	2.4 (4.9)	1.9 (5.1)	2.4 (5.7)

*Note.* The subscale scores for the CAFAS (i.e., School Role Performance, Home Role Performance, Community Role Performance, Behavior Toward Others, Moods/Emotion, Moods/Self-Harmful Behavior, Substance Use, and Thinking) can have a range from 0 to 30, with 0, 10, 20, and 30 representing minimal, mild, moderate, and severe impairment, respectively. The total score for the CAFAS can have a range from 0 to 240. CAFAS = Child and Adolescent Functional Assessment Scale. CBR = Community-based residential.

## **Procedures**

**Data Source.** CAMHD's Research Evaluation and Training Program electronically extracted a limited dataset with relevant client clinical and demographic data from the Child and Adolescent Mental Health Management Information System (i.e., CAMHD's data management system). This database maintains records on all CAMHD clients, consistent with CAMHD's data storage procedures (CAMHD, 2012). All therapist data was electronically extracted from the credentialing database that was developed and maintained by the Credentialing Office of CAMHD. This database provided therapists' education level and professional information (e.g., specialty).

**Human Subjects Consideration.** Upon entry into CAMHD, the legal guardian of the youth received a complete description of CAMHD's privacy policies and signed the Notice of Privacy Practices consent form, which allowed for the use of data for research purposes. This consent form adheres to the Health Insurance Portability and Accountability Act and Family Educational Rights and Privacy Act standards. This study was submitted to the University of Hawai'i at Mānoa's Institutional Review Board and received an exempt approval due to the nature of this study being archival and the signed Notice of Privacy Practices by the legal guardian of these youth.

## **Data Analytic Strategy**

**Defining Problem Area through Treatment Targets.** As previously mentioned, therapists complete the MTPS, which indicates the treatment targets they addressed each reporting month for every youth they treated. Treatment targets have been found to be related to youths' diagnoses and moderately stable over time (Daleiden et al., 2004). For example, when

treating a youth with conduct disorder or oppositional defiant disorder, a therapist might endorse addressing the treatment targets of aggression, fire setting, and runaway on the MTPS over several months of their treatment episode. CAMHD youth were included in this study if they had at least one of the following MTPS targets per month and at least two of the following MTPS targets per episode (cf. Orimoto et al., 2013): aggression, anger, fire setting, oppositional/non-compliant behavior, runaway, sexual misconduct, and willful misconduct/delinquency. Participant inclusionary criteria centered on these target behaviors owing to PracticeWise, LLC's (2014) literature coding summaries and PDEB profiles for "disruptive behavior" being based on these seven DBP targets.

**Defining utilization of PDEB with Level-Two (Good) or better support (i.e., PDEB-Score).** As previously mentioned, the primary focus of this study was to examine the extent to which PDEB-use predicted improvement rates for DBP youth in CBR-III settings. As mentioned previously, PDEB identification was based on the treatment outcome literature distillation findings for DBP youth, 13 years or older, from all levels of care. Table 1 (above) provides a list of the percent of study groups for evidence-based treatment protocols that included each PE that had Level-Two or better support for DBP youth 13 years or older, regardless of setting. For the purposes of this study, practices were considered as PDEB if they were present in at least 30% of study groups with Level-Two or better support (cf. Denenny & Mueller, 2012; Love, 2014). The conservative criteria of 30% was chosen in hopes of ensuring that the best practices were represented on the list of indicated PEs, while trying not to be overly inclusive. Based on this information, there were 15 PEs that were considered PDEB for DBP youth 13 years or older across all settings.



The PDEB predictor score was defined as the average monthly proportion of PDEBs endorsed as being used by a therapist with a client. This definition will be further referred to as the PDEB-score and will be represented with the following equation (cf. Orimoto et al., 2013):

$$\frac{\sum \frac{\text{PDEBs endorsed each MTPS}}{\text{All practices endorsed each MTPS}}}{\text{Number of MTPSs}}$$

For example, if a therapist saw a client in the CBR-III setting for six months and used four PDEBs and three PMESs (i.e., practices with minimal evidence support or PEs in less than 30% of study groups) in the first three months, and five PDEBs and one PMES in the last three months, the youth’s PDEB-score would be calculated as follows:

$$\frac{4/7 + 4/7 + 4/7 + 5/6 + 5/6 + 5/6}{6} = \frac{.57 + .57 + .57 + .83 + .83 + .83}{6} = \mathbf{0.70}$$

This youth would receive a PDEB-score of 0.70, suggesting that on average 70% of the PEs endorsed by the youth’s therapist per month were PDEB. This PDEB-score can range from zero to one.

Each youth received one PDEB-score based on the list of PDEBs for older DBP youth across all settings (found bolded in Table 1). The several advantages of using this definition for PDEB-use included: (a) controlling for the number of PEs each therapist used per month; (b) accounting for whether a therapist was consistently using PDEBs throughout treatment as compared to those who only used PDEBs in the beginning or end of treatment; (3) accounting for the PMESs that each therapist used; and (4) taking into consideration the use of PDEBs multiple times throughout a treatment episode.

**Data Preparation.** First, minimum and maximum values (i.e., response ranges) for each item, subscale, and totals of all measures were calculated to identify impossible values and eliminate potential data entry errors. MTPSs were inspected to ensure that each MTPS included had at least one treatment target, respective progress ratings for each treatment target, and at least one PE. Prior research indicates that the majority of MTPS records were considered valid using these criteria (e.g., Keir, Jackson, Izmirian, et al., 2014; Love et al., 2011; Love, Tolman, Mueller, & Powell, 2010). Second, in order to obtain a preliminary and broad understanding of the data, the following was examined at all subscale and total levels for each measure: means, standard deviations, skewness, and kurtosis. Finally, assumptions for conducting MLM analyses were tested (e.g., normality of the dependent variable, normality of residuals for the dependent variable, sufficient variance in the dependent variable, and predictors not having multicollinearity; Quene & van den Bergh, 2004; Raudenbush & Bryk, 2002).

**Missing Data.** As noted below, MLM was utilized as the major analytic strategy for this study. MLM allows for participants within a study to have incomplete or unequal amounts of data for each participant (Quene & van den Bergh, 2004; Raudenbush & Bryk, 2002). Thus, it was not necessary for listwise deletion to occur if participants had some missing data or unequal time points. However, MLM assumes that the missing data in the sample are missing at random (Quene & van den Bergh, 2004; Raudenbush & Bryk, 2002). Hence, a Missing Values Analysis was run in the Statistical Package for Social Sciences to determine if the data were Missing Completely at Random, Missing at Random, or Missing Not at Random (Little & Rubin, 1987). Missing data were addressed independently for each variable with missing data.

**Power.** Calculating an appropriate sample size for a multilevel model is more complex than the strategies used for single-level analyses. Furthermore, there is a lack of consistency

between the guidelines put forth by statisticians (e.g., different sample sizes depending on types of analyses; Hox, 2010; Scherbaum & Ferrerter, 2009). One sample size guideline that statisticians tend to agree upon is increasing the number of units at level-two (e.g., clients, where the PDEB-score is housed) rather than the number of units at level-one (e.g., time) within each group since this assists in calculating random coefficients (Heck, Thomas, & Tabata, 2013; Hox, 2010; Scherbaum & Ferrerter, 2009). In addition, prior studies that employed a multilevel model in this field were referenced to help estimate an appropriate sample size. Previous studies were able to significantly predict the slope of a youth's improvement (e.g., progress ratings) with small to medium effect sizes for their estimate by having a sample size ranging from 57 to 2,171 (e.g., Mueller et al., 2010; Orimoto et al., 2013; Weersing & Weisz, 2002; Weisz et al., 2009; Weisz, Jensen-Doss, & Hawley, 2006). This suggested that the final sample size of 341 for the current study likely had sufficient power.

**Analyses for Study Aim One: Descriptive Analyses.** Prior to conducting the MLM analysis (described below), descriptive analyses of the data were performed. As a reminder, these analyses were exploratory in nature and had no *a priori* hypotheses. First, means, standard deviations, and frequencies were calculated for youth demographic information, therapist information, and clinical services information. Second, frequency counts of MTPS treatment targets used were calculated in two ways: (a) the proportion of the total sample that had each treatment target endorsed at any point in time throughout the entire treatment episode (regardless of how often; e.g., 1 = yes, 0 = no) and (b) the monthly proportion of all MTPSs in a youth's entire treatment episode that included each treatment target (e.g., 8 of 10 MTPSs = 80%), averaged across the entire dataset. Third, frequency counts for each PE were calculated in a fashion similar to the treatment target analysis described above. Finally, exploratory analyses

were conducted to examine the relationships between the variables described above (e.g., correlation between initial CAFAS score and PDEB-score, ANOVA between race and PDEB-score). All of the analyses mentioned above were completed within and across each of the five CBR-III agencies examined in this study.

**Analyses for Study Aim Two: Multilevel Modeling.** As mentioned previously, the second aim of this study was to use MLM to examine the extent to which PDEB-use predicted rate of improvement for disruptive youth 13 years and older in the CBR-III setting. It was hypothesized that a higher PDEB-score would be associated with greater rates of improvement on progress ratings for these older disruptive youth in this setting. The proposed study followed the guidelines discussed by Peugh (2010), which noted the following steps needed to conduct a MLM analysis. First, the appropriate parameter estimation methods and covariance structures were selected (e.g., full information maximum likelihood or restricted estimation maximum likelihood). Parameter estimation indicated the extent to which the sample covariance matrix representing the model effectively approximated the observed sample data (Heck et al., 2013). In full information maximum likelihood, both regression coefficients and variance components are included in the likelihood function, which can lead to an overly liberal hypothesis test if the sample size is small and there are more parameters (Heck et al., 2013). In restricted estimation maximum likelihood, only the variance components are included in the likelihood function, which tend to lead to better estimates when there are a smaller number of groups in the study (Heck et al., 2013).

Second, the ICC from the unconditional model (i.e., model without predictors) was calculated to identify the proportion of variance explained by the grouping structures of the population (i.e., time, client, and therapist; Heck et al., 2013; Woltman, Feldstain, Mackay, &

Rocchi, 2012). The ICC can also be interpreted as the within-subjects correlation of any two randomly chosen individuals in the same group (Hox, 2010; Quene & van den Bergh, 2004). In the current study, client-level differences needed to account for more than 5% of the ICC or the between group variance in youth improvement rate to justify a multilevel analysis (rather than a one-level analysis; Heck et al., 2013).

Third, the shapes of the within-subject growth trends were inspected among a random subset of the population (n=30, approximately 10%) to determine the overall shape of the trend (e.g., linear, quadratic, negative exponent, log, natural log). Relevant terms of time were considered for inclusion if growth rates were not linear (Raudenbush & Bryk, 2002; Singer & Willett, 2003). Finally, centering of units, including the time in months and other variables, was conducted as needed to maximize the interpretation of the data (Heck et al., 2013).

The current study examined the extent to which the PDEB-score for DBP youth in the CBR-III setting predicted rate of change or slope of youth progress ratings for their DBP treatment targets (i.e., the dependent variable). The slope was calculated for each youth by averaging their MTPS progress ratings on the seven disruptive behavior targets for each month and then looking at the changes across months. A decision about the length of the treatment episode that was included in this study was made by calculating the average length of treatment for DBP youth in the CBR-III setting and adding one standard deviation. Based on this formula, up to 9 months of a youth's treatment episode was included in the MLM analyses (i.e., 187.9 days (mean) + 82.5 days (standard deviation) = 270.4 days or approximately 9 months).

Statistical Package for Social Sciences was utilized to analyze the three-level<sup>4</sup> mixed-effects model, where time (in months) that the MTPS was completed was nested within youth, which was nested within therapists. Level-one included time in months. Level-two included the main variable of interest (i.e., PDEB-score) and controlled for between-client variation and youth-related variables. Level-three included therapist-level characteristics as covariates. Across the level-two youth variables (e.g., age, ethnicity, gender, initial impairment as measured by the youth's first CAFAS, total number of comorbid diagnoses, treatment dose as measured by number of days in treatment, use of family therapy, CBR-III agency), research thus far seems to suggest that age, initial impairment, and the use of family therapy are associated with youth improvement, and these variables were closely examined in the current study (e.g., Casey et al., 2010; Daleiden et al., 2010; Gorske, Srebalus, & Walls, 2003; Wells, Wyatt, & Hobfoll, 1991). In terms of the level-three predictors (e.g., licensure status, degree, professional specialty), previous research demonstrated conflicting results in terms of therapist-related variables being significantly related to improvement rates or PDEB-use (Daleiden et al., 2010; Higa-McMillan et al., 2014; Orimoto et al., 2013), making the inclusion and investigation of these variables exploratory in nature.

Below is the equation that represents the multilevel model for the current study (Raudenbush & Bryk, 2002):

$$\text{Level-one: } Y_{ij} = \pi_{0ij} + \pi_{1ij}a_{ij} + e_{ij}$$

$$\text{Level-two: } \pi_{0ij} = \beta_{00j} + \beta_{01j}X_{0ij} + r_{0ij}$$

$$\pi_{1ij} = \beta_{10j} + \beta_{11j}X_{1ij} + r_{1ij}$$

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<sup>4</sup> This model was originally going to include four-levels, with the fourth level being CBR-III agency. However, due to the small number of agencies in this sample (n = 5), it was removed as a level and was instead included as a variable at the client level (i.e., level-two).

$$\text{Level-three: } \beta_{00j} = \gamma_{000} + \gamma_{001} W_{1j} + u_{00j}$$

$$\beta_{01j} = \gamma_{010} + \gamma_{011} W_{1j} + u_{01j}$$

$$\beta_{10j} = \gamma_{100} + \gamma_{101} W_{1j} + u_{10j}$$

$$\beta_{11j} = \gamma_{110} + \gamma_{111} W_{1j} + u_{11j}$$

In these equations, the subscripts of  $t$ ,  $i$ , and  $j$  represent time, individual, and group, respectively.

The model with the variables included is as follows (where  $p$  represents the number of parameters):

$$\text{Level-one: } Y_{tij} = \pi_{0ij} + \pi_{1ij} \mathbf{TIME}_{tij} + e_{tij}$$

$$\text{Level-two: } \pi_{0ij} = \beta_{00j} + \beta_{01j} \mathbf{PDEB-Score}_{1ij} + \beta_{02j} \mathbf{YouthAge}_{2ij} + \dots + \beta_{0pj} \mathbf{CAFAS}_{pij} + r_{0ij}$$

$$\pi_{1ij} = \beta_{10j} + \beta_{11j} \mathbf{PDEB-Score}_{1ij} + \beta_{12j} \mathbf{YouthAge}_{2ij} + \dots + \beta_{1pj} \mathbf{CAFAS}_{pij} + r_{1ij}$$

$$\text{Level-three: } \beta_{00j} = \gamma_{000} + \gamma_{001} \mathbf{Licensure}_{1j} + \dots + \gamma_{00p} \mathbf{Degree} + u_{00j}$$

$$\beta_{01j} = \gamma_{010} + \gamma_{011} \mathbf{Licensure}_{1j} + \dots + \gamma_{01p} \mathbf{Degree} + u_{01j}$$

$$\beta_{10j} = \gamma_{100} + \gamma_{101} \mathbf{Licensure}_{1j} + \dots + \gamma_{10p} \mathbf{Degree} + u_{10j}$$

$$\beta_{11j} = \gamma_{110} + \gamma_{111} \mathbf{Licensure}_{1j} + \dots + \gamma_{11p} \mathbf{Degree} + u_{11j}$$

### **Chapter 3. Results**

The results were organized into four sections. First, the data preparation and missing values analyses were discussed for relevant variables. Second, the descriptive analyses for study aim one (e.g., frequencies, ANOVAs, correlations) were conducted and summarized for youth and therapist variables. Next, the MLM analyses for study aim two were completed to examine the extent to which PDEB-score predicted rate of improvement for older DBP youth. Finally, exploratory follow-up analyses for study aim two were conducted and examined.

#### **Data Preparation and Missing Values**

First, minimum and maximum values (i.e., response ranges) for each item, subscale, and totals of all measures were calculated and no impossible values were found in the dataset. MTPSs were inspected to ensure that they were valid (i.e., had treatment targets, progress ratings for each treatment target, and at least one PE). As mentioned previously, only nine MTPSs (0.4% of the total 2419 MTPSs) did not have complete data (i.e., they were missing PEs) and 33 MTPSs (1.4% of the total 2419 MTPSs) were missing both treatment target and PE data.

Second, means, standard deviations, skewness, and kurtosis were examined for the CAFAS scores, PDEB-score, and dependent variable of average progress rating on DBP targets. Skewness values beyond positive or negative one and kurtosis values beyond positive or negative two were considered mild departures from normality, while skewness values of positive or negative two and kurtosis values of positive or negative seven were considered significant deviations from normality (R. Heck, personal communication, February 27, 2016). Table 5 (next page) provides the means, standard deviations, skewness, and kurtosis values for these variables, with bolded items representing potential variables with a non-normal distribution. Given the main variables of interest (i.e., PDEB-score, the dependent variable, and Total CAFAS score)



had normal distributions, it was determined that no further action was needed to address normality concerns.

Table 5.

*Means, Standard Deviations, Skewness, and Kurtosis for Child and Adolescent Functional Assessment Scale (CAFAS), PDEB-Score, and Average Progress Rating for Disruptive Behavior Targets*

Variable	Mean	Standard Deviation	Skewness	Kurtosis
<b>CAFAS</b>				
<b>School Role Performance</b>	<b>25.67</b>	<b>7.28</b>	<b>-1.96</b>	<b>3.62</b>
<b>Home Role Performance</b>	<b>26.55</b>	<b>6.00</b>	<b>-1.84</b>	<b>2.98</b>
Community Role Performance	19.89	7.43	-0.86	1.09
<b>Behavior Toward Others</b>	<b>19.57</b>	<b>5.64</b>	<b>-0.67</b>	<b>2.34</b>
Mood/Emotion	15.86	6.98	-0.61	0.02
<b>Mood/Self-Harm</b>	<b>3.10</b>	<b>6.54</b>	<b>2.11</b>	<b>3.29</b>
Substance Use	17.50	10.91	-0.44	-1.13
<b>Thinking</b>	<b>2.84</b>	<b>5.62</b>	<b>2.30</b>	<b>5.61</b>
Total	131.43	28.35	-0.70	1.52
PDEB-Score	0.32	0.04	-0.04	0.05
Average Monthly Progress Rating for disruptive behavior targets	2.72	1.42	0.18	-0.79

*Note.* Bolded values were considered non-normal. PDEB = Practice elements derived from the evidence-base.

Several assumptions for MLM were tested when the sample was limited to only the first nine months of a youth’s treatment episode (i.e., 2241 rows of data). First, the distribution of the dependent variable was tested and found to be normal. Second, the residuals of the dependent variable were calculated and all residual values beyond positive or negative three were considered outliers. Of the total sample, 55 MTPSs had a dependent variable (i.e., average progress rating of DBP targets) that was considered an outlier, leading them to be removed from the sample. This removal of the outliers did not decrease the youth participant sample size (n = 341), but did remove 55 dependent variable data points (i.e., 55 MTPS data points were removed). Third, as will be discussed in more detail below, the variance in the dependent variable (i.e., the ICC) was greater than 5%. Finally, multicollinearity was examined by looking

at the correlations between the items that would be included in the MLM. Given that none of the correlations between different constructs were above 0.5 (see Table 18 below), this assumption was considered met (R. Heck, personal communication, February 27, 2016).

In the current study, there was only one variable that was investigated for missing data: CAFAS Total Score. With this variable, either the data was completely present or completely missing for each client. Thus, the Missing Values Analysis for this variable was found to be not Missing Completely at Random (due to the all or nothing nature of this data). To address this missing data so that participants would not be excluded if they did not have a CAFAS Total Score, a multiple imputation was used to calculate this value using relevant variables that occurred in the same level (i.e., level-two) of the analysis as the CAFAS Total Score (R. Heck, personal communication, December 2, 2016). Missing MTPS data was not imputed because only approximately 1% of MTPS data was missing and MLM allows for participants to have unequal amounts of data per participant for variables that are person-period (e.g., the MTPS).

### **Analyses for Study Aim One: Descriptive Analyses.**

Descriptive analyses were completed for relevant demographic and clinical information in this study. The means, standard deviations, and frequencies for youth and therapist demographic and clinical information are provided in Tables 2 and 3 above in the “Youth Participants” and “Therapist Participants” sections, respectively. Overall, these results suggested that the typical youth placed into CBR-III settings was a 15.8 years old male, who was multiracial, had three diagnoses, had a CBR-III episode that was 6 months in length, and was discharged successfully to the home setting. With regard to therapists, the data suggested that the modal therapist was characterized as being an unlicensed Mental Health Professional, who had one master’s degree in the specialty of marriage and family therapy or counseling psychology.

The frequency count of all treatment targets endorsed on the MTPSs throughout the entire treatment episode (i.e., prior to limiting the sample to nine months) are presented below in Tables 6 to 11 (for the total sample and each respective agency). The middle column of each table represents the percent of the sample that had each treatment target endorsed at least once at any point in time throughout the entire treatment episode (regardless of how often; 1 = yes, 0 = no). The right column of each table represents the percent of MTPS reporting months within a youth's entire treatment episode that included each treatment target, averaged across the entire dataset. For example, in Table 6, oppositional/non-compliant behavior was used at least once throughout the treatment episode for 286 youth (83.9% of the total sample) and was used on average within 76.0% ( $SD = 37.6$ ) of the months throughout all youths' treatment episodes. Overall, the results from Table 6 suggested that the top DBP treatment targets across the total sample were anger, aggression, oppositional/non-compliant behavior, runaway, and willful misconduct/delinquency. In addition, these results indicated that fire setting was not a DBP treatment target for any youth in this sample and sexual misconduct was a concern with only a small percentage of this sample. Based on the results from the total sample, non-DBP treatment targets that frequently occurred included the following: other externalizing behaviors (e.g., substance use), social interactions (e.g., activity involvement, assertiveness, community involvement, empathy, peer involvement, peer/sibling conflict, positive peer interactions, social skills), anxiety (e.g., anxiety, avoidance, phobias/fears), mood (e.g., contentment/enjoyment/happiness, depressed mood, low self-esteem, positive thinking/attitude, self-injurious behavior), and other topics (e.g., treatment engagement, academic achievement).

The treatment target endorsement patterns were examined amongst each agency to determine similarities and differences. Generally speaking, agency-specific results were

consistent with the total sample with regard to the specific DBP treatment targets that were highly endorsed (e.g., anger, aggression, oppositional/non-compliant behavior, runaway, and willful misconduct/delinquency) and infrequently endorsed (e.g., fire setting and sexual misconduct). In addition, all of these agencies typically endorsed the majority of the same non-DBP treatment targets. However, there were a few differences among the treatment targets endorsed by these agencies. For example, Agency A frequently targeted self-control and adjustment to change, which may be related to the substance use focus of this agency. Agencies C and E had a high focus of traumatic stress and health-related targets (e.g., health management, medical regimen adherence), which might be associated with the high rate of females within Agency C (i.e., 100%) and E (i.e., 50%). Agencies D and E also endorsed attention problems and hyperactivity more frequently than the total sample, which is likely due to their high percentage of youth with attention deficit/hyperactivity disorder, as compared to the other agencies. Finally, Agencies B, C, D, and E had high endorsements of school-related targets (e.g., academic achievement, school attendance, and school involvement), which is not surprising given that educational supports are incorporated into CBR settings. These agency-specific differences possibly highlight the diverse missions and populations served by these agencies.

Table 6.

*Frequency Counts of Treatment Targets for the Total Sample (n = 341)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
<b>Oppositional/Non-Compliant Behavior</b>	<b>286 (83.9%)</b>	<b>76.0% (37.6)</b>
Substance Use	298 (87.4%)	69.0% (37.4)
Positive Peer Interaction	289 (84.8%)	68.1% (39.3)
<b>Anger</b>	<b>289 (84.8%)</b>	<b>67.5% (38.1)</b>
Activity Involvement	275 (80.6%)	67.3% (41.3)
Phobia/Fears	252 (73.9%)	56.7% (42.2)
Treatment Engagement	242 (71.0%)	51.7% (41.9)
<b>Aggression</b>	<b>216 (63.3%)</b>	<b>44.7% (41.9)</b>
<b>Runaway</b>	<b>209 (61.3%)</b>	<b>40.8% (41.8)</b>
<b>Willful Misconduct/Delinquency</b>	<b>183 (53.7%)</b>	<b>34.4% (39.4)</b>
Avoidance	171 (50.1%)	30.6% (37.9)
Empathy	142 (41.6%)	23.8% (35.2)
Academic Achievement	144 (42.2%)	21.6% (32.6)
Self-Injurious Behavior	140 (41.1%)	21.3% (33.5)
Anxiety	127 (37.2%)	19.7% (32.6)
Low Self-Esteem	108 (31.7%)	19.6% (35.0)
Social Skills	130 (38.1%)	18.4% (30.1)
Depressed Mood	114 (33.4%)	18.1% (32.4)
Positive Thinking/Attitude	116 (34.0%)	16.6% (29.0)
Peer Involvement	115 (33.7%)	14.4% (25.5)
Contentment/Enjoyment/Happiness	101 (29.6%)	13.0% (25.2)
Assertiveness	96 (28.2%)	12.7% (26.2)
Peer/Sibling Conflict	80 (23.5%)	10.2% (23.2)
Community Involvement	81 (23.8%)	10.2% (22.1)
Adjustment to Change	63 (18.5%)	8.6% (23.3)
School Involvement	90 (26.4%)	8.6% (19.6)
Attention Problems	68 (19.9%)	7.9% (20.1)
Medical Regimen Adherence	51 (15.0%)	7.7% (22.6)
Traumatic Stress	38 (11.1%)	7.0% (23.5)
Hyperactivity	41 (12.0%)	6.7% (21.5)
Grief	30 (8.8%)	5.7% (21.2)
Self-Control	36 (10.6%)	5.1% (18.6)
Other*	25 (7.3%)	4.4% (17.7)
School Attendance	37 (10.9%)	3.9% (15.3)
Cognitive-Intellectual Functioning	35 (10.3%)	3.0% (12.5)
Adaptive Behavior/Living Skills	22 (6.5%)	2.1% (10.6)
Health Management	18 (5.3%)	1.8% (10.9)

Table 6. (continued)

*Frequency Counts of Treatment Targets for the Total Sample (n = 341)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
Positive Family Functioning	9 (2.6%)	1.6% (11.2)
Suicidality	7 (2.1%)	1.4% (10.7)
Shyness	9 (2.6%)	1.1% (9.1)
<b>Sexual Misconduct</b>	<b>15 (4.4%)</b>	<b>1.1% (7.3)</b>
Mania	5 (1.5%)	0.7% (7.2)
Learning Disorder/Underachievement	9 (2.6%)	0.7% (5.3)
Sleep Disturbance	4 (1.2%)	0.5% (4.8)
Eating/Feeding Problems	4 (1.2%)	0.5% (4.6)
Psychosis	3 (0.9%)	0.4% (3.9)
Gender Identity Problems	3 (0.9%)	0.3% (2.9)
Housing/Living Situation	7 (2.1%)	0.3% (2.2)
Personal Hygiene	2 (0.6%)	0.2% (3.8)
Treatment Planning*	1 (0.3%)	0.2% (3.4)
Occupational Functioning/Stress	4 (1.2%)	0.2% (1.5)
Parenting Skills*	1 (0.3%)	0.1% (2.2)
Compulsive Behavior*	1 (0.3%)	0.0% (0.7)
Unclear*	1 (0.3%)	0.0% (0.5)
Enuresis/Encopresis	0	0
<b>Fire Setting</b>	<b>0</b>	<b>0</b>
Pregnancy Education/Adjustment	0	0
Speech and Language Problems	0	0

*Note.* Bolded items represent disruptive behavior treatment targets. Treatment target utilized at least once throughout the episode = Number of participants (and percent of sample) that had each treatment target endorsed at least once throughout the entire episode (i.e., yes or no). Treatment target utilization overall = Percent of Monthly Treatment Progress Summary (MTPS) reporting months within a youth's entire treatment episode that included each treatment target, averaged (with standard deviation) across the entire dataset. \*Treatment targets commonly written-in by therapists.

Table 7.

*Frequency Counts of Treatment Targets for Agency A (n = 98)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
Substance Use	93 (94.9%)	88.4% (28.2)
Activity Involvement	89 (90.8%)	88.3% (30.2)
Positive Peer Interaction	82 (83.7%)	77.7% (38.7)
<b>Anger</b>	<b>75 (76.5%)</b>	<b>72.3% (42.3)</b>
Phobia/Fears	65 (66.3%)	64.4% (46.6)
<b>Oppositional/Non-Compliant Behavior</b>	<b>56 (57.1%)</b>	<b>54.5% (48.4)</b>
<b>Runaway</b>	<b>50 (51.0%)</b>	<b>47.7% (48.5)</b>
<b>Aggression</b>	<b>45 (45.9%)</b>	<b>40.3% (46.3)</b>
Low Self-Esteem	30 (30.6%)	29.9% (45.4)
Treatment Engagement	26 (26.5%)	24.6% (42.2)
Social Skills	25 (25.5%)	21.4% (39.1)
Avoidance	21 (21.4%)	20.9% (40.3)
Self-Injurious Behavior	19 (19.4%)	17.7% (37.4)
Adjustment to Change	19 (19.4%)	17.6% (37.0)
<b>Willful Misconduct/Delinquency</b>	<b>23 (23.5%)</b>	<b>17.4% (35.0)</b>
Anxiety	20 (20.4%)	17.1% (36.5)
Empathy	17 (17.3%)	16.4% (36.9)
Other*	23 (23.5%)	13.7% (28.8)
Depressed Mood	13 (13.3%)	11.1% (30.0)
Self-Control	17 (17.3%)	11.0% (27.4)
Positive Thinking/Attitude	12 (12.2%)	9.2% (27.0)
Academic Achievement	13 (13.3%)	9.0% (26.8)
Traumatic Stress	10 (10.2%)	8.9% (27.9)
Grief	8 (8.2%)	7.0% (24.7)
Contentment/Enjoyment/Happiness	9 (9.2%)	6.4% (22.0)
Hyperactivity	5 (5.1%)	4.7% (20.4)
Assertiveness	4 (4.1%)	3.9% (19.0)
Medical Regimen Adherence	6 (6.1%)	3.6% (16.4)
Adaptive Behavior/Living Skills	4 (4.1%)	3.3% (16.9)
Community Involvement	4 (4.1%)	2.8% (15.4)
Suicidality	3 (3.1%)	2.6% (15.0)
Cognitive-Intellectual Functioning	2 (2.0%)	2.0% (14.2)
Peer/Sibling Conflict	2 (2.0%)	1.8% (12.6)
Peer Involvement	3 (3.1%)	1.7% (11.0)
School Attendance	3 (3.1%)	1.2% (6.7)
Health Management	2 (2.0%)	1.2% (10.3)
Positive Family Functioning	2 (2.0%)	1.2% (10.3)

Table 7. (continued)

*Frequency Counts of Treatment Targets for Agency A (n = 98)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
School Involvement	2 (2.0%)	1.2% (10.3)
Shyness	1 (1.0%)	0.9% (8.7)
Mania	1 (1.0%)	0.7% (6.7)
<b>Sexual Misconduct</b>	<b>1 (1.0%)</b>	<b>0.7% (6.7)</b>
Attention Problems	1 (1.0%)	0.5% (5.1)
Sleep Disturbance	1 (1.0%)	0.5% (5.1)
Parenting Skills*	1 (1.0%)	0.4% (4.0)
Compulsive Behavior*	1 (1.0%)	0.2% (1.4)
Eating/Feeding Problems	0	0
Enuresis/Encopresis	0	0
<b>Fire Setting</b>	<b>0</b>	<b>0</b>
Gender Identity Problems	0	0
Housing/Living Situation	0	0
Learning Disorder/Underachievement	0	0
Occupational Functioning/Stress	0	0
Personal Hygiene	0	0
Pregnancy Education/Adjustment	0	0
Psychosis	0	0
Speech and Language Problems	0	0
Treatment Planning*	0	0
Unclear*	0	0

*Note.* Bolded items represent disruptive behavior treatment targets. Treatment target utilized at least once throughout the episode = Number of participants (and percent of sample) that had each treatment target endorsed at least once throughout the entire episode (i.e., yes or no). Treatment target utilization overall = Percent of Monthly Treatment Progress Summary (MTPS) reporting months within a youth's entire treatment episode that included each treatment target, averaged (with standard deviation) across the entire dataset. \*Treatment targets commonly written-in by therapists.



Table 8.

*Frequency Counts of Treatment Targets for Agency B (n = 158)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
<b>Oppositional/Non-Compliant Behavior</b>	<b>157 (99.4%)</b>	<b>91.8% (15.6)</b>
<b>Anger</b>	<b>152 (96.2%)</b>	<b>69.4% (31.1)</b>
Positive Peer Interaction	143 (90.5%)	67.9% (36.7)
Activity Involvement	134 (84.8%)	66.2% (38.9)
Substance Use	146 (92.4%)	66.2% (34.1)
Phobia/Fears	140 (88.6%)	64.1% (36.1)
Treatment Engagement	141 (89.2%)	59.2% (36.0)
<b>Willful Misconduct/Delinquency</b>	<b>127 (80.4%)</b>	<b>49.6% (37.3)</b>
Avoidance	124 (78.5%)	44.1% (35.2)
<b>Aggression</b>	<b>109 (69.0%)</b>	<b>39.6% (36.5)</b>
<b>Runaway</b>	<b>109 (69.0%)</b>	<b>36.9% (36.7)</b>
Empathy	103 (65.2%)	33.2% (33.9)
Academic Achievement	99 (62.7%)	29.2% (32.1)
Peer Involvement	94 (59.5%)	26.7% (29.9)
Social Skills	92 (58.2%)	22.4% (26.5)
Positive Thinking/Attitude	76 (48.1%)	21.2% (29.1)
Anxiety	79 (50.0%)	19.9% (26.9)
Peer/Sibling Conflict	67 (42.4%)	18.8% (28.8)
Assertiveness	78 (49.4%)	18.6% (26.0)
Contentment/Enjoyment/Happiness	75 (47.5%)	17.9% (24.0)
Community Involvement	65 (41.1%)	16.8% (24.5)
Depressed Mood	67 (42.4%)	16.4% (26.6)
Self-Injurious Behavior	72 (45.6%)	15.7% (25.2)
Low Self-Esteem	51 (32.3%)	11.1% (20.6)
School Involvement	63 (39.9%)	9.9% (17.4)
Attention Problems	47 (29.7%)	9.4% (18.6)
Adjustment to Change	38 (24.1%)	6.4% (13.4)
Hyperactivity	19 (12.0%)	5.1% (17.1)
Cognitive-Intellectual Functioning	29 (18.4%)	3.8% (9.1)
Medical Regimen Adherence	18 (11.4%)	3.7% (12.7)
Adaptive Behavior/Living Skills	15 (9.5%)	2.1% (7.2)
Grief	9 (5.7%)	2.0% (9.4)
Self-Control	11 (7.0%)	1.5% (5.8)
School Attendance	14 (8.9%)	1.1% (3.9)
Traumatic Stress	9 (5.7%)	1.0% (5.1)
Learning Disorder/ Underachievement	7 (4.4%)	0.9% (4.5)

Table 8. (continued)

*Frequency Counts of Treatment Targets for Agency B (n = 158)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
Health Management	12 (7.6%)	0.9% (3.5)
Eating/Feeding Problems	3 (1.9%)	0.8% (6.2)
<b>Sexual Misconduct</b>	<b>7 (4.4%)</b>	<b>0.6% (3.3)</b>
Shyness	6 (3.8%)	0.6% (3.1)
Positive Family Functioning	3 (1.9%)	0.4% (2.9)
Housing/Living Situation	6 (3.8%)	0.4% (2.5)
Occupational Functioning/Stress	4 (2.5%)	0.4% (2.2)
Gender Identity Problems	1 (0.6%)	0.3% (3.2)
Sleep Disturbance	1 (0.6%)	0.1% (1.6)
Suicidality	1 (0.6%)	0.1% (1.2)
Personal Hygiene	1 (0.6%)	0.0% (1.0)
Compulsive Behavior*	0	0
Enuresis/Encopresis	0	0
<b>Fire Setting</b>	<b>0</b>	<b>0</b>
Mania	0	0
Other*	0	0
Parenting Skills*	0	0
Pregnancy Education/Adjustment	0	0
Psychosis	0	0
Speech and Language Problems	0	0
Treatment Planning*	0	0
Unclear*	0	0

*Note.* Bolded items represent disruptive behavior treatment targets. Treatment target utilized at least once throughout the episode = Number of participants (and percent of sample) that had each treatment target endorsed at least once throughout the entire episode (i.e., yes or no). Treatment target utilization overall = Percent of Monthly Treatment Progress Summary (MTPS) reporting months within a youth's entire treatment episode that included each treatment target, averaged (with standard deviation) across the entire dataset. \*Treatment targets commonly written-in by therapists.

Table 9.

*Frequency Counts of Treatment Targets for Agency C (n = 13)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
<b>Oppositional/Non-Compliant Behavior</b>	<b>13 (100.0%)</b>	<b>98.1% (6.9)</b>
Positive Peer Interaction	12 (92.3%)	69.0% (37.6)
<b>Runaway</b>	<b>11 (84.6%)</b>	<b>68.5% (40.8)</b>
Treatment Engagement	12 (92.3%)	67.1% (36.4)
Phobia/Fears	11 (84.6%)	61.3% (39.7)
Traumatic Stress	8 (61.5%)	54.4% (46.1)
<b>Anger</b>	<b>9 (69.2%)</b>	<b>53.7% (41.1)</b>
<b>Aggression</b>	<b>9 (69.2%)</b>	<b>50.9% (44.3)</b>
Academic Achievement	9 (69.2%)	48.3% (44.3)
Self-Injurious Behavior	11 (84.6%)	47.1% (36.1)
Low Self-Esteem	9 (69.2%)	40.3% (40.5)
Depressed Mood	6 (46.2%)	39.2% (46.6)
Activity Involvement	6 (46.2%)	29.6% (40.4)
Positive Thinking/Attitude	7 (53.8%)	25.4% (28.4)
School Attendance	4 (30.8%)	21.5% (35.1)
Substance Use	4 (30.8%)	21.2% (38.0)
Peer/Sibling Conflict	2 (15.4%)	12.3% (31.1)
Avoidance	3 (23.1%)	12.3% (28.9)
Health Management	2 (15.4%)	11.5% (30.0)
Self-Control	2 (15.4%)	9.2% (27.8)
Grief	1 (7.7%)	7.7% (27.7)
Positive Family Functioning	1 (7.7%)	7.7% (27.7)
School Involvement	1 (7.7%)	6.2% (22.2)
Attention Problems	1 (7.7%)	3.1% (11.1)
Contentment/Enjoyment/Happiness	1 (7.7%)	2.6% (9.2)
Psychosis	1 (7.7%)	2.6% (9.2)
Empathy	1 (7.7%)	1.9% (6.9)
Adaptive Behavior/Living Skills	1 (7.7%)	1.5% (5.5)
Anxiety	1 (7.7%)	1.5% (5.5)
Hyperactivity	1 (7.7%)	1.5% (5.5)
Social Skills	1 (7.7%)	1.5% (5.5)
Adjustment to Change	1 (7.7%)	1.3% (4.6)
Assertiveness	0	0
Cognitive-Intellectual Functioning	0	0
Community Involvement	0	0
Compulsive Behavior*	0	0
Eating/Feeding Problems	0	0

Table 9. (continued)

*Frequency Counts of Treatment Targets for Agency C (n = 13)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
Enuresis/Encopresis	0	0
<b>Fire Setting</b>	<b>0</b>	<b>0</b>
Gender Identity Problems	0	0
Housing/Living Situation	0	0
Learning Disorder/Underachievement	0	0
Mania	0	0
Medical Regimen Adherence	0	0
Occupational Functioning/Stress	0	0
Other*	0	0
Parenting Skills*	0	0
Peer Involvement	0	0
Personal Hygiene	0	0
Pregnancy Education/Adjustment	0	0
<b>Sexual Misconduct</b>	<b>0</b>	<b>0</b>
Shyness	0	0
Sleep Disturbance	0	0
Speech and Language Problems	0	0
Suicidality	0	0
Treatment Planning*	0	0
<b>Willful Misconduct/Delinquency</b>	<b>0</b>	<b>0</b>
Unclear*	0	0

*Note.* Bolded items represent disruptive behavior treatment targets. Treatment target utilized at least once throughout the episode = Number of participants (and percent of sample) that had each treatment target endorsed at least once throughout the entire episode (i.e., yes or no). Treatment target utilization overall = Percent of Monthly Treatment Progress Summary (MTPS) reporting months within a youth's entire treatment episode that included each treatment target, averaged (with standard deviation) across the entire dataset. \*Treatment targets commonly written-in by therapists.

Table 10.

*Frequency Counts of Treatment Targets for Agency D (n = 46)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
Treatment Engagement	45 (97.8%)	78.8% (30.5)
<b>Aggression</b>	<b>39 (84.8%)</b>	<b>70.3% (37.5)</b>
<b>Oppositional/Non-Compliant Behavior</b>	<b>39 (84.8%)</b>	<b>62.7% (40.1)</b>
<b>Anger</b>	<b>37 (80.4%)</b>	<b>60.3% (41.6)</b>
Positive Peer Interaction	36 (78.3%)	54.7% (40.6)
Substance Use	33 (71.7%)	50.6% (41.4)
<b>Willful Misconduct/Delinquency</b>	<b>30 (65.2%)</b>	<b>45.0% (41.0)</b>
Self-Injurious Behavior	29 (63.0%)	37.5% (37.2)
<b>Runaway</b>	<b>25 (54.3%)</b>	<b>33.8% (38.4)</b>
Activity Involvement	25 (54.3%)	33.0% (40.0)
Depressed Mood	22 (47.8%)	32.7% (40.1)
Phobia/Fears	27 (58.7%)	29.9% (34.7)
Avoidance	20 (43.5%)	24.8% (35.3)
Medical Regimen Adherence	20 (43.5%)	24.7% (37.8)
Anxiety	17 (37.0%)	22.7% (35.0)
Empathy	17 (37.0%)	20.2% (34.3)
School Involvement	20 (43.5%)	19.1% (27.9)
Positive Thinking/Attitude	15 (32.6%)	18.2% (32.4)
School Attendance	14 (30.4%)	14.4% (28.9)
Attention Problems	13 (28.3%)	14.2% (28.5)
Low Self-Esteem	8 (17.4%)	11.7% (29.0)
Contentment/Enjoyment/Happiness	11 (23.9%)	11.5% (27.7)
Hyperactivity	9 (19.6%)	11.4% (27.1)
Academic Achievement	12 (26.1%)	9.8% (19.7)
Social Skills	8 (17.4%)	7.5% (18.2)
Peer Involvement	13 (28.3%)	5.6% (10.8)
Self-Control	5 (10.9%)	4.5% (17.9)
Assertiveness	5 (10.9%)	4.5% (16.7)
<b>Sexual Misconduct</b>	<b>7 (15.2%)</b>	<b>4.4% (16.0)</b>
Health Management	2 (4.3%)	3.9% (18.7)
Cognitive-Intellectual Functioning	3 (6.5%)	3.0% (15.2)
Community Involvement	6 (13.0%)	2.7% (8.8)
Traumatic Stress	4 (8.7%)	2.3% (9.9)
Peer/Sibling Conflict	6 (13.0%)	2.3% (6.7)
Psychosis	2 (4.3%)	2.0% (9.3)
Grief	4 (8.7%)	1.7% (6.5)
Adjustment to Change	4 (8.7%)	1.6% (5.6)

Table 10. (continued)

*Frequency Counts of Treatment Targets for Agency D (n = 46)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
Sleep Disturbance	1 (2.2%)	1.5% (9.8)
Mania	2 (4.3%)	1.4% (8.2)
Positive Family Functioning	1 (2.2%)	1.0% (6.7)
Suicidality	1 (2.2%)	0.3% (2.1)
Gender Identity Problems	1 (2.2%)	0.2% (1.6)
Adaptive Behavior/Living Skills	1 (2.2%)	0.2% (1.3)
Learning Disorder/ Underachievement	1 (2.2%)	0.2% (1.3)
Unclear*	1 (2.2%)	0.2% (1.3)
Compulsive Behavior*	0	0
Eating/Feeding Problems	0	0
Enuresis/Encopresis	0	0
<b>Fire Setting</b>	<b>0</b>	<b>0</b>
Housing/Living Situation	0	0
Occupational Functioning/Stress	0	0
Other*	0	0
Parenting Skills*	0	0
Personal Hygiene	0	0
Pregnancy Education/Adjustment	0	0
Shyness	0	0
Speech and Language Problems	0	0
Treatment Planning*	0	0

*Note.* Bolded items represent disruptive behavior treatment targets. Treatment target utilized at least once throughout the episode = Number of participants (and percent of sample) that had each treatment target endorsed at least once throughout the entire episode (i.e., yes or no). Treatment target utilization overall = Percent of Monthly Treatment Progress Summary (MTPS) reporting months within a youth's entire treatment episode that included each treatment target, averaged (with standard deviation) across the entire dataset. \*Treatment targets commonly written-in by therapists.

Table 11.

*Frequency Counts of Treatment Targets for Agency E (n = 26)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
Activity Involvement	21 (80.8%)	74.6% (41.8)
<b>Oppositional/Non-Compliant Behavior</b>	<b>21 (80.8%)</b>	<b>74.3% (41.2)</b>
Substance Use	22 (84.6%)	69.6% (38.3)
<b>Anger</b>	<b>16 (61.5%)</b>	<b>58.1% (48.2)</b>
Positive Peer Interaction	16 (61.5%)	56.1% (46.8)
Treatment Engagement	18 (69.2%)	52.2% (42.8)
<b>Aggression</b>	<b>14 (53.8%)</b>	<b>43.5% (47.8)</b>
<b>Runaway</b>	<b>14 (53.8%)</b>	<b>37.4% (44.4)</b>
Low Self-Esteem	10 (38.5%)	36.0% (46.9)
Anxiety	10 (38.5%)	32.6% (46.3)
Assertiveness	9 (34.6%)	31.1% (46.0)
Academic Achievement	11 (42.3%)	29.8% (43.0)
Grief	8 (30.8%)	29.3% (45.4)
Phobia/Fears	9 (34.6%)	28.9% (43.7)
Self-Injurious Behavior	9 (34.6%)	26.5% (40.3)
Traumatic Stress	7 (26.9%)	21.0% (38.2)
Medical Regimen Adherence	7 (26.9%)	20.4% (37.8)
Depressed Mood	6 (23.1%)	19.2% (39.1)
Hyperactivity	7 (26.9%)	18.2% (36.1)
Attention Problems	6 (23.1%)	17.8% (35.6)
Contentment/Enjoyment/Happiness	5 (19.2%)	16.4% (36.7)
Community Involvement	6 (23.1%)	16.1% (33.5)
Empathy	4 (15.4%)	12.0% (32.5)
School Involvement	4 (15.4%)	11.4% (29.4)
Peer Involvement	5 (19.2%)	11.3% (26.6)
Social Skills	4 (15.4%)	10.6% (28.4)
Positive Thinking/Attitude	6 (23.1%)	9.4% (24.6)
Positive Family Functioning	2 (7.7%)	7.7% (27.2)
Shyness	2 (7.7%)	7.7% (27.2)
Suicidality	2 (7.7%)	6.9% (24.6)
Other*	2 (7.7%)	6.3% (22.7)
<b>Willful Misconduct/Delinquency</b>	<b>3 (11.5%)</b>	<b>5.5% (17.8)</b>
Avoidance	3 (11.5%)	5.4% (20.0)
School Attendance	2 (7.7%)	4.3% (19.7)
Mania	2 (7.7%)	4.2% (19.6)
Adjustment to Change	1 (3.8%)	3.9% (19.6)
Cognitive-Intellectual Functioning	1 (3.8%)	3.9% (19.6)

Table 11. (continued)

*Frequency Counts of Treatment Targets for Agency E (n = 26)*

Treatment Target	Treatment target utilized at least once throughout the episode	Treatment target utilization overall
Self-Control	1 (3.8%)	3.9% (19.6)
Learning Disorder/Underachievement	1 (3.8%)	3.1% (15.7)
Peer/Sibling Conflict	3 (11.5%)	2.9% (8.3)
Personal Hygiene	1 (3.8%)	2.7% (13.7)
Treatment Planning*	1 (3.8%)	2.4% (12.3)
Adaptive Behavior/Living Skills	1 (3.8%)	1.4% (7.4)
Eating/Feeding Problems	1 (3.8%)	1.3% (6.5)
Gender Identity Problems	1 (3.8%)	1.3% (6.5)
Housing/Living Situation	1 (3.8%)	1.0% (4.9)
Sleep Disturbance	1 (3.8%)	1.0% (4.9)
Compulsive Behavior*	0	0
Enuresis/Encopresis	0	0
<b>Fire Setting</b>	<b>0</b>	<b>0</b>
Health Management	0	0
Occupational Functioning/Stress	0	0
Parenting Skills*	0	0
Pregnancy Education/Adjustment	0	0
Psychosis	0	0
<b>Sexual Misconduct</b>	<b>0</b>	<b>0</b>
Speech and Language Problems	0	0
Unclear*	0	0

*Note.* Bolded items represent disruptive behavior treatment targets. Treatment target utilized at least once throughout the episode = Number of participants (and percent of sample) that had each treatment target endorsed at least once throughout the entire episode (i.e., yes or no). Treatment target utilization overall = Percent of Monthly Treatment Progress Summary (MTPS) reporting months within a youth's entire treatment episode that included each treatment target, averaged (with standard deviation) across the entire dataset. \*Treatment targets commonly written-in by therapists.



The frequency count of PEs endorsed on the MTPSs throughout the youth's entire treatment episode (i.e., prior to limiting the sample to nine months) are presented below in Tables 12 to 17 (for the total sample and each respective agency). The middle column of each table represents the percent of the sample that had each PE endorsed at least once at any point in time throughout the entire treatment episode (regardless of how often; 1 = yes, 0 = no). The right column of each table represents the percent of MTPS reporting months within a youth's entire treatment episode that included each PE (e.g., 8 of 10 MTPSs = 80%), averaged across the entire dataset. For example, in Table 12, supportive listening or client centered was used at least once throughout the treatment episode for 335 youth (98.2% of the sample) and was used on average within 87.2% ( $SD = 20.5$ ) of the months throughout all youths' treatment episodes.

Table 12 suggests that all of the PDEBs, except response cost, were used at least once throughout the entire treatment episode for over half of the total sample. In addition, all of the PDEBs, except parent or teacher monitoring, parent or teacher praise, and response cost, were used in at least 50% of the MTPS reporting months for the total sample. After visually inspecting the data from Table 12, it was evident that the majority of the PEs that were utilized in over 50% of the months throughout all youths' treatment episodes were targeted to children (e.g., activity scheduling, assertiveness training, cognitive, communication skills, emotional processing, goal setting, insight building, mindfulness, problem solving, relaxation, skill building, social skills training, twelve step program). Additionally, these PEs mostly derived from the MTPS factors of Coping and Self-Control (e.g., cognitive, relaxation) and Behavioral Management (e.g., line of sight supervision, therapist praise or rewards).

In an exploratory way, PE utilization patterns were inspected across each of the agencies to determine similarities and differences. Generally speaking, Agency-specific results were

consistent with the total sample and tended to show that the PDEBs that were consistently not administered at least once for 50% or more of each sample or across at least 50% of MTPS reporting months were parent or teacher monitoring, parent or teacher praise, and response cost. In addition, similarly to the total sample, about 8 to 12 of the PDEBs in this study were included in at least 50% of the MTPS reporting months across each of the agencies. Visual inspection also indicated that the majority of the high frequency PEs (i.e., utilized over 50% of the reporting months throughout all youths' treatment episodes) were typically child oriented across the majority of the agencies. Finally, most agencies had high frequency PEs that derived from the MTPS factors of Coping and Self-Control, which is similar to the total sample. A major difference that was apparent with these PEs is that Agency C had fewer PEs utilized with a majority of their youth as compared to the other agencies, which might relate to the small sample size of this agency. Another difference was that Agency E had a more diverse set of PEs utilized with a majority of their youth as compared to other agencies.

Table 12.

*Frequency Counts of Practice Elements for the Total Sample (n = 341)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Supportive Listening or Client Centered	335 (98.2%)	87.2% (20.5)
<b>Communication Skills</b>	<b>340 (99.7%)</b>	<b>86.2% (19.5)</b>
Natural and Logical Consequences	329 (96.5%)	83.8% (24.7)
Line of Sight Supervision	322 (94.4%)	83.3% (28.4)
Time out	331 (97.1%)	83.0% (24.8)
Educational Supports	329 (96.5%)	82.6% (26.3)
<b>Relationship or Rapport Building</b>	<b>337 (98.8%)</b>	<b>82.6% (21.7)</b>
Activity Scheduling	329 (96.5%)	81.9% (28.6)
<b>Problem Solving</b>	<b>335 (98.2%)</b>	<b>80.2% (24.2)</b>
Skill Building	334 (97.9%)	79.2% (25.1)
Milieu Therapy	310 (90.9%)	78.1% (32.7)
Insight Building	329 (96.5%)	76.4% (27.8)
<b>Family Therapy</b>	<b>319 (93.5%)</b>	<b>75.8% (29.5)</b>
Family Engagement	328 (96.2%)	75.8% (28.9)
<b>Therapist Praise or Rewards</b>	<b>299 (87.7%)</b>	<b>73.6% (36.3)</b>
<b>Social Skills Training</b>	<b>312 (91.5%)</b>	<b>72.6% (32.4)</b>
<b>Maintenance or Relapse Prevention</b>	<b>307 (90.0%)</b>	<b>71.4% (33.4)</b>
Emotional Processing	297 (87.1%)	69.1% (36.1)
Twelve Step Program	282 (82.7%)	68.6% (39.8)
<b>Cognitive</b>	<b>298 (87.4%)</b>	<b>68.6% (36.3)</b>
<b>Modeling</b>	<b>300 (88.0%)</b>	<b>63.8% (35.3)</b>
Crisis Management	298 (87.4%)	63.2% (35.3)
<b>Tangible Rewards</b>	<b>286 (83.9%)</b>	<b>62.7% (40.0)</b>
Psychoeducation Child	301 (88.3%)	61.4% (36.6)
Mindfulness	291 (85.3%)	59.2% (36.8)
<b>Goal Setting</b>	<b>243 (71.3%)</b>	<b>56.3% (41.8)</b>
<b>Self-Monitoring</b>	<b>293 (85.9%)</b>	<b>53.5% (33.9)</b>
Care Coordination	229 (67.2%)	53.1% (42.5)
Mentoring	264 (77.4%)	52.9% (38.7)
Assertiveness Training	265 (77.7%)	52.6% (38.6)
Relaxation	268 (78.6%)	52.4% (38.0)
Self-Rewards or Self-Praise	247 (72.4%)	49.1% (39.6)
Personal Safety Skills	217 (63.6%)	48.5% (42.9)
Motivational Interviewing	246 (72.1%)	47.9% (40.8)
Commands	217 (63.6%)	46.1% (43.1)
Medication or Pharmacotherapy	228 (66.9%)	45.3% (38.9)
Peer Pairing	241 (70.7%)	41.6% (37.1)
<b>Parent or Teacher Praise</b>	<b>226 (66.3%)</b>	<b>37.8% (36.4)</b>
Psychoeducation Parent	250 (73.3%)	37.7% (33.7)
Behavioral Contracting	197 (57.8%)	35.9% (38.0)

Table 12. (continued)

*Frequency Counts of Practice Elements for the Total Sample (n = 341)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Cultural Training	170 (49.9%)	34.4% (42.0)
Ignoring or Differential Reinforcement of Other Behaviors	196 (57.5%)	34.3% (36.8)
Parent Coping	198 (58.1%)	31.3% (34.3)
Attending	169 (49.6%)	31.2% (38.9)
<b>Parent or Teacher Monitoring</b>	<b>189 (55.4%)</b>	<b>29.7% (35.0)</b>
Interpretation	184 (54.0%)	26.4% (33.1)
Stimulus Control/Antecedent Management	136 (39.9%)	21.5% (33.0)
Response Prevention	124 (36.4%)	15.1% (26.6)
<b>Response Cost</b>	<b>102 (29.9%)</b>	<b>13.5% (25.9)</b>
Free Association	90 (26.4%)	12.3% (26.6)
Functional Analysis	84 (24.6%)	11.1% (24.9)
Exposure	101 (29.6%)	11.1% (22.1)
Unclear*	55 (16.1%)	8.4% (23.4)
Guided Imagery	35 (10.3%)	6.2% (21.6)
Play Therapy	66 (19.4%)	5.6% (15.1)
Catharsis	51 (15.0%)	5.4% (16.8)
Other*	35 (10.3%)	5.0% (17.2)
Individual Therapy for Caregiver	52 (15.2%)	3.6% (11.7)
Anger Management*	19 (5.6%)	2.2% (10.2)
Thought Field Therapy	27 (7.9%)	1.2% (4.4)
Biofeedback or Neurofeedback	12 (3.5%)	0.8% (4.5)
Marital Therapy	14 (4.1%)	0.5% (2.8)
Eye Movement or Tapping	6 (1.8%)	0.4% (4.7)
Discrete Trial Training	5 (1.5%)	0.4% (3.1)
Art or Music Therapy*	3 (0.9%)	0.3% (3.9)
Parenting*	1 (0.3%)	0.2% (2.7)
Counseling*	2 (0.6%)	0.1% (1.3)
Hypnosis	2 (0.6%)	0.1% (1.3)
Juvenile Sex Offender Treatment*	1 (0.3%)	0.0% (0.5)
Assessment*	0	0
Behavioral Management*	0	0
Family Visits*	0	0
Informal Supports*	0	0
Legal Assistance or Involvement*	0	0

*Note.* Bolded items indicate practice elements that derived from the evidence-base (i.e., PDEBs; defined earlier as practice elements in 30% or more of the study groups examining evidence-based treatments). PE utilized at least once throughout the episode = Number of participants (and percent of sample) that had each practice element endorsed at least once throughout the entire episode (i.e., yes or no). PE utilization overall = Percent of Monthly Treatment Progress Summary reporting months within a youth's entire treatment episode that included each PE, averaged (with standard deviation) across the entire dataset. \*PEs commonly written-in by therapists.

Table 13.

*Frequency Counts of Practice Elements for Agency A (n = 98)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Twelve Step Program	98 (100.0%)	96.6% (11.1)
<b>Communication Skills</b>	<b>98 (100.0%)</b>	<b>96.5% (9.1)</b>
<b>Therapist Praise or Rewards</b>	<b>98 (100.0%)</b>	<b>94.6% (10.9)</b>
<b>Tangible Rewards</b>	<b>96 (98.0%)</b>	<b>94.3% (16.6)</b>
Activity Scheduling	94 (95.9%)	92.7% (22.6)
Educational Supports	97 (99.0%)	92.2% (18.1)
Milieu Therapy	97 (99.0%)	91.5% (19.6)
Line of Sight Supervision	92 (93.9%)	90.3% (25.3)
<b>Family Therapy</b>	<b>95 (96.9%)</b>	<b>87.8% (21.2)</b>
Insight Building	93 (94.9%)	86.6% (25.9)
Motivational Interviewing	94 (95.9%)	86.5% (24.6)
<b>Problem Solving</b>	<b>94 (95.9%)</b>	<b>85.6% (23.9)</b>
<b>Social Skills Training</b>	<b>97 (99.0%)</b>	<b>84.6% (21.3)</b>
<b>Relationship or Rapport Building</b>	<b>95 (96.9%)</b>	<b>84.3% (24.9)</b>
Skill Building	95 (96.9%)	83.9% (23.1)
Natural and Logical Consequences	88 (89.8%)	83.1% (31.7)
<b>Maintenance or Relapse Prevention</b>	<b>93 (94.9%)</b>	<b>83.1% (28.1)</b>
Supportive Listening or Client Centered	93 (94.9%)	82.7% (27.1)
Relaxation	92 (93.9%)	82.6% (27.2)
Time out	95 (96.9%)	81.9% (26.6)
Mindfulness	94 (95.9%)	79.6% (28.5)
<b>Modeling</b>	<b>83 (84.7%)</b>	<b>74.3% (36.6)</b>
<b>Self-Monitoring</b>	<b>89 (90.8%)</b>	<b>74.1% (31.2)</b>
<b>Cognitive</b>	<b>83 (84.7%)</b>	<b>71.2% (38.3)</b>
Psychoeducation Child	84 (85.7%)	70.3% (36.5)
Family Engagement	91 (92.9%)	69.5% (34.4)
Assertiveness Training	79 (80.6%)	64.5% (39.1)
Crisis Management	82 (83.7%)	62.7% (37.6)
Self-Rewards or Self-Praise	83 (84.7%)	59.8% (36.1)
Peer Pairing	82 (83.7%)	58.7% (37.5)
Cultural Training	67 (68.4%)	57.8% (44.4)
<b>Goal Setting</b>	<b>70 (71.4%)</b>	<b>57.5% (43.6)</b>
Mentoring	75 (76.5%)	53.3% (37.7)
Medication or Pharmacotherapy	70 (71.4%)	48.2% (39.6)
Emotional Processing	62 (63.3%)	46.2% (44.0)
Care Coordination	58 (59.2%)	46.1% (44.5)
Attending	51 (52.0%)	44.1% (46.1)
Personal Safety Skills	58 (59.2%)	43.6% (43.2)
Interpretation	51 (52.0%)	39.8% (42.6)
Psychoeducation Parent	61 (62.2%)	37.2% (37.3)

Table 13. (continued)

*Frequency Counts of Practice Elements for Agency A (n = 98)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Commands	47 (48.0%)	37.1% (44.4)
Behavioral Contracting	53 (54.1%)	36.4% (39.7)
Ignoring or Differential Reinforcement of Other Behaviors	51 (52.0%)	35.6% (38.5)
Parent Coping	46 (46.9%)	32.3% (37.7)
<b>Parent or Teacher Praise</b>	<b>50 (51.0%)</b>	<b>26.5% (32.7)</b>
<b>Parent or Teacher Monitoring</b>	<b>37 (37.8%)</b>	<b>16.0% (26.8)</b>
Unclear*	20 (20.4%)	15.8% (34.3)
Guided Imagery	19 (19.4%)	15.0% (33.3)
Stimulus Control or Antecedent Management	28 (28.6%)	12.0% (26.6)
Response Prevention	26 (26.5%)	10.2% (22.8)
<b>Response Cost</b>	<b>11 (11.2%)</b>	<b>5.7% (19.2)</b>
Exposure	17 (17.3%)	5.6% (17.1)
Free Association	19 (19.4%)	5.0% (15.0)
Play Therapy	11 (11.2%)	3.2% (11.0)
Thought Field Therapy	7 (7.1%)	1.2% (4.7)
Individual Therapy for Caregiver	3 (3.1%)	1.1% (7.9)
Catharsis	6 (6.1%)	1.0% (4.4)
Anger Management*	1 (1.0%)	0.5% (5.1)
Parenting*	1 (1.0%)	0.5% (5.1)
Marital Therapy	3 (3.1%)	0.4% (2.4)
Functional Analysis	2 (2.0%)	0.3% (2.0)
Eye Movement or Tapping	1 (1.0%)	0.2% (1.4)
Biofeedback or Neurofeedback	1 (1.0%)	0.1% (1.3)
Art or Music Therapy*	0	0
Assessment*	0	0
Behavioral Management*	0	0
Counseling*	0	0
Discrete Trial Training	0	0
Family Visits*	0	0
Hypnosis	0	0
Informal Supports*	0	0
Juvenile Sex Offender Treatment*	0	0
Legal Assistance or Involvement*	0	0
Other*	0	0

*Note.* Bolded items indicate practice elements that derived from the evidence-base (i.e., PDEBs; defined earlier as practice elements in 30% or more of the study groups examining evidence-based treatments). PE utilized at least once throughout the episode = Number of participants (and percent of sample) that had each practice element endorsed at least once throughout the entire episode (i.e., yes or no). PE utilization overall = Percent of Monthly Treatment Progress Summary reporting months within a youth's entire treatment episode that included each PE, averaged (with standard deviation) across the entire dataset. \*PEs commonly written-in by therapists.

Table 14.

*Frequency Counts of Practice Elements for Agency B (n = 158)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Time out	158 (100.0%)	90.8% (13.7)
Supportive Listening or Client Centered	158 (100.0%)	89.6% (15.1)
Emotional Processing	158 (100.0%)	89.0% (14.6)
<b>Relationship or Rapport Building</b>	<b>158 (100.0%)</b>	<b>86.8% (14.5)</b>
Family Engagement	157 (99.4%)	85.7% (20.2)
<b>Communication Skills</b>	<b>158 (100.0%)</b>	<b>85.7% (17.6)</b>
Natural and Logical Consequences	157 (99.4%)	82.2% (21.5)
Activity Scheduling	154 (97.5%)	80.8% (26.9)
<b>Family Therapy</b>	<b>154 (97.5%)</b>	<b>80.4% (24.3)</b>
<b>Maintenance or Relapse Prevention</b>	<b>152 (96.2%)</b>	<b>78.8% (26.5)</b>
<b>Problem Solving</b>	<b>158 (100.0%)</b>	<b>78.2% (22.2)</b>
<b>Social Skills Training</b>	<b>150 (94.9%)</b>	<b>77.9% (28.5)</b>
Educational Supports	151 (95.6%)	77.8% (28.2)
Skill Building	156 (98.7%)	77.4% (26.4)
Line of Sight Supervision	150 (94.9%)	76.9% (30.8)
Twelve Step Program	137 (86.7%)	70.9% (35.9)
Milieu Therapy	133 (84.2%)	69.0% (37.3)
<b>Modeling</b>	<b>147 (93.0%)</b>	<b>68.7% (30.6)</b>
Insight Building	154 (97.5%)	67.5% (27.1)
<b>Cognitive</b>	<b>141 (89.2%)</b>	<b>66.9% (35.4)</b>
Mentoring	138 (86.7%)	64.5% (35.8)
Personal Safety Skills	124 (78.5%)	63.4% (39.5)
Crisis Management	139 (88.0%)	63.3% (35.1)
Care Coordination	123 (77.8%)	62.5% (38.3)
<b>Goal Setting</b>	<b>123 (77.8%)</b>	<b>62.4% (38.6)</b>
Psychoeducation Child	141 (89.2%)	58.3% (36.4)
Assertiveness Training	140 (88.6%)	57.4% (34.2)
Mindfulness	135 (85.4%)	54.8% (36.5)
<b>Therapist Praise or Rewards</b>	<b>116 (73.4%)</b>	<b>52.4% (42.6)</b>
<b>Parent or Teacher Praise</b>	<b>126 (79.7%)</b>	<b>48.4% (36.9)</b>
<b>Self-Monitoring</b>	<b>137 (86.7%)</b>	<b>44.7% (29.0)</b>
Peer Pairing	123 (77.8%)	43.9% (34.6)
Self-Rewards or Self-Praise	103 (65.2%)	43.4% (40.4)
Commands	100 (63.3%)	43.0% (42.8)
<b>Parent or Teacher Monitoring</b>	<b>115 (72.8%)</b>	<b>42.9% (37.2)</b>
Behavioral Contracting	105 (66.5%)	42.1% (37.2)
<b>Tangible Rewards</b>	<b>116 (73.4%)</b>	<b>40.6% (37.8)</b>
Psychoeducation Parent	130 (82.3%)	39.0% (32.5)
Ignoring or Differential Reinforcement of Other Behaviors	103 (65.2%)	37.8% (35.8)
Relaxation	115 (72.8%)	37.8% (32.8)

Table 14. (continued)

*Frequency Counts of Practice Elements for Agency B (n = 158)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Motivational Interviewing	110 (69.6%)	36.2% (35.8)
Parent Coping	110 (69.6%)	35.2% (33.2)
Medication or Pharmacotherapy	78 (49.4%)	30.0% (35.2)
Attending	93 (58.9%)	29.1% (32.9)
Stimulus Control or Antecedent Management	71 (44.9%)	25.2% (34.8)
Cultural Training	59 (37.3%)	17.2% (30.1)
Exposure	71 (44.9%)	16.9% (24.8)
Response Prevention	71 (44.9%)	15.3% (22.7)
<b>Response Cost</b>	<b>66 (41.8%)</b>	<b>14.8% (23.3)</b>
Interpretation	70 (44.3%)	13.1% (20.8)
Functional Analysis	44 (27.8%)	12.1% (25.8)
Other*	28 (17.7%)	9.7% (23.9)
Individual Therapy for Caregiver	38 (24.1%)	4.0% (7.9)
Play Therapy	27 (17.1%)	3.8% (10.7)
Catharsis	26 (16.5%)	3.4% (8.6)
Unclear*	14 (8.9%)	2.4% (8.8)
Free Association	17 (10.8%)	1.8% (5.6)
Biofeedback or Neurofeedback	5 (3.2%)	1.0% (5.8)
Thought Field Therapy	8 (5.1%)	0.8% (3.7)
Marital Therapy	6 (3.8%)	0.6% (3.0)
Guided Imagery	4 (2.5%)	0.4% (2.3)
Discrete Trial Training	1 (0.6%)	0.1% (1.0)
Hypnosis	1 (0.6%)	0.1% (0.7)
Anger Management*	0	0
Art or Music Therapy*	0	0
Assessment*	0	0
Behavioral Management*	0	0
Counseling*	0	0
Eye Movement or Tapping	0	0
Family Visits*	0	0
Informal Supports*	0	0
Juvenile Sex Offender Treatment*	0	0
Legal Assistance or Involvement*	0	0
Parenting*	0	0

*Note.* Bolded items indicate practice elements that derived from the evidence-base (i.e., PDEBs; defined earlier as practice elements in 30% or more of the study groups examining evidence-based treatments). PE utilized at least once throughout the episode = Number of participants (and percent of sample) that had each practice element endorsed at least once throughout the entire episode (i.e., yes or no). PE utilization overall = Percent of Monthly Treatment Progress Summary reporting months within a youth's entire treatment episode that included each PEs, averaged (with standard deviation) across the entire dataset. \*PEs commonly written-in by therapists.



Table 15.

*Frequency Counts of Practice Elements for Agency C (n = 13)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Activity Scheduling	13 (100.0%)	98.1% (6.9)
Supportive Listening or Client Centered Milieu Therapy	13 (100.0%)	96.5% (8.5)
Milieu Therapy	13 (100.0%)	96.2% (10.0)
<b>Therapist Praise or Rewards</b>	<b>13 (100.0%)</b>	<b>95.6% (8.3)</b>
Insight Building	13 (100.0%)	94.6% (14.5)
<b>Problem Solving</b>	<b>13 (100.0%)</b>	<b>93.1% (14.9)</b>
<b>Cognitive</b>	<b>13 (100.0%)</b>	<b>89.6% (17.6)</b>
<b>Relationship or Rapport Building</b>	<b>13 (100.0%)</b>	<b>89.6% (15.6)</b>
Time out	13 (100.0%)	87.3% (16.4)
Crisis Management	13 (100.0%)	86.3% (16.9)
Psychoeducation Child	13 (100.0%)	85.5% (19.8)
Skill Building	12 (92.3%)	77.8% (29.2)
<b>Communication Skills</b>	<b>13 (100.0%)</b>	<b>75.6% (26.3)</b>
Family Engagement	12 (92.3%)	74.5% (29.9)
Educational Supports	10 (76.9%)	63.9% (43.5)
Natural and Logical Consequences	12 (92.3%)	60.6% (36.1)
<b>Modeling</b>	<b>10 (76.9%)</b>	<b>59.4% (43.5)</b>
Medication or Pharmacotherapy	12 (92.3%)	59.0% (30.6)
<b>Goal Setting</b>	<b>8 (61.5%)</b>	<b>56.5% (47.3)</b>
Line of Sight Supervision	8 (61.5%)	56.2% (47.1)
Psychoeducation Parent	13 (100.0%)	53.5% (24.4)
Emotional Processing	10 (76.9%)	52.4% (44.5)
<b>Social Skills Training</b>	<b>8 (61.5%)</b>	<b>51.5% (48.6)</b>
Care Coordination	8 (61.5%)	51.2% (44.1)
Mentoring	8 (61.5%)	50.5% (42.5)
<b>Family Therapy</b>	<b>10 (76.9%)</b>	<b>49.2% (32.0)</b>
Self-Rewards or Self-Praise	7 (53.8%)	46.8% (48.5)
<b>Maintenance or Relapse Prevention</b>	<b>9 (69.2%)</b>	<b>44.9% (40.5)</b>
Commands	6 (46.2%)	43.1% (49.6)
Relaxation	10 (76.9%)	38.3% (32.8)
Twelve Step Program	6 (46.2%)	37.8% (47.0)
<b>Parent or Teacher Praise</b>	<b>6 (46.2%)</b>	<b>34.6% (41.6)</b>
<b>Tangible Rewards</b>	<b>7 (53.8%)</b>	<b>29.4% (35.1)</b>
Behavioral Contracting	7 (53.8%)	28.9% (36.1)
Parent Coping	7 (53.8%)	25.8% (31.7)
Interpretation	7 (53.8%)	22.4% (32.2)
Assertiveness Training	6 (46.2%)	20.3% (26.5)
<b>Self-Monitoring</b>	<b>7 (53.8%)</b>	<b>19.6% (26.3)</b>
Free Association	5 (38.5%)	15.7% (25.6)
<b>Parent or Teacher Monitoring</b>	<b>3 (23.1%)</b>	<b>13.2% (27.7)</b>

Table 15. (continued)

*Frequency Counts of Practice Elements for Agency C (n = 13)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Guided Imagery	4 (30.8%)	12.8% (22.2)
Mindfulness	4 (30.8%)	12.4% (27.8)
Ignoring or Differential Reinforcement of Other Behaviors	2 (15.4%)	9.6% (28.0)
Personal Safety Skills	3 (23.1%)	9.2% (17.5)
Attending	2 (15.4%)	8.5% (20.8)
Cultural Training	1 (7.7%)	7.7% (27.7)
Peer Pairing	2 (15.4%)	6.5% (17.5)
Exposure	1 (7.7%)	6.2% (22.2)
<b>Response Cost</b>	<b>1 (7.7%)</b>	<b>6.2% (22.2)</b>
Response Prevention	1 (7.7%)	6.2% (22.2)
Art or Music Therapy*	1 (7.7%)	4.6% (16.6)
Stimulus Control or Antecedent Management	1 (7.7%)	4.6% (16.6)
Thought Field Therapy	1 (7.7%)	1.9% (6.9)
Functional Analysis	1 (7.7%)	1.5% (5.5)
Individual Therapy for Caregiver	1 (7.7%)	1.5% (5.5)
Play Therapy	1 (7.7%)	1.5% (5.5)
Unclear*	1 (7.7%)	1.5% (5.5)
Anger Management*	0	0
Assessment*	0	0
Behavioral Management*	0	0
Biofeedback or Neurofeedback	0	0
Catharsis	0	0
Counseling*	0	0
Discrete Trial Training	0	0
Eye Movement or Tapping	0	0
Family Visits*	0	0
Hypnosis	0	0
Informal Supports*	0	0
Juvenile Sex Offender Treatment*	0	0
Legal Assistance or Involvement*	0	0
Marital Therapy	0	0
Motivational Interviewing	0	0
Other*	0	0
Parenting*	0	0

*Note.* Bolded items indicate practice elements that derived from the evidence-base (i.e., PDEBs; defined earlier as practice elements in 30% or more of the study groups examining evidence-based treatments). PE utilized at least once throughout the episode = Number of participants (and percent of sample) that had each practice element endorsed at least once throughout the entire episode (i.e., yes or no). PE utilization overall = Percent of Monthly Treatment Progress Summary reporting months within a youth's entire treatment episode that included each PEs, averaged (with standard deviation) across the entire dataset. \*PEs commonly written-in by therapists.

Table 16.

*Frequency Counts of Practice Elements for Agency D (n = 46)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Line of Sight Supervision	46 (100.0%)	93.1% (9.8)
Natural and Logical Consequences	46 (100.0%)	92.0% (11.5)
Parent Coping	15 (32.6%)	9.3% (19.2)
Guided Imagery	7 (15.2%)	9.2% (25.4)
Milieu Therapy	46 (100.0%)	88.3% (15.6)
Educational Supports	46 (100.0%)	87.9% (17.0)
<b>Therapist Praise or Rewards</b>	<b>46 (100.0%)</b>	<b>85.3% (15.7)</b>
Supportive Listening or Client Centered	45 (97.8%)	82.0% (23.8)
Peer Pairing	13 (28.3%)	8.2% (20.9)
Exposure	7 (15.2%)	8.0% (21.8)
Anger Management*	11 (23.9%)	8.0% (18.4)
<b>Communication Skills</b>	<b>46 (100.0%)</b>	<b>77.1% (19.8)</b>
<b>Problem Solving</b>	<b>46 (100.0%)</b>	<b>76.5% (26.3)</b>
Insight Building	43 (93.5%)	75.3% (30.6)
Medication or Pharmacotherapy	44 (95.7%)	75.1% (28.4)
Twelve Step Program	16 (34.8%)	7.7% (13.3)
Individual Therapy for Caregiver	6 (13.0%)	7.6% (23.0)
Skill Building	45 (97.8%)	69.3% (25.3)
<b>Tangible Rewards</b>	<b>42 (91.3%)</b>	<b>66.7% (36.4)</b>
Family Engagement	43 (93.5%)	64.1% (28.6)
<b>Relationship or Rapport Building</b>	<b>45 (97.8%)</b>	<b>63.7% (27.0)</b>
Time out	39 (84.8%)	57.7% (35.2)
<b>Cognitive</b>	<b>36 (78.3%)</b>	<b>57.3% (39.7)</b>
Free Association	38 (82.6%)	57.3% (36.5)
Commands	38 (82.6%)	55.8% (37.2)
Activity Scheduling	42 (91.3%)	55.4% (35.9)
<b>Family Therapy</b>	<b>39 (84.8%)</b>	<b>54.9% (34.2)</b>
Crisis Management	40 (87.0%)	52.8% (34.0)
Psychoeducation Child	40 (87.0%)	52.4% (36.8)
Cultural Training	31 (67.4%)	50.9% (45.1)
<b>Goal Setting</b>	<b>31 (67.4%)</b>	<b>50.3% (43.7)</b>
Emotional Processing	42 (91.3%)	49.9% (30.0)
Mindfulness	33 (71.7%)	48.2% (40.0)
Care Coordination	28 (60.9%)	46.5% (45.3)
<b>Self-Monitoring</b>	<b>39 (84.8%)</b>	<b>45.7% (31.9)</b>
Relaxation	32 (69.6%)	44.2% (39.0)
<b>Social Skills Training</b>	<b>35 (76.1%)</b>	<b>39.6% (33.8)</b>
Personal Safety Skills	23 (50.0%)	36.8% (43.2)
Ignoring or Differential Reinforcement of Other Behaviors	31 (67.4%)	35.9% (37.7)
<b>Modeling</b>	<b>36 (78.3%)</b>	<b>31.0% (29.2)</b>

Table 16. (continued)

*Frequency Counts of Practice Elements for Agency D (n = 46)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Interpretation	32 (69.6%)	30.6% (27.5)
<b>Maintenance or Relapse Prevention</b>	<b>27 (58.7%)</b>	<b>29.3% (32.8)</b>
Psychoeducation Parent	28 (60.9%)	29.1% (30.4)
Self-Rewards or Self-Praise	28 (60.9%)	28.5% (31.8)
Behavioral Contracting	20 (43.5%)	24.7% (38.9)
Mentoring	26 (56.5%)	22.2% (31.5)
Functional Analysis	23 (50.0%)	21.3% (30.0)
Eye Movement or Tapping	4 (8.7%)	2.6% (12.5)
Discrete Trial Training	4 (8.7%)	2.4% (8.0)
Other*	4 (8.7%)	2.3% (8.1)
Assertiveness Training	17 (37.0%)	19.4% (35.0)
Motivational Interviewing	21 (45.7%)	16.9% (27.3)
<b>Parent or Teacher Praise</b>	<b>21 (45.7%)</b>	<b>16.6% (25.0)</b>
Attending	11 (23.9%)	15.9% (34.0)
Stimulus Control or Antecedent Management	12 (26.1%)	14.0% (29.0)
<b>Parent or Teacher Monitoring</b>	<b>14 (30.4%)</b>	<b>13.8% (28.2)</b>
Play Therapy	19 (41.3%)	13.0% (22.6)
Response Prevention	8 (17.4%)	11.5% (29.4)
<b>Response Cost</b>	<b>7 (15.2%)</b>	<b>11.5% (28.9)</b>
Unclear*	11 (23.9%)	10.4% (22.2)
Thought Field Therapy	5 (10.9%)	1.4% (4.1)
Marital Therapy	5 (10.9%)	1.2% (3.7)
Biofeedback or Neurofeedback	3 (6.5%)	0.9% (3.5)
Hypnosis	1 (2.2%)	0.5% (3.3)
Catharsis	2 (4.3%)	0.4% (2.0)
Juvenile Sex Offender Treatment*	1 (2.2%)	0.2% (1.3)
Art or Music Therapy*	0	0
Assessment*	0	0
Behavioral Management*	0	0
Counseling*	0	0
Family Visits*	0	0
Informal Supports*	0	0
Legal Assistance or Involvement*	0	0
Parenting*	0	0

*Note.* Bolded items indicate practice elements that derived from the evidence-base (i.e., PDEBs; defined earlier as practice elements in 30% or more of the study groups examining evidence-based treatments). PE utilized at least once throughout the episode = Number of participants (and percent of sample) that had each practice element endorsed at least once throughout the entire episode (i.e., yes or no). PE utilization overall = Percent of Monthly Treatment Progress Summary reporting months within a youth's entire treatment episode that included each PEs, averaged (with standard deviation) across the entire dataset. \*PEs commonly written-in by therapists.

Table 17.

*Frequency Counts of Practice Elements for Agency E (n = 26)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Supportive Listening or Client Centered	26 (100.0%)	93.6% (12.6)
Natural and Logical Consequences	26 (100.0%)	93.2% (10.2)
Line of Sight Supervision	26 (100.0%)	92.4% (13.4)
<b>Therapist Praise or Rewards</b>	<b>26 (100.0%)</b>	<b>91.8% (15.1)</b>
Skill Building	26 (100.0%)	90.9% (12.2)
<b>Tangible Rewards</b>	<b>25 (96.2%)</b>	<b>88.0% (22.5)</b>
Activity Scheduling	26 (100.0%)	86.4% (18.4)
Insight Building	26 (100.0%)	84.6% (17.4)
Commands	26 (100.0%)	83.5% (20.3)
Time out	26 (100.0%)	81.7% (23.0)
Self-Rewards or Self-Praise	26 (100.0%)	80.8% (24.1)
<b>Relationship or Rapport Building</b>	<b>26 (100.0%)</b>	<b>80.8% (21.7)</b>
<b>Cognitive</b>	<b>25 (96.2%)</b>	<b>78.3% (28.7)</b>
Emotional Processing	25 (96.2%)	77.0% (29.6)
Educational Supports	25 (96.2%)	76.2% (30.1)
<b>Problem Solving</b>	<b>24 (92.3%)</b>	<b>72.2% (31.8)</b>
Twelve Step Program	25 (96.2%)	71.9% (33.8)
<b>Communication Skills</b>	<b>25 (96.2%)</b>	<b>71.9% (32.2)</b>
Crisis Management	24 (92.3%)	71.5% (30.9)
<b>Maintenance or Relapse Prevention</b>	<b>26 (100.0%)</b>	<b>69.6% (22.2)</b>
Medication or Pharmacotherapy	24 (92.3%)	68.6% (31.9)
<b>Social Skills Training</b>	<b>22 (84.6%)</b>	<b>63.2% (34.2)</b>
Family Engagement	25 (96.2%)	61.4% (32.2)
<b>Self-Monitoring</b>	<b>21 (80.8%)</b>	<b>59.4% (39.5)</b>
Stimulus Control or Antecedent Management	24 (92.3%)	56.6% (29.2)
Milieu Therapy	21 (80.8%)	56.0% (41.9)
<b>Modeling</b>	<b>24 (92.3%)</b>	<b>55.0% (27.2)</b>
<b>Parent or Teacher Praise</b>	<b>23 (88.5%)</b>	<b>54.5% (32.3)</b>
Assertiveness Training	23 (88.5%)	53.3% (34.6)
<b>Family Therapy</b>	<b>21 (80.8%)</b>	<b>52.5% (36.4)</b>
Motivational Interviewing	21 (80.8%)	52.3% (35.1)
Mindfulness	25 (96.2%)	51.2% (21.5)
Psychoeducation Child	23 (88.5%)	50.6% (33.6)
Interpretation	24 (92.3%)	50.5% (28.2)
Relaxation	19 (73.1%)	48.4% (39.6)
Catharsis	17 (65.4%)	45.9% (38.0)
Parent Coping	20 (76.9%)	45.8% (34.4)
Response Prevention	18 (69.2%)	43.3% (40.0)
<b>Response Cost</b>	<b>17 (65.4%)</b>	<b>41.6% (38.0)</b>
Peer Pairing	21 (80.8%)	39.7% (31.3)

Table 17. (continued)

*Frequency Counts of Practice Elements for Agency E (n = 26)*

Practice Element (PE)	PE utilized at least once throughout the episode	PE utilization overall
Psychoeducation Parent	18 (69.2%)	38.1% (34.3)
<b>Parent or Teacher Monitoring</b>	<b>20 (76.9%)</b>	<b>37.5% (29.7)</b>
Mentoring	18 (69.2%)	36.8% (35.1)
Care Coordination	12 (46.2%)	35.0% (43.0)
Cultural Training	12 (46.2%)	35.0% (41.9)
Attending	12 (46.2%)	33.8% (43.2)
Functional Analysis	14 (53.8%)	32.9% (37.2)
<b>Goal Setting</b>	<b>11 (42.3%)</b>	<b>25.2% (35.4)</b>
Free Association	11 (42.3%)	23.0% (33.2)
Behavioral Contracting	12 (46.2%)	20.5% (27.8)
Ignoring or Differential Reinforcement of Other Behaviors	9 (34.6%)	18.1% (30.9)
Unclear*	9 (34.6%)	17.2% (30.5)
Personal Safety Skills	9 (34.6%)	17.0% (30.2)
Play Therapy	8 (30.8%)	14.4% (27.4)
Anger Management*	7 (26.9%)	12.1% (22.3)
Individual Therapy for Caregiver	4 (15.4%)	5.2% (14.0)
Exposure	5 (19.2%)	4.7% (11.0)
Thought Field Therapy	6 (23.1%)	3.0% (5.9)
Other*	3 (11.5%)	2.3% (6.5)
Art or Music Therapy*	2 (7.7%)	1.9% (8.0)
Biofeedback or Neurofeedback	3 (11.5%)	1.9% (5.4)
Counseling*	2 (7.7%)	1.3% (4.5)
Eye Movement or Tapping	1 (3.8%)	0.4% (1.8)
Guided Imagery	1 (3.8%)	0.4% (1.8)
Assessment*	0	0
Behavioral Management*	0	0
Discrete Trial Training	0	0
Family Visits*	0	0
Hypnosis	0	0
Informal Supports*	0	0
Juvenile Sex Offender Treatment*	0	0
Legal Assistance or Involvement*	0	0
Marital Therapy	0	0
Parenting*	0	0

*Note.* Bolded items indicate practice elements that derived from the evidence-base (i.e., PDEBs; defined earlier as practice elements in 30% or more of the study groups examining evidence-based treatments). PE utilized at least once throughout the episode = Number of participants (and percent of sample) that had each practice element endorsed at least once throughout the entire episode (i.e., yes or no). PE utilization overall = Percent of Monthly Treatment Progress Summary reporting months within a youth's entire treatment episode that included each PEs, averaged (with standard deviation) across the entire dataset. \*PEs commonly written-in by therapists.

To get a better understanding of the relationship between the independent variable and the relevant clinical and demographic information, exploratory correlations and ANOVAs were calculated with PDEB-score against variables such as CAFAS Total Score, age, length of treatment episode, diagnoses, and so on. Consistent with the PDEB-score being calculated only based on the first nine months of treatment, the correlations and ANOVAs were calculated with the nine month PDEB-score. Correlations and ANOVAs were not calculated for the dependent variable of average progress rating on DBP targets each month because averaging the dependent variable across the youth's treatment episode had limited clinical interpretation and typically decreased the variability of the data. The results of the correlation analyses for the total sample are presented below in Table 18. Overall, the results from the total sample's correlation suggested that number of diagnoses positively associated with impairment in school and negatively associated with impairment related to behavior toward others. In addition, age positively related to average number of PDEBs used per month, average total number of PEs used per month, and impairment related to substance use. Age was also negatively associated with length of the treatment episode.

Across each of the agencies, there seemed to be variability among the continuous variables that were significantly related to each other. Similar to the total sample, several agencies had significant positive and negative relationships between number of diagnoses, age, length of treatment episode, and different impairment settings. For example, Agency A had a significant negative relationship between number of diagnoses and CAFAS: Behavior Toward Others. Agency B had a significant negative relationship between age and length of treatment episode, CAFAS: School Role Performance, CAFAS: Home Role Performance, CAFAS: Behavior Toward Others, and CAFAS Total Score. Agency C had a significant positive

relationship between age and CAFAS: Community Role Performance, and between length of treatment episode and CAFAS: Self-Harm. Agency D had a significant positive relationship between length of treatment episode and CAFAS Total Score, and between number of diagnoses and CAFAS: Substance Use. Finally, Agency E had a significant positive relationship between age and CAFAS: Community Role Performance, CAFAS: Substance Use, and CAFAS Total Score, and between number of diagnoses and CAFAS: School Role Performance and CAFAS: Moods/Emotions. Agency E also had a negative relationship between age and CAFAS: Thinking, and between length of treatment episode and CAFAS: Moods/Emotions.

Apparent differences between the agencies related to the association between PE-use and impairment. For example, Agency A had a significant negative relationship between CAFAS: Community Role Performance and average number of PDEBs used per month, PMESs used per month, and total PEs used per month. Agency C had a significant positive relationship between CAFAS: Behavior Toward Others and average number of PMESs and PEs used per month. Agency C also had a significant positive relationship between CAFAS: Moods/Emotions and average number of PDEBs used per month. Finally, Agency D had a significant positive relationship between CAFAS: Home Role Performance and average number of PDEBs used per month. Given that each of the agencies had a different clinical mission and population of youth they service (e.g., females, males, substance use, emotional and behavioral issues), this variability in the constructs that significantly correlated with each other was expected. To see these results across each of the agencies, see Tables 19 through 23.



Table 18.

*Correlations between Continuous Variables for the Total Sample (n = 341)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	--																
2	<b>.359**</b>	--															
3	<b>-.275**</b>	<b>.778**</b>	--														
4	-.070	<b>.896**</b>	<b>.976**</b>	--													
5	.084	<b>.156**</b>	.103	<b>.127*</b>	--												
6	-.019	-.082	-.050	-.064	<b>-.140**</b>	--											
7	.020	.082	.073	.081	.020	-.143	--										
8	-.025	.005	.016	.013	-.081	-.048	<b>.200*</b>	--									
9	.080	.079	.043	.058	-.071	.054	.164	<b>.336**</b>	--								
10	-.005	-.017	-.008	-.011	.052	.069	-.026	<b>.185**</b>	<b>.134*</b>	--							
11	-.017	.010	.017	.016	-.102	.027	<b>-.229**</b>	<b>.220**</b>	<b>.188**</b>	<b>.137*</b>	--						
12	-.031	-.027	.005	-.006	-.088	.004	.060	<b>.178**</b>	<b>.111*</b>	.030	<b>.270**</b>	--					
13	.062	-.030	-.060	.053	-.005	-.065	.050	.047	.053	-.082	.055	<b>.257**</b>	--				
14	.098	.104	.051	.072	<b>.172**</b>	-.001	.140	<b>.201**</b>	<b>.156**</b>	<b>.257**</b>	.036	.054	.099	--			
15	-.057	-.040	-.013	-.023	-.015	-.094	.007	-.063	-0.040	<b>-.214**</b>	<b>.143**</b>	<b>.187**</b>	<b>.106*</b>	<b>.202**</b>	--		
16	.061	.053	.029	.039	.022	.007	.160	<b>.508**</b>	<b>.484**</b>	<b>.388**</b>	<b>.424**</b>	<b>.441**</b>	<b>.364**</b>	<b>.540**</b>	.104	--	
17	<b>-.111*</b>	<b>-.159**</b>	<b>-.117*</b>	<b>-.138*</b>	-.050	.061	.091	-.074	.002	-.083	-.049	.011	.003	-.065	-.082	-.077	--

*Note.* Variables are defined as follows: (1) Practices that derived from the evidence-base (PDEB)-Score, (2) Average number of PDEBs used per month, (3) Average number of practice elements used per month that had minimal evidence support, (4) Average total number of practice elements used per month, (5) Age (in months) at the start of the episode, (6) Length of the treatment episode in months, (7) Number of diagnoses, (8) CAFAS: School Role Performance, (9) CAFAS: Home Role Performance, (10) CAFAS: Community Role Performance, (11) CAFAS: Behavior Toward Others, (12) CAFAS: Moods/Emotions, (13) CAFAS: Moods/Self-Harmful Behavior, (14) CAFAS: Substance Use, (15) CAFAS: Thinking, (16) CAFAS: Total Score, and (17) Number of degrees held by therapist. CAFAS = Child and Adolescent Functional Assessment Scale. NA represents that a correlation could not be computed because one of the variables was a constant. \*\* $p < 0.01$ . \* $p < 0.05$ .

Table 19.

*Correlations between Continuous Variables for Agency A (n = 98)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	--																
2	<b>.357**</b>	--															
3	<b>-.430**</b>	<b>.677**</b>	--														
4	-.187	<b>.844**</b>	<b>.966**</b>	--													
5	-.019	.181	<b>.215*</b>	<b>.220*</b>	--												
6	-.069	.056	.079	.077	-.108	--											
7	-.104	-.058	.027	.001	-.015	.008	--										
8	.020	-.074	-.074	-.080	-.116	-.009	.136	--									
9	.044	.003	-.028	-.019	-.048	.026	.190	<b>.261**</b>	--								
10	-.001	<b>-.225*</b>	<b>-.206*</b>	<b>-.229*</b>	-.180	.114	.195	<b>.243*</b>	.063	--							
11	.096	.004	-.054	-.038	.100	.071	<b>-.473*</b>	.100	.182	.156	--						
12	-.018	.033	.056	.052	-.014	.152	.022	.107	-.056	-.016	<b>.317**</b>	--					
13	-.045	-.124	-.046	-.077	-.116	-.053	-.128	<b>.219*</b>	.131	-.078	.181	<b>.241*</b>	--				
14	.124	-.013	-.105	-.081	.135	.054	-.035	<b>.242*</b>	<b>.286**</b>	.186	<b>.297**</b>	.019	.136	--			
15	-.067	.003	.050	.038	.194	-.041	-.256	-.028	-.027	<b>-.367**</b>	.168	.158	.184	-.063	--		
16	.058	-.097	-.115	-.118	-.035	-.012	-.049	<b>.472**</b>	<b>.375**</b>	<b>.248*</b>	<b>.562**</b>	<b>.488**</b>	<b>.504**</b>	<b>.515**</b>	.172	--	
17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--

*Note.* Variables are defined as follows: (1) Practices that derived from the evidence-base (PDEB)-Score, (2) Average number of PDEBs used per month, (3) Average number of practice elements used per month that had minimal evidence support, (4) Average total number of practice elements used per month, (5) Age (in months) at the start of the episode, (6) Length of the treatment episode in months, (7) Number of diagnoses, (8) CAFAS: School Role Performance, (9) CAFAS: Home Role Performance, (10) CAFAS: Community Role Performance, (11) CAFAS: Behavior Toward Others, (12) CAFAS: Moods/Emotions, (13) CAFAS: Moods/Self-Harmful Behavior, (14) CAFAS: Substance Use, (15) CAFAS: Thinking, (16) CAFAS: Total Score, and (17) Number of degrees held by therapist. CAFAS = Child and Adolescent Functional Assessment Scale. NA represents that a correlation could not be computed because one of the variables was a constant. \*\* $p < 0.01$ . \* $p < 0.05$ .

Table 20.

*Correlations between Continuous Variables for Agency B (n = 158)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	--																
2	<b>.410**</b>	--															
3	<b>-.270**</b>	<b>.745**</b>	--														
4	-.040	<b>.884**</b>	<b>.970**</b>	--													
5	.083	.085	.004	.034	--												
6	-.085	-.040	.041	.014	<b>-.163*</b>	--											
7	.120	.114	.035	.068	.082	-.143	--										
8	-.076	-.022	.031	.013	<b>-.184*</b>	-.053	.078	--									
9	.146	.103	.038	.064	<b>-.223**</b>	.134	.100	<b>.352**</b>	--								
10	.002	-.056	-.048	-.054	.030	.061	-.179	.059	.153	--							
11	-.100	-.001	.082	.057	<b>-.239**</b>	.040	-.099	<b>.282**</b>	.150	<b>.194*</b>	--						
12	-.004	-.100	-.072	-.087	-.138	.059	.031	.116	.134	.110	<b>.277**</b>	--					
13	.149	.015	-.095	-.061	-.067	-.077	.092	-.116	.004	-.128	-.074	.168*	--				
14	.092	-.046	-.113	-.096	-.055	.084	.013	<b>.197*</b>	.142	<b>.253**</b>	.028	.091	.087	--			
15	-.055	-.043	-.016	-.026	-.010	-.084	.169	-.142	-.121	-.135	.149	.123	.048	<b>-.209**</b>	--		
16	.058	-.039	-.064	-.059	<b>-.198*</b>	.056	.059	<b>.506**</b>	<b>.522**</b>	<b>.472**</b>	<b>.451**</b>	<b>.437**</b>	<b>.209**</b>	<b>.549**</b>	.071	--	
17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--

*Note.* Variables are defined as follows: (1) Practices that derived from the evidence-base (PDEB)-Score, (2) Average number of PDEBs used per month, (3) Average number of practice elements used per month that had minimal evidence support, (4) Average total number of practice elements used per month, (5) Age (in months) at the start of the episode, (6) Length of the treatment episode in months, (7) Number of diagnoses, (8) CAFAS: School Role Performance, (9) CAFAS: Home Role Performance, (10) CAFAS: Community Role Performance, (11) CAFAS: Behavior Toward Others, (12) CAFAS: Moods/Emotions, (13) CAFAS: Moods/Self-Harmful Behavior, (14) CAFAS: Substance Use, (15) CAFAS: Thinking, (16) CAFAS: Total Score, and (17) Number of degrees held by therapist. CAFAS = Child and Adolescent Functional Assessment Scale. NA represents that a correlation could not be computed because one of the variables was a constant. \*\* $p < 0.01$ . \* $p < 0.05$ .

Table 21.

*Correlations between Continuous Variables for Agency C (n = 13)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1	--																	
2	.226	--																
3	-.338	<b>.834**</b>	--															
4	-.163	<b>.921**</b>	<b>.983**</b>	--														
5	<b>.680*</b>	.263	-.086	.027	--													
6	-.230	.350	.485	.459	.388	--												
7	.096	-.453	-.844	-.847	-.519	-.794	--											
8	.252	.199	.043	.096	.073	-.158	-.250	--										
9	.401	.246	.000	.082	.136	-.011	NA	<b>.608*</b>	--									
10	.490	.092	-.163	-.084	<b>.562*</b>	-.196	.134	.139	.099	--								
11	-.137	.500	<b>.577*</b>	<b>.574*</b>	-.079	.166	NA	-.464	-.259	-.122	--							
12	.199	<b>.555*</b>	.418	.480	.293	.333	.250	.171	<b>.669*</b>	.214	.114	--						
13	-.095	.202	.246	.241	.366	<b>.562*</b>	-.559	.071	.167	.323	-.006	.484	--					
14	.286	-.312	-.425	-.403	.427	-.004	.343	-.224	-.166	<b>.569*</b>	-.346	.004	.121	--				
15	-.155	.270	.355	.340	-.194	-.186	-.408	.286	-.004	.000	-.116	-.093	-.397	-.355	--			
16	.051	.168	.170	.176	.477	.173	-.097	-.112	-.334	<b>.768**</b>	-.025	.131	.460	<b>.617*</b>	.071	--		
17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--

*Note.* Variables are defined as follows: (1) Practices that derived from the evidence-base (PDEB)-Score, (2) Average number of PDEBs used per month, (3) Average number of practice elements used per month that had minimal evidence support, (4) Average total number of practice elements used per month, (5) Age (in months) at the start of the episode, (6) Length of the treatment episode in months, (7) Number of diagnoses, (8) CAFAS: School Role Performance, (9) CAFAS: Home Role Performance, (10) CAFAS: Community Role Performance, (11) CAFAS: Behavior Toward Others, (12) CAFAS: Moods/Emotions, (13) CAFAS: Moods/Self-Harmful Behavior, (14) CAFAS: Substance Use, (15) CAFAS: Thinking, (16) CAFAS: Total Score, and (17) Number of degrees held by therapist. CAFAS = Child and Adolescent Functional Assessment Scale. NA represents that a correlation could not be computed because one of the variables was a constant. \*\* $p < 0.01$ . \* $p < 0.05$ .

Table 22.

*Correlations between Continuous Variables for Agency D (n = 46)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	--																
2	-.020	--															
3	<b>-.448**</b>	<b>.884**</b>	--														
4	<b>-.342*</b>	<b>.936**</b>	<b>.992**</b>	--													
5	-.004	-.081	-.053	-.062	--												
6	.218	-.206	-.212	-.215	-.143	--											
7	-.445	-.135	.166	.084	-.132	-.415	--										
8	-.133	.123	.131	.132	-.024	.153	.333	--									
9	-.057	<b>.296*</b>	.251	.269	.238	.014	.463	<b>.443**</b>	--								
10	-.177	.034	.083	.072	.051	.190	.102	.221	.205	--							
11	-.101	-.127	-.098	-.108	-.204	.041	-.144	<b>.396**</b>	.191	.189	--						
12	.014	.149	.097	.113	-.116	.000	-.249	.270	.215	-.015	<b>.306*</b>	--					
13	.088	-.218	-.214	-.220	.093	.135	.064	.157	.020	-.111	.089	<b>.409**</b>	--				
14	.057	.007	.003	.004	.266	-.004	<b>.641*</b>	.172	.109	-.025	-.189	.079	.166	--			
15	.031	.046	.011	.021	-.045	-.099	-.099	-.063	.048	-.058	.074	<b>.394**</b>	<b>.451**</b>	-.028	--		
16	.055	.103	.061	.073	.139	<b>.362*</b>	.507	<b>.578**</b>	<b>.597**</b>	<b>.322*</b>	.252	<b>.386**</b>	<b>.374*</b>	<b>.412**</b>	.185	--	
17	-.190	-.229	-.140	-.168	-.002	.043	.175	-.185	-.004	-.192	-.094	.014	.033	-.081	-.158	-.135	--

*Note.* Variables are defined as follows: (1) Practices that derived from the evidence-base (PDEB)-Score, (2) Average number of PDEBs used per month, (3) Average number of practice elements used per month that had minimal evidence support, (4) Average total number of practice elements used per month, (5) Age (in months) at the start of the episode, (6) Length of the treatment episode in months, (7) Number of diagnoses, (8) CAFAS: School Role Performance, (9) CAFAS: Home Role Performance, (10) CAFAS: Community Role Performance, (11) CAFAS: Behavior Toward Others, (12) CAFAS: Moods/Emotions, (13) CAFAS: Moods/Self-Harmful Behavior, (14) CAFAS: Substance Use, (15) CAFAS: Thinking, (16) CAFAS: Total Score, and (17) Number of degrees held by therapist. CAFAS = Child and Adolescent Functional Assessment Scale. NA represents that a correlation could not be computed because one of the variables was a constant. \*\* $p < 0.01$ . \* $p < 0.05$ .

Table 23.

*Correlations between Continuous Variables for Agency E (n = 26)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1	--																	
2	<b>.434*</b>	--																
3	-.231	<b>.750**</b>	--															
4	-.018	<b>.880**</b>	<b>.974**</b>	--														
5	-.210	.024	.214	.162	--													
6	<b>.479*</b>	.324	.018	.124	-.045	--												
7	.311	.400	.138	.238	-.064	-.185	--											
8	.065	-.019	-.101	-.079	.212	-.340	<b>.784**</b>	--										
9	-.045	-.038	-.004	-.016	.087	-.046	.070	.287	--									
10	-.031	.079	.117	.111	<b>.511**</b>	-.235	.187	<b>.543**</b>	.223	--								
11	.053	.155	.111	.133	-.039	-.045	-.543	.081	.360	-.144	--							
12	-.205	-.074	.039	.002	-.037	<b>-.441*</b>	<b>.599*</b>	<b>.540**</b>	.234	-.082	.105	--						
13	.128	-.014	-.062	-.049	.329	.005	-.087	-.043	-.128	-.057	.047	.131	--					
14	-.007	.161	.198	.197	<b>.699**</b>	.046	.071	.345	.169	<b>.642**</b>	.092	-.140	-.103	--				
15	-.225	-.106	-.001	-.037	<b>-.410*</b>	-.148	-.021	-.022	0.045	<b>.461*</b>	.171	<b>.425*</b>	.022	<b>-.460*</b>	--			
16	-.017	.139	.163	.165	<b>.581**</b>	-.187	.283	<b>.636**</b>	<b>.498**</b>	<b>.507**</b>	<b>.438*</b>	.349	.238	<b>.628**</b>	-.042	--		
17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--

*Note.* Variables are defined as follows: (1) Practices that derived from the evidence-base (PDEB)-Score, (2) Average number of PDEBs used per month, (3) Average number of practice elements used per month that had minimal evidence support, (4) Average total number of practice elements used per month, (5) Age (in months) at the start of the episode, (6) Length of the treatment episode in months, (7) Number of diagnoses, (8) CAFAS: School Role Performance, (9) CAFAS: Home Role Performance, (10) CAFAS: Community Role Performance, (11) CAFAS: Behavior Toward Others, (12) CAFAS: Moods/Emotions, (13) CAFAS: Moods/Self-Harmful Behavior, (14) CAFAS: Substance Use, (15) CAFAS: Thinking, (16) CAFAS: Total Score, and (17) Number of degrees held by therapist. CAFAS = Child and Adolescent Functional Assessment Scale. NA represents that a correlation could not be computed because one of the variables was a constant. \*\* $p < 0.01$ . \* $p < 0.05$ .

The results of the significant ANOVAs between the categorical youth and therapist variables and the PDEB-score for the total sample and each agency are presented below in Table 24. The categorical variables examined in this analysis included primary diagnoses, any diagnosis (i.e., diagnoses included anywhere in the youth's diagnostic profile), youth's discharge status, therapist's highest degree, therapist's professional specialty, and therapist's position. The results from the total sample suggested that youth who typically have diagnoses of attention deficit/hyperactivity disorder and bipolar disorder had lower PDEB-scores than youth that did not have those diagnoses. This suggests that therapists were less likely to use PDEBs for youth who have mental health concerns that may be more organically driven and that may lead to higher emotional dysregulation, impulsivity, and medication use. In addition, there were mild differences between PDEB-score and highest degree and professional specialty. Although post hoc analyses were not conducted due to moderate differences in the sample sizes of the groups, the results suggested that therapists specializing in medicine and substance abuse had higher PDEB-scores. Similar to the correlational results, the ANOVA findings indicated between-agency differences with regard to variables such as different diagnoses (e.g., substance use) and discharge statuses (e.g., runaway, refused) being related to higher PDEB-scores. These results were consistent with the different missions and populations served by these agencies. Given the exploratory nature of these analyses and the small sample sizes for some of the subgroups (e.g.,  $n = 2$ ), post hoc analyses were not pursued.

Table 24.

*Results of Significant One-Way Analysis of Variances (ANOVAs) between PDEB-Score and Client and Therapist Variables*

Variable	Group	N	Mean (SD)	F	df	P	$\eta^2$
<b>Total (n = 341)</b>							
Primary ADHD Diagnosis	0	137	0.32 (0.04)	4.897	(1, 140)	0.029	0.034
	1	5	0.28 (0.06)				
Any Bipolar Diagnosis	0	133	0.32 (0.04)	3.953	(1, 140)	0.049	0.027
	1	9	0.29 (0.05)				
Highest Degree <sup>a</sup>	AA/Voc	2	0.34 (0.03)	3.872	(5, 334)	0.002	0.055
	BA/BS	10	0.32 (0.01)				
	MA/MS	249	0.32 (0.04)				
	PsyD	6	0.34 (0.04)				
	MD	70	0.34 (0.04)				
	JD	3	0.32 (0.05)				
	Professional Specialty <sup>b</sup>	Clinical	7				
	Counseling	82	0.33 (0.04)				
	MFT	109	0.31 (0.04)				
	Law	11	0.32 (0.02)				
	Social Work	34	0.33 (0.04)				
	Substance Abuse	2	0.34 (0.03)				
	Psychology	25	0.32 (0.04)				
	Medicine	70	0.34 (0.04)				
<b>Agency A (n = 98)</b>							
Discharge Status: Refused	0	94	0.33 (0.03)	4.051	(1, 96)	0.047	0.040
	1	4	0.36 (0.07)				



Table 24. (continued)

*Results of Significant One-Way Analysis of Variances (ANOVAs) between PDEB-Score and Client and Therapist Variables*

Variable	Group	N	Mean (SD)	F	df	P	$\eta^2$
<b>Agency B (n = 158)</b>							
Highest Degree	MA/MS	88	0.32 (0.05)	9.971	(1, 156)	0.002	0.060
	MD	70	0.34 (0.04)				
Professional Specialty	Counseling	19	0.37 (0.04)	27.647	(2, 155)	0.000	0.263
	MFT	69	0.30 (0.04)				
	Medicine	70	0.34 (0.04)				
<b>Agency D (n = 46)</b>							
Any Other Diagnosis	0	3	0.34 (0.02)	8.066	(1, 12)	0.015	0.402
	1	11	0.29 (0.03)				
Discharge Status: Runaway	0	36	0.31 (0.04)	4.201	(1, 44)	0.046	0.087
	1	10	0.28 (0.03)				
<b>Agency E (n = 26)</b>							
Any Substance Use Diagnosis	0	8	0.28 (0.04)	5.889	(1, 11)	0.034	0.349
	1	5	0.33 (0.02)				

*Note.* It should be noted that some of these analysis were run with variables that had missing data. The following analyses were removed because there were only two groups and one of the groups had one participant, leading the whole analysis to be removed: Agency C's analyses for primary or any Adjustment diagnosis, Agency D's analyses for primary or any Trauma diagnosis, and Agency E's analysis for primary ADHD diagnosis. <sup>a</sup>Highest Degree of High School was removed due to there being only one participant in this group. <sup>b</sup>Professional Specialty of High School was removed due to there being only one participant in this group. PDEB = Practices derived from the evidence-base. 1 = Youth or therapists were part of that group. 0 = Youth or therapists were not part of that group. ADHD = Attention deficit/hyperactivity disorder. AA/Voc = Associates or vocational degree. BA/BS = Bachelors level degree. MA/MS = Masters level degree. PsyD = Doctorate of Psychology. MD = Medical degree. JD = Juris Doctor. MFT = Marriage and Family Therapy.

## **Analyses for Study Aim Two: Multilevel Modeling**

Prior to running the multilevel model, the appropriate parameter estimation for the model was chosen. Given that restricted estimation maximum likelihood can only be used when variance components are being compared, full information maximum likelihood was chosen for this model so that successive models with both regression coefficients and variance components could be compared. A preliminary step in MLM is often to partition the variance of the outcome into the proportion that is present at each level (i.e., calculating the ICC). The unconditional model (that does not include any predictor variables) is typically used for non-longitudinal MLMs to calculate the proportion of variance explained by the grouping structures of the population (i.e., time-related measure nested within each client and therapist). However, for longitudinal models like the one in this study, it is typically recommended to use the unconditional growth model that includes time (i.e., the change over the repeated measures) as the null model (Hox, 2010, pp. 88-89; Heck et al., 2013). This is due to the non-longitudinal MLMs assuming that each data point is unrelated, which is not the case for longitudinal MLMs, where each time point is related to one another and is therefore important in considering the initial model (Heck et al., 2013). After entering time into the model and calculating the variance components, the total variance estimate of the model was 1.71 (level-one variance of 0.53 + level-two variance of 0.59 + level-three variance of 0.59). Level-one, -two, and -three accounted for 30.99% (i.e.,  $0.53/1.71$ ), 34.50% (i.e.,  $0.59/1.71$ ), and 34.50% (i.e.,  $0.59/1.71$ ) of the variance in this initial model, respectively. Said another way, with regard to accounting for variance in the outcome variable of progress rating, it was estimated that level-one (i.e., time) would account for 30.99% of the variance, level-two (i.e., client-level variables) would account for 34.50% of the variance, and level-three (i.e., therapist-level variables) would account for 34.50% of the

variance. Since the main variable of interest was on level-two, it was expected that at least approximately 5% of the variance would be at this level. Given that approximately 34.50% of the variance was located between clients, conducting an MLM was appropriate for this sample.

The within-subjects growth trends were inspected for a random sample of 30 subjects to determine the overall shape of the trend. Over half of the individual trends appeared to be linear in shape, with the remaining graphs having a variety of shapes (e.g., natural log, inverted-“U,” or indecipherable). Given that most of the graphs were linear, it seemed appropriate to keep the time in a linear form. The intercept was also defined as ending status (i.e., the level of the dependent variable at the end of the study, adjusted for covariates in the model). By recoding the time variable in this fashion, the intercept could be interpreted as the final average progress rating or final average improvement rating on MTPS DBP treatment targets (which ranged from 3 to 9 months, depending on the total length of the treatment episode for each client). To define the intercept as ending status, the time variable was coded such that the last month of treatment was 0, and the first month of treatment was -1, to indicate that it occurred prior in time to the last month of treatment. To account for other possible trajectory shapes and clients who had different lengths of treatment episodes, the months of treatment in between -1 and 0 varied depending on the client (see Table 25 on the next page for an example of how time was recoded for two clients who had four and nine months of treatment included in this study). The overall effect of using this recoded time variable for the intercept was that it captured the change from the first to last month of treatment (i.e., with the coefficient for time interpreted as the overall change in the dependent variable over the client’s treatment episode or as time changed from -1 to 0), which forced the data into a linear format.

Table 25.

*Example of How Time was Recoded to be the “End Status” for Clients with Different Lengths of Treatment Episodes*

Client Random ID Number	Time (in Months)	Recoded Time Variable
1	1	-1
1	2	-0.66
1	3	-0.33
1	4	0
2	1	-1
2	2	-0.825
2	3	-0.75
2	4	-0.675
2	5	-0.5
2	6	-0.325
2	7	-0.25
2	8	-0.175
2	9	0

Finally, in terms of the variables in the model, the secondary variables were typically centered on their sample average (referred to as grand-mean centering), while the primary independent variable of interest (i.e., the PDEB-score) was centered on the minimum value in the data set. These decisions were made to help with the interpretation of the ending status intercept (i.e., the final average progress rating on DBP targets).

**Intercept-Only Model.** The intercept-only model (or the “unconditional means model” that did not include time) indicated that the average progress rating across months was significantly different than zero ( $p < 0.001$ ). The intercept of 2.63 was the grand mean progress rating on DBP treatment targets across all months and all clients. Several possible level-one error structures were preliminarily investigated by comparing Akaike information criterion (AIC) estimates (with lower AIC values indicating a better fit of the proposed covariance structure to the data), before deciding that a Scaled Identity error structure fit the data best. A Scaled Identity

covariance structure suggests that there is one constant variance for all the repeated measures (Heck et al., 2013).

**Time-Only (Level-One) Model.** The next model considered only the addition of time within clients. This model included the time variable added as a fixed effect. Random effects for time were also added at level-two and -three. The end status intercept of this model was 3.83 ( $p < 0.001$ ), suggesting that at the final month of their treatment episode window, participants' final average progress rating on DBP treatment targets was 3.83 on a 6-point scale. The estimate for time was 2.46 ( $p < 0.001$ ), suggesting that across the varied lengths of their treatment episodes, the average change in the mean progress rating on DBP treatment targets increased by 2.46 on the MTPS rating scale. When investigating the covariance parameters of this model, there was significant variability in the intercept within youth (Wald  $Z = 18.82$ ,  $p < 0.001$ ), between youth (Wald  $Z = 6.27$ ,  $p < 0.001$ ), and between therapists (Wald  $Z = 3.093$ ,  $p < 0.002$ ). Random effects were 0.18 ( $p = 0.091$ ) at level-two and 0.50 ( $p = 0.002$ ) at level-three. The -2 Log Likelihood deviance value for the final level-one model was 5726.90, suggesting this model was considerably better than the intercept-only model (-2 Log Likelihood = 7425.64).

**Level-Two Model.** The second step of the model development was to add between-youth fixed predictors to explain variance in the intercept (i.e., the final mean progress rating on DBP treatment targets). In addition to the time variable from the level-one model, the following variables were added into the model as fixed effects for explaining the level-two ending status intercept: PDEB-score, length of treatment beyond three months, agency (with the comparison group being Agency B due to it having the largest sample size), gender, age in months (centered on the grand mean), total CAFAS score at the start of the treatment episode (centered on the

grand mean), number of diagnoses, and use of Family Therapy at least once throughout the treatment episode (i.e., yes/no).

In terms of the slope model, it is recommended that theory or previous research be used to limit the variables added to the slope model because too many variables can make the results difficult to interpret. Thus, based on previous research, the following variables were also included as fixed effects for the level-two slope model: PDEB-score, length of treatment beyond three months, age in months (centered on grand mean), total CAFAS score at the start of the treatment episode (centered on the grand mean), and use of Family Therapy at least once throughout the treatment episode (i.e., yes/no). No covariates were entered as random effects due to the lack of theoretical support to consider these variables as randomly varying and because previous research of this nature had not determined random effects to be significant.

For the ending status intercept model, the following variables were not significant predictors of the intercept and were removed from the final level-two model: PDEB-score, agency, gender, total CAFAS score at the start of the treatment episode, and number of diagnoses. The final level-two model for the intercept included the following significant variables: time (recoded to range from -1 to 0), length of treatment beyond three months, age in months (centered on the grand mean), and use of family therapy at least once throughout the treatment episode. These factors together changed the intercept to be 2.03 ( $p < 0.001$ ), which meant that the final average progress rating on DBP treatment targets for youth who had three months of treatment, were the average age in the sample, and did not have family therapy used in their treatment episode was 2.03.

In terms of the individual predictors of the ending status intercept, longer length of treatment beyond three months and the use of family therapy at least once in the treatment

episode were significant at predicting higher final average progress ratings, while higher age in months was significant at predicting lower final average progress ratings. More specifically, with every added month of treatment beyond three months, the final average progress rating on DBP treatment targets increased by 0.31 points on the MTPS ( $p < 0.001$ ). Clients that had family therapy used at any point in time in their treatment episode had 0.65 more points on their final average progress rating on DBP treatment targets as compared to clients that did not have family therapy used ( $p = 0.003$ ). Finally, for every added month of age beyond the grand mean (i.e., 189.6 months or 15.8 years), the final average progress rating on DBP treatment targets decreased by 0.02 points (i.e., for every added year beyond 15.8 years, the final average progress rating on DBP treatment targets decreased by  $0.02 \times 12 \text{ months} = 0.24$  points;  $p < 0.001$ ). Random effects of time were 0.41 ( $p = 0.002$ ) at level-three and 0.08 ( $p = 0.246$ ) at level-two.

When examining the time slope model, the same variables that were significant at predicting the end status of average progress rating were also significant at  $p < 0.05$  or  $p < 0.10$  in predicting the slope of improvement on the average progress rating for DBP treatment targets. For every added month of treatment beyond three months, the rate of improvement on the average progress rating for DBP targets increased by 0.30 ( $p < 0.001$ ). Clients that had family therapy used at any point in time in their treatment episode had a 0.46 increase in their rate of change for the average progress rating for DBP treatment targets as compared to those clients that did not have family therapy used with them ( $p = 0.053$ ). Finally, for every added month of age beyond the grand mean, the rate of change in the average progress rating on DBP treatment targets decreased by 0.02 ( $p < 0.001$ ).

The deviance value for the final level-two model (-2 Log Likelihood = 5525.03) was smaller than the previous model (-2 Log Likelihood = 5726.90). Since the difference in deviance

between two nested models is distributed as a chi-squared analysis with degrees of freedom equal to the difference in the number of parameters, the difference between the deviance values for these two models needed to be above the chi-square critical value of 12.59 (parameter difference  $df = 13-7 = 6$ ). Given the deviance difference of 201.87 is greater than the chi-square critical value, the current model was significantly improved over the previous model, suggesting that this level-two model was better at predicting the end status and slope of average progress rating for DBP treatment targets.

**Level-Three Model.** The third step of the model development included adding between-therapist fixed predictors to explain variance in the intercept (i.e., the final mean progress rating on DBP treatment targets). In addition to carrying-over the time variable from the level-one model and the significant level-two predictors, the following variables were added into the model as fixed effects at the level-three intercept model: highest educational degree, number of degrees, professional specialty, licensure status (i.e., yes or no), and position (i.e., Qualified Mental Health Professional, Mental Health Professional, and Paraprofessional). None of these variables were included in the level-three slope model because there was no theoretical reason to investigate these variables with the time slope. Because none of the level-three variables were found to be a significant predictor of the ending status intercept, they were not included in the final model. This resulted in the final model for this study including predictors only at level-one and level-two. However, the variance components were still estimated for the therapist level, since it was appropriate to consider the covariates at levels-one and -two as nested within therapists, even if there were no covariates included at that level. The full results of this MLM can be seen in Table 26.



Table 26.

*Multilevel Models Predicting End Status and Monthly Rate of Change in Average Progress Rating on Disruptive Behavior Treatment Targets Using PDEB-Score (n=341)*

		Level-One Model	Level-Two Model
<i>Fixed effects</i>			
Final average progress rating	Intercept	3.83** (SE = 0.14)	2.03** (SE = 0.24)
	Length of Treatment Beyond three Months		0.31** (SE = 0.03)
	Age in Months (GMC)		-0.02** (SE = 0.00)
	Use of Family Therapy		0.65** (SE = 0.22)
	Time	2.46** (SE = 0.12)	0.85** (SE = 0.26)
Rate of Change	Length of Treatment Beyond three Months		0.30** (SE = 0.03)
	Age in Months (GMC)		-0.02** (SE = 0.00)
	Use of Family Therapy		0.46~ (SE = 0.24)
<i>Variance Components</i>			
Level-1 (Time)	Within-person	0.53**	0.51**
Level-2 (Client)	In final status	0.59**	0.44**
	In rate of change	0.19~	0.08
Level-3 (Therapist)	In final status	0.59**	0.48**
	In rate of change	0.50**	0.41**
<i>Goodness of fit</i>			
	Deviance	5726.90	5525.03
	No of estimated parameters	7	13
	AIC	5740.90	5551.03
	BIC	5780.73	5625.00

*Note.* PDEB-Score = Practices derived from the evidence-base-score. GMC = Grand-mean centered. SE = Standard error. AIC = Akaike information criterion. BIC = Bayesian information criterion. ~p < 0.10; \*p < 0.05; \*\*p < 0.001.

### **Exploratory Follow-Up Analyses: Average PDEB-Use and PMES-Use**

As mentioned earlier, the field of psychology has multiple definitions of EBP-use, with PDEB-score being one of them. Given the previous method of calculating EBP-use (i.e., PDEB-score) was not a significant predictor of the final average progress rating or the rate of change in the average progress rating on the DBP targets, another method of calculating PDEB-use was investigated: the average number of PDEBs used per month and the average number of PMESs used per month. This differs from the previous definition in that it was not a proportion of the total practices used by the therapist that were PDEBs; instead, it was an average of the raw number of PDEBs (i.e., PEs in 30% or more of the PE profile) and PMESs (i.e., PEs in less than 30% of the PE profile) used per month. Since only the PDEB-score was replaced by the average number of PDEBs and PMESs used per month and the level-one model was the same as the previous MLM, model development started at level-two. The same predictors were included for the end status intercept and slope models as in the previous analysis, with the exception of PDEB-score, which was replaced with both average PDEBs used per month and average PMESs used per month (both centered around the minimum value of the sample).

For the intercept model, the variables that were not significant predictors of the intercept and were removed from the final level-two model included gender, total CAFAS score at the start of the treatment episode, number of diagnoses, and use of family therapy at least once throughout the treatment episode. The final level-two model for the end status intercept included the significant variables of average number of PDEBs used per month (centered on the minimum), length of treatment beyond three months, and age in months (centered on the grand mean). In addition, the variables that were significant at  $p < 0.10$  in this model included the average number of PMESs used per month (centered on the minimum) and agency (with the

comparison group being Agency B due to it having the largest sample size). These variables together changed the end status intercept to be 1.90 ( $p < 0.001$ ), which meant that the final average progress rating on DBP treatment targets was 1.90 for youth who had three months of treatment, had the minimum average number of PDEBs and PMESs used per month, were in Agency B (i.e., the comparison group), and had the average age in the sample.

In terms of the individual predictors of the ending status or final intercept, longer length of treatment beyond three months and average PDEBs used per month were significant at predicting higher final average progress rating, while higher age in months was significant at predicting lower final average progress rating on DBP treatment targets. More specifically, with every added month of treatment beyond three months, the final average progress rating on DBP treatment targets increased by 0.32 points on the MTPS ( $p < 0.001$ ). For every one-point increase in average number of PDEBs used per month beyond the minimum of 3.89, the final average progress rating on DBP treatment targets increased by 0.08 points ( $p = 0.021$ ). Finally, for every added month of age beyond the grand mean (i.e., 189.6 months or 15.8 years), the final average progress rating on DBP treatment targets decreased by 0.02 (i.e., for every added year beyond 15.8 years, the average final progress rating on DBP treatment targets decreased by 0.24;  $p < 0.001$ ). In addition, average number of PMESs used per month and Agency were also significant at  $p < 0.10$  in predicting the dependent variable. With every one-unit increase in average number of PMESs used per month beyond the minimum of 7.29, the final average progress rating on DBP treatment targets increased by 0.03 ( $p = 0.072$ ). Among the agencies included in this study, only Agency E was significant at  $p = 0.060$  in differing from Agency B. Youth in Agency E had 0.96 points less than youth in Agency B on their final average progress rating on DBP treatment

targets. Random effects of time were 0.44 ( $p = 0.002$ ) at level-three and 0.06 ( $p = 0.333$ ) at level-two.

When examining the time slope model, length of treatment beyond three months and age in months were significant at predicting the rate of change for the average progress rating for DBP treatment targets. For every added month of treatment beyond three months, the rate of improvement on the average progress rating for DBP treatment targets increased by 0.31 points ( $p < 0.001$ ). In addition, for every added month of age beyond the grand mean, the rate of change in the average progress rating on DBP treatment targets decreased by -0.02 ( $p < 0.001$ ). It should be noted that when the average number of PDEBs- and PMESs-used per month were inputted in separate MLM analyses (without the other included in the models), both were significant in predicting the end status and slope of average progress rating. However, their significance in predicting rate of improvement on the average progress rating was not present when they were inputted together and their shared variance was taken into account.

The deviance value for the final level-two model (-2 Log Likelihood = 5500.41) was smaller than the previous model (-2 Log Likelihood = 5726.90). The difference between the deviance values for these two models needed to be above the chi-square critical value of 18.31 (parameter difference  $df = 17-7 = 10$ ) to be considered significant. Since the deviance difference of 226.49 was greater than the chi-square critical value, the current model was significantly improved over the previous level-one model, suggesting that this level-two model was better at predicting the end status and slope of average progress rating for DBP treatment targets. When investigating the level-three model, which included the same therapist-level predictors as the previous model, none of the variables were significant at predicting the end status intercept and

were not included in the final model. The full results of this exploratory MLM can be seen in Table 27.

Table 27.

*Multilevel Models Predicting End Status and Monthly Rate of Change in Average Progress Rating on Disruptive Behavior Treatment Targets Using Average Number of PDEBs and PMESs (n=341)*

		Level-One Model	Level-Two Model
<i>Fixed effects</i>			
Final average progress rating	Intercept	3.83** (SE = 0.14)	1.90** (SE = 0.30)
	Length of Treatment Beyond three Months		0.32** (SE = 0.03)
	Average Sum of PDEB (CM)		0.08* (SE = 0.04)
	Average Sum of PMES (CM)		0.03~ (SE = 0.02)
	Agency A vs. Agency B		-0.04 (SE = 0.32)
	Agency C vs. Agency B		-0.64 (SE = 0.54)
	Agency D vs. Agency B		0.42 (SE = 0.39)
	Agency E vs. Agency B		-0.96~ (SE = 0.06)
	Age in Months (GMC)		-0.02** (SE = 0.00)
	Time	2.46** (SE = 0.12)	1.23** (SE = 0.17)
Rate of Change	Length of Treatment Beyond three Months		0.31** (SE = 0.03)
	Age in Months (GMC)		-0.02** (SE = 0.00)
<i>Variance Components</i>			
Level-1 (Time)	Within-person	0.53**	0.51**
Level-2 (Client)	In final status	0.59**	0.38**
	In rate of change	0.19~	0.06
Level-3 (Therapist)	In final status	0.59**	0.50**
	In rate of change	0.50**	0.44**
<i>Goodness of fit</i>			
	Deviance	5726.90	5500.41
	No of estimated parameters	7	17
	AIC	5740.90	5534.41
	BIC	5780.73	5631.14

*Note.* PDEB = Practices derived from the evidence-base. PMES = Practices with minimal evidence support. GMC = Grand-mean centered. CM = Centered on the minimum. SE = Standard error. AIC = Akaike information criterion. BIC = Bayesian information criterion. ~p < 0.10; \*p < 0.05; \*\* p < 0.001.

### **Exploratory Follow-Up Analyses: Practice Elements Separately**

Additional exploratory analyses were conducted by entering each PE separately into the level-two model of the MLM (with time at level-one and no additional variables at level-two or three) to see which PEs might be significant at predicting the end status and rate of change for the average progress ratings on DBP treatment targets. These analyses were conducted with the knowledge that there would be an inflated alpha, that several of these PEs were likely correlated with each other, and that several potentially important covariates were not included in these analyses. Thus, these analyses were conducted and interpreted with caution.

Figures 2 and 3 present the PEs that were significant at  $p < 0.05$  level in predicting the end status and slope (i.e., rate of change) for the average progress rating on DBP treatment targets, respectively. As an example, Figure 2 will be used to demonstrate how to interpret these numbers. Counseling was a PE found in 0% of the study groups investigating EBPs (EBP% = 0 on the graph) and was considered a PMES (as represented from the white bar graph). The estimate of the end status for counseling was 2.16, suggesting that clients who had counseling at least once in their treatment episode had 2.16 more points on their final average progress rating on DBP targets than youth that did not have counseling. On the other hand, Family Therapy was a PE found in 40% of study groups in the evidence-base literature (EBP% = 40) and was considered a PDEB (as represented from the dark bar graph). The estimate for the end status of family therapy was 1.14, indicating that clients who had family therapy used at least once in their treatment episode had 1.14 more points on their final average progress rating for DBP targets than youth that did not have family therapy. Finally, youth that received medication management or pharmacotherapy, a PMES because it was included in 0% of study groups in the evidence-base literature, had an estimate of -0.46. This suggests that youth who had medication

management at least once in their treatment episode had a final average progress rating on DBP treatment targets that was 0.46 points lower than those youth who did not have medication management. The estimates for the slope of progress ratings in Figure 3 can also be interpreted in a similar fashion.

Based on Figure 2, the only PDEBs that were significant at independently predicting final average progress rating were family therapy, modeling, parent or teacher praise, response cost, and self-monitoring. In addition, results from Figure 3 suggested that the only PDEBs that were significant at predicting rate of improvement on average progress rating were family therapy, maintenance or relapse prevention, modeling, relationship or rapport building, and self-monitoring. Overall, these findings suggest that less than half of the 15 PEs that were considered PDEBs (see blue bars) for this study were significant at independently predicting end status and rate of change for average progress rating of DBP treatment targets. Observations of the specific PDEBs that were significant suggest that both child and parent oriented PEs were significant. In addition, these significant PDEBs spanned all three of the MTPS factors (i.e., Behavior Management, Coping and Self-Control, and Family Interventions). Finally, these PDEBs were included in 32-44% of the study groups investigating the evidence-based literature.

The top five PMESs that were significant at independently predicting final average progress rating in Figure 2 were counseling, discrete trial training, eye movement or tapping, hypnosis, and supportive listening or client centered. In addition, Figure 3 indicated that the top five PMESs that were significant at predicting rate of improvement on average progress rating were counseling, discrete trial training, educational supports, skill building, and supportive listening or client centered. Overall, across all of the significant positive PMES estimates, the majority of the PEs were targeted to children (e.g., supportive listening, insight building,



assertiveness training, etc.). These PMESs also derived from all three of the MTPS factors (i.e., Behavior Management, Coping and Self-Control, and Family Interventions), with a slightly larger emphasis on the Coping and Self-Control factor. Finally, approximately half of the PMESs that were significant derived from zero evidence-based protocols. The other half of the PMESs derived from less than 30% but more than 1% of evidence-based study groups. Lastly, there were only a few PEs that consistently demonstrated a negative relationship between use and progress rating (e.g., anger management, art or music therapy, medication management, and other), indicating the potential need for further investigation of the extent to which these PEs lead to poorer outcomes.

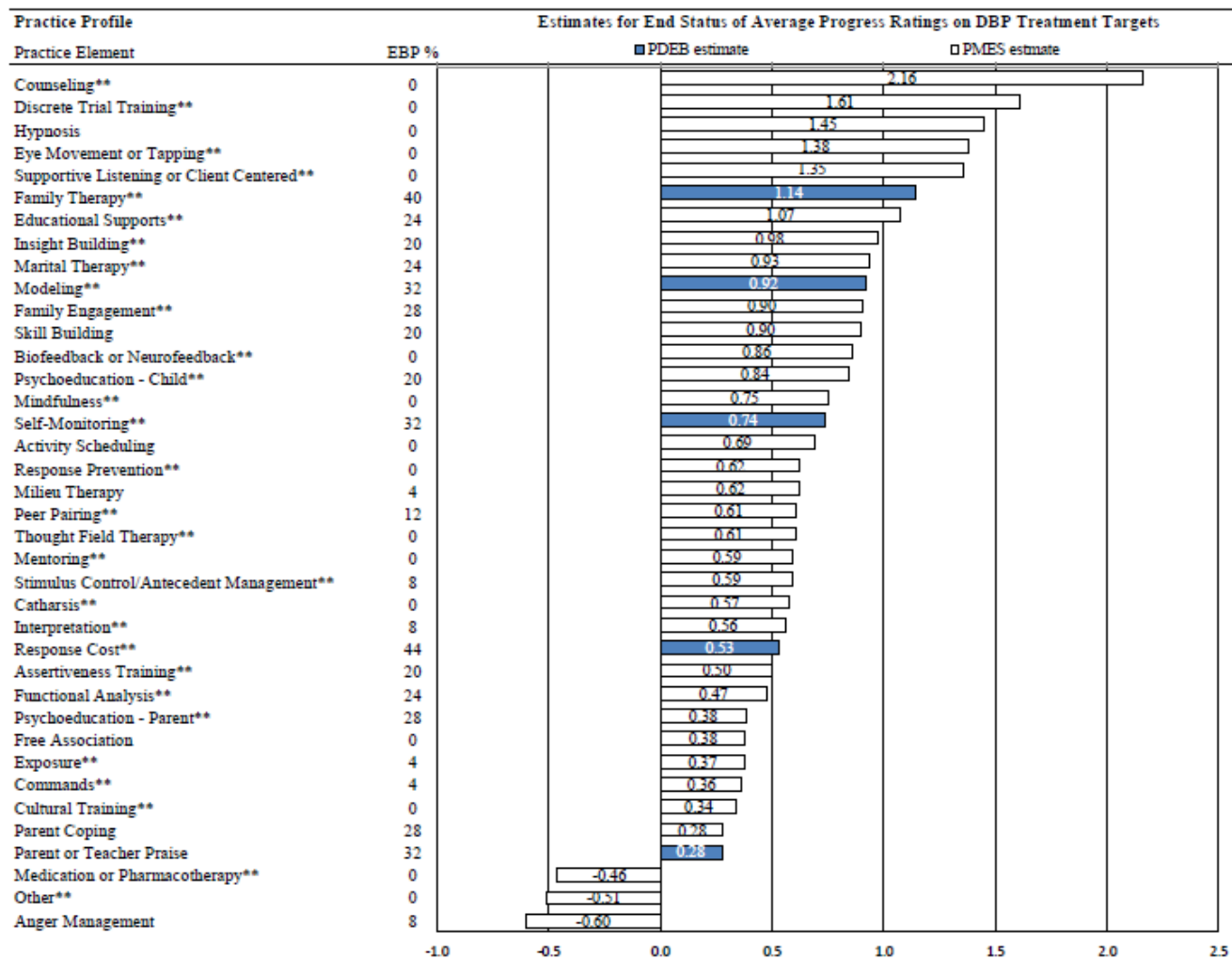


Figure 2. Graphical depiction of estimate sizes for each practice element that significantly predicted end status of the average progress rating on disruptive behavior problem (DBP) treatment targets ( $p < 0.05$ ). Dark bars represent practices that derived from the evidence-base (PDEBs; PEs in 30% or more of the study groups investigating evidence-based practices) and white bars represent practices with minimal evidence support (PMESs; PEs in less than 30% of study groups investigating evidence-based practices). \*\*Represents practice elements that were significant at the  $p < 0.01$  level.

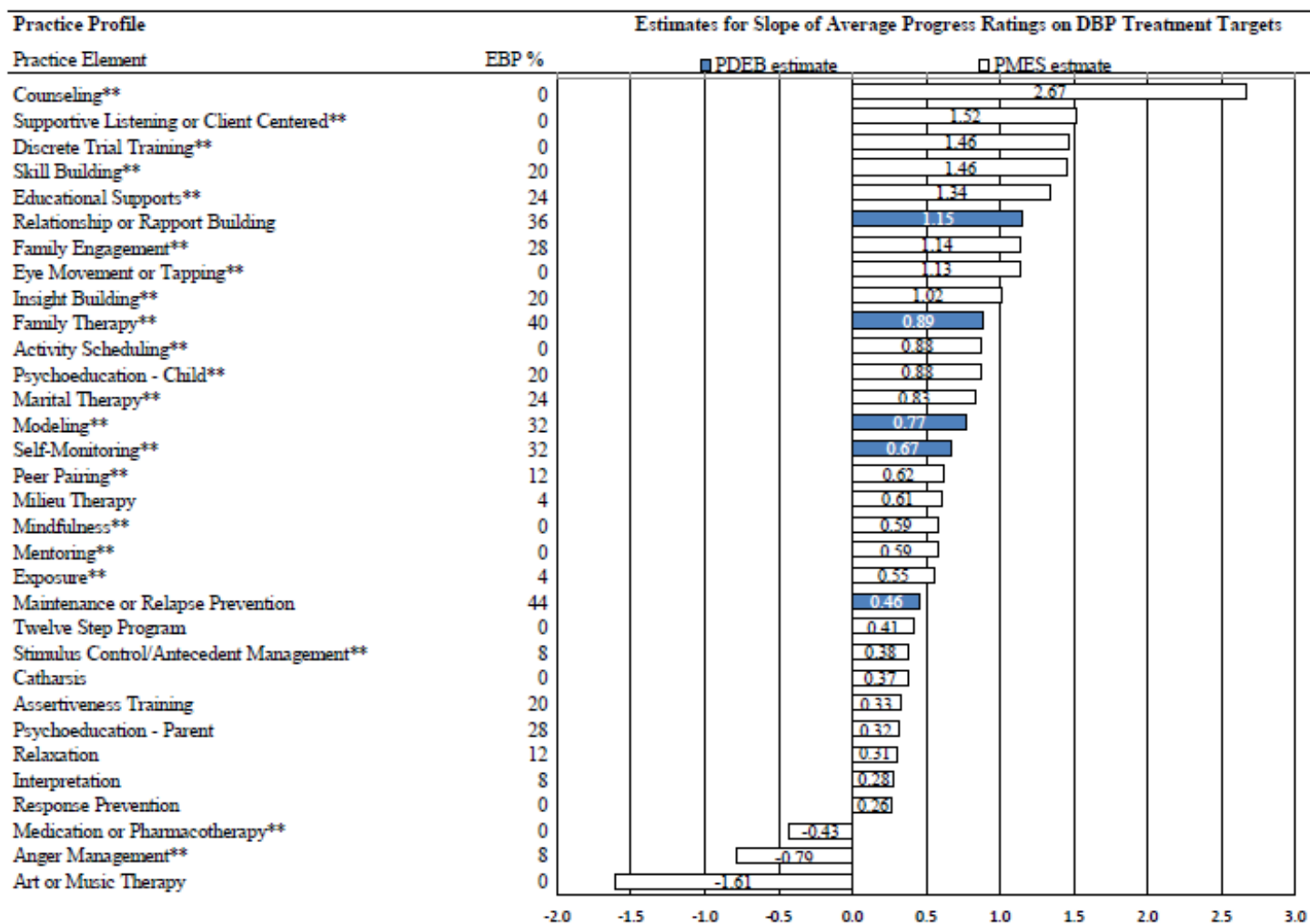


Figure 3. Graphical depiction of estimate sizes for each practice element that significantly predicted rate of change for the average progress rating on disruptive behavior problem (DBP) treatment targets ( $p < 0.05$ ). Dark bars represent practices that derived from the evidence-base (PDEBs; PEs in 30% or more of the study groups investigating evidence-based practices) and white bars represent practices with minimal evidence support (PMESs; PEs in less than 30% of study groups investigating evidence-based practices). \*\*Represents practice elements that were significant at the  $p < 0.01$  level.

## Chapter 4. Discussion

### Summary of Aim One: Descriptive Analyses

This is the first study to date that examined the extent to which therapeutic practices impact the improvement rates of older DBP youth within CBR-III settings. The study's first aim was to conduct descriptive analyses to better understand the practices used in CBR-III settings. The first aim was exploratory in nature and did not have *a priori* hypotheses. The initial descriptive analyses suggested that youth in the CBR-III setting were typically 15 years old, male, multiracial, comorbid, and stay an average of six months. Therapists of these CBR-III youth typically had a master's degree in marriage and family therapy or counseling, were unlicensed, and were Mental Health Professionals. Based on the results from the PE utilization frequency counts, both PDEBs and PMESs were used with CBR-III youth. The most commonly used PEs across the entire sample (i.e., 90% or more of the total sample) were activity scheduling, communication skills, educational supports, family engagement, family therapy, insight building, line of sight supervision, maintenance or relapse prevention, milieu therapy, natural and logical consequences, problem solving, relationship or rapport building, skill building, social skills training, supportive listening or client centered, and time out. The specific PDEBs that were consistently not administered among the majority of the youth in the sample were parent or teacher monitoring, parent or teacher praise, and response cost. The high-frequency PEs used with this sample suggested that there were more child-oriented skills implemented and that a lot of the PEs derived from the MTPS factors of Coping and Self-Control. Regarding treatment targets, the non-DBP treatment targets covered a variety of issues including social interactions, anxiety, mood, and other topics. Overall, the descriptive information about the PEs and treatment targets endorsed suggested significant variability

between the agencies. Results from the exploratory analyses in this portion of the study similarly reflected this diversity among the agencies. Findings from the total sample suggested significant associations between impairment level, number of diagnoses, and the youth's age. In addition, PDEB-scores for the total sample were significantly higher for youth without diagnoses of attention deficit/hyperactivity disorder and bipolar disorder, and for therapists who were in the medical or substance abuse fields.

### **Summary of Aim Two: MLM Analyses Predicting Average Progress Rating on DBP**

#### **Targets**

The study's second aim was to determine the extent to which PDEB-use predicted improvement rates for older DBP youth in the CBR-III setting. The hypothesis for the second aim of this study was not supported based on the initial method in which PDEB-use was defined, which centered on proportionate PDEB usage across a youth's treatment episode or the first nine months of treatment (for youth with episodes longer than nine months). In other words, PDEB-score (i.e., number of PDEBs used divided by all PEs used, averaged across the treatment episode) was not significant in predicting rate of improvement on DBP treatment targets for CBR-III youth. The initial MLM analyses suggested that lower age, longer length of treatment, and the use of family therapy at least once throughout the treatment episode were significant at predicting both final average progress rating and rate of improvement on average progress rating for DBP treatment targets. Follow-up exploratory analyses<sup>5</sup> indicated that the average number of

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<sup>5</sup>Owing to the overall analytic strategy's approval at the dissertation proposal for this project, models utilizing PDEB-scores were considered the "primary analyses" and the other methods of calculating or investigating PDEB-use were considered "follow-up analyses" as an artifact of the dissertation defense process. At the time this paper was written, however, both analyses seemed equally informative and care should be taken to not disproportionately focus on the "primary analyses" over the "follow-up analyses."

PDEBs used per month and average number of PMESs used per month were significant at  $p < 0.05$  and  $p < 0.10$ , respectively, in predicting final average progress rating. Along with these predictors, lower age and longer length of treatment remained significant in predicting both final average progress rating and rate of improvement on average progress rating. Finally, the exploratory PE-specific analyses added more qualitative information about both the PDEBs and PMESs that might be associated with improvement rates for these youth. For example, less than half of the PDEBs were significant at independently predicting end status and rate of change for average progress rating of DBP treatment targets. In addition, these PDEBs targeted both children and parents, and derived from all three of the MTPS factors. With regard to the PMESs, a majority of these PEs were child-oriented, derived from all three of the MTPS factors, and derived from 0% of EBPs approximately half of the time.

### **PDEB-Use and PMES-Use in TAU Settings**

Taken as a whole, the study findings tend to both support and challenge prior research on improvement rates and PDEB-use in TAU settings. The major finding from aim two of this study was that the PDEB-score was not significant at predicting final average progress rating or rate of change on average progress rating for DBP treatment targets. This differs from the findings of Orimoto and colleagues (2013), who found marginal effects of PDEB-score in predicting improvement rate for DBP youth in the intensive in-home setting. These contradictory results may suggest that PDEB-score might be significant in predicting improvement rates for DBP youth in the intensive in-home setting, but not for older DBP youth in the CBR-III setting. Given that CBR-III youth are typically more impaired (i.e., they usually have higher CAFAS scores when entering their treatment episode) than intensive in-home youth, it is not surprising that their predictors of improvement may be different from that of less impaired youth. For example, CBR-

III youth likely have more diagnoses on average, which might lead them to have more diverse practices and treatment approaches than youth in intensive in-home settings. Indeed, the average number of diagnoses for youth placed in this setting was three and the most commonly endorsed treatment targets included a wide variety of targets outside of the DBP domain (e.g., social interactions, anxiety, mood, etc.).

On the other hand, the alternative method of calculating PDEB-use (i.e., average number of PDEBs used per month) was significant at predicting final average progress rating in the exploratory analyses. These results align with previous research studies which found that average number of PDEBs used per month was significant at predicting either final average progress rating or improvement rates on progress ratings for depressed youth in intensive in-home settings (Love, 2014) and attention deficit/hyperactivity disorder youth across various settings (Mueller et al., 2009). Although PDEB-use was not significant in predicting rate of change in average progress ratings, it did predict final average progress rating, which is also a different indicator of improvement (i.e., how they ended treatment). Thus, while the hypothesis for the second aim of this study was not supported through the PDEB-score method of defining PDEB-use, it was supported by the exploratory finding that average number of PDEBs used per month predicted final average progress rating. This may be due to the different operational definitions of PDEB-use. PDEB-score (i.e., the proportionate PDEB-use) controls for number of PEs used per month, the consistent use of PDEBs throughout treatment, the number of PMESs used per month, and the use of the same PDEBs multiple times throughout a treatment episode. On the other hand, the average number of PDEBs used per month does not take into account the number of PMESs used per month, but does consider the consistent use of PDEBs throughout treatment. Thus, the latter definition does not penalize the therapist for using PMESs for the DBP problem area, which may

be more appropriate for this population given their high comorbidity rates. Hence, these findings may suggest that using more PDEBs for DBP youth in the CBR-III setting can help these youth end treatment at higher stages of improvement (i.e., at higher progress ratings).

However, it is important to interpret this aforementioned finding with its complementary result, which noted that the average number of PMESs used per month was marginally significant (i.e.,  $p < 0.10$ ) in predicting final average progress rating on DBP treatment targets. When average number of PDEBs and PMESs used per month were entered separately into the MLM analyses, they were both significant at predicting the dependent variable. When both of these variables were entered into the exploratory MLM analyses together, average number of PDEBs used per month was significant (i.e.,  $p < 0.05$ ) and average number of PMESs used per month was marginally significant (i.e.,  $p < 0.10$ ) in predicting the final average progress rating. These results may be interpreted in multiple ways. First, they might suggest that therapists are using PEs that derive from the evidence-base for multiple problem areas (e.g., exposure for anxiety, problem solving for disruptive behavior), which might be the reason both the average number of PDEBs used and PMESs used were significant and marginally significant, respectively, in predicting final average progress rating. As can be seen from the demographic information in Table 2, most youth in this sample have an average of three diagnoses, which range across nine different diagnostic categories. Indeed, visual inspections of the most commonly reported treatment targets did highlight the fact that many youth were being treated for problem areas outside of the scope of DBPs. Thus, if a youth had a diagnosis of conduct disorder and post-traumatic stress disorder, they might receive both self-monitoring (i.e., a PDEB for DBPs) and exposure (i.e., a PMES for DBPs, but a PDEB for anxiety). Hence, it may be that these therapists were mindful of the comorbidity of their clients when picking PDEBs for



disruptive behavior and other problem areas (but PDEBs for other problem areas would be classified as disruptive behavior PMES strategies). Another interpretation of these results is that the therapists are using a variety of practices with their clients, without choosing them based on the evidence-based literature (i.e., they are “throwing the kitchen sink” at them). These therapists may be unsure of what to do with these severe clients and then may turn to their previous work with youth in these settings to guide the practices they used. For example, agencies in CAMHD are invited to “data parties” and provided with information about which PEs they use regularly (Higa-McMillan et al., 2011) and the extent to which their clients are improving based on their agency’s PE profile findings. Thus, these results as a whole can be interpreted either as therapists consciously using PDEBs from multiple problem areas, therapists using as many PEs as they deem fit for their clients, or therapists referencing their prior experiences with these clients to guide their treatment. Findings from this study suggest that using a variety of PDEB strategies may improve final average progress rating for youth with DBPs.

Similar to the findings above, both the descriptive analyses and exploratory inferential analyses with each separate PE suggested that a diversity of PEs (i.e., both PDEBs and PMESs) were used with DBP youth in CBR-III settings. PEs associated with positive changes in the youth outcomes tended to be child-targeted and from the MTPS factors of Coping and Self-Control and Behavioral Management. Similar research with disruptive youth in the intensive in-home setting also found that youth with two or more diagnoses had an eclectic range and greater dosage of PEs used throughout their treatment episode (Orimoto et al., 2014). In addition, one observation about the separate PMESs that were significant in predicting final average progress rating and rate of improvement on average progress rating was that approximately half of these PMESs would have been considered PDEBs if the original inclusion criteria in the PE profile

was lowered from 30% to 1% (e.g., educational supports, insight building, marital therapy). This change would have meant that any PE that was included in at least one study group examining an EBP would have been considered a PDEB. In other words, this indicates that therapists are primarily using PEs that are present within at least one evidence-based protocol. For instance, a therapist might be using techniques that derive from treatment protocols that have some evidence-support (e.g., treatment support that may correspond to Levels-three to –four mentioned above), but not a large amount of evidence-support (e.g., treatment support corresponding with Levels-one and –two). In addition, although this interpretation suggests that the majority of the PMESs used were related to DBPs, it should be noted that several PEs do overlap with multiple problem areas and it is difficult to determine if the use of these PEs was related to comorbidity or the various methods of defining PDEBs.

Another observation from the exploratory PE-specific MLM analyses included the practices that were associated with lack of improvement for DBP youth in the CBR-III setting. Previous research on DBP youth in the intensive in-home setting found that line of sight supervision and supportive listening were associated with a decline in improvement rate (Orimoto et al., 2013). These specific findings did not generalize to the youth in this sample. Line of sight supervision was not significant in predicting improvement or deterioration rates, and supportive listening was positively associated with improvement rate. The findings from the current study suggested that medication or pharmacotherapy, anger management, and other techniques were associated with lower final average progress rating, while medication or pharmacotherapy, anger management, and art or music therapy were associated with a decrease in rates of improvement on average progress ratings. Similar to the descriptive results from the first aim mentioned above, this decrease in improvement might be related to an emotional

regulation issue, rather than the specific PE that was used to treat these youth. For example, the youth who received anger management likely had anger problems or difficulty with emotional regulation. Hence, the use of anger management or medication might be seen as a proxy of treating emotionally dysregulated youth, who might be considered more severe and may have slower improvement in CBR-III settings.

### **Client- and Therapist-Level Variables Predicting Improvement**

Alongside the influence of PEs, lower youth age and longer length of treatment were significant in predicting both final average progress rating and rate of improvement on average progress rating in both the second aim of this study and the exploratory MLM analyses. Similar research on depressed youth in the intensive in-home setting found that functional impairment and number of diagnoses were client-level variables that were significant in predicting final average progress rating (Love, 2014). These findings were likely not supported in the CBR setting because there was little variability among impairment and number of diagnoses, given that the majority of the youth in this setting had high CAFAS scores and similar number of diagnoses. On the other hand, there was a wide variety of ages among the youth in this sample (ranging from 13 to 17). Lower age was potentially related to better progress ratings since some of the older youth might have “aged out” of the mental health system during their CBR-III treatment episode and might have chosen to leave the program regardless of whether or not they improved. Another interpretation of this result is that these older youth may have had less PDEBs used with them, leading them to not improve at the same rate as younger clients (who in the CAMHD system, have been shown to receive less PMESs than older youth; Higa-McMillan et al., 2014).

Another client-level variable that was significant in predicting final average progress rating and rate of improvement on average progress rating was longer length of treatment. The simplest interpretation of this finding is that more PEs or PDEBs can be used with clients and mastered if they have longer lengths of treatment, which increases the likelihood of them improving. To take this interpretation a step forward, some of these CBR-III agencies have treatment programs or a specific set of therapeutic topics that they are required to cover with each youth (e.g., Agency A typically covers substance abuse counseling over a certain number of weeks). Thus, if a youth had a longer length of treatment, they likely progressed through more of the agency's materials, leading them to learn more therapeutic skills and improve at higher rates. Additionally, youth with shorter episodes might have quit the program (e.g., aging out, eloping), leaving them without as many therapeutic skills. On a different note, qualitative information provided from a representative of Agency A suggested that some youth are encouraged to stay in their program long after they have met their treatment goals due to their families and homes not being deemed as appropriate for their return. Thus, it may be that youth who have longer lengths of treatment have maintained the improvement from prior months and are just practicing their skills in a controlled, CBR-III environment.

A third variable that was significant in predicting final average progress rating and rate of improvement on average progress rating for DBP targets was the use of family therapy at least once throughout the treatment episode. This finding was only significant in the initial model with the PDEB-score and not in the exploratory follow-up analyses with the average number of PDEBs and PMESs used per month. This contradictory finding might have occurred because the number of PDEBs used per month includes the PE of family therapy and it was unable to account for unique variance above and beyond average PDEBs used. Overall, these findings

suggested that the use of family therapy might increase the improvement of youth within CBR-III settings, which is supported by previous research. Given CBR-III youth are displaced from their homes, the use of this specific PE can help these youth develop stronger relationships and supports within their family and transition better when they move back into the home setting (Leichtman & Leichtman, 2001). This is especially helpful, given that some youth are maintained in the CBR-III setting until their family is ready to support them upon their return (as mentioned previously). Prior findings also suggest that family involvement in treatment is a strong predictor of youth maintaining improvement post-discharge from a CBR setting (Casey et al., 2010; Gorske et al., 2003; Leichtman & Leichtman, 2001, 2002; Wells et al., 1991). Thus, if these findings are interpreted alongside previous research, it is likely that the use of family therapy with these youth might increase their improvement both within and after discharge from CBR-III settings.

Regarding level-three data, the current study found that no therapist-specific information was significant in predicting final average progress rating or rate of improvement for average progress rating on DBP treatment targets. Previous research in Hawai'i that investigated these same constructs (e.g., professional specialty, position, degree, licensure status, number of degrees) found similar non-significant results (Love, 2014; Orimoto et al., 2013). These findings might have occurred for several reasons. First, the categories of the professional specialties included in this study were derived based on the highest degree held by the therapist. Nuanced information collected directly from therapists might have led to different categorizations of professional specialties, which may have been significant in predicting final status or rate of change. In addition, the specialty categories in the current exploratory study were not collapsed into larger superordinate groupings, which may have led to the insignificant findings. For

example, research by Higa-McMillan and colleagues (2014) collapsed a psychology and psychiatry specialty and found that those therapists used more PDEBs than the therapists with a social work specialty. Exploratory analyses in the current study indicated that psychiatry and substance abuse specialties had the highest PDEB-scores, while the marriage and family therapy specialty had the lowest PDEB-score, which is similar to these prior findings. Taken together, these significant associations and collapsing of categories potentially warrant further investigation of professional specialty in PDEB research.

An additional potential reason for the lack of statistically significant therapist-level predictors is that this data may not have had enough variance at the therapist level. For example, since the majority of the therapists had a masters as their highest degree, it decreased the chances of it being significant in predicting the outcome. A third reason that the therapist-level variables were insignificant might relate to the lack of important constructs not examined in this study. For example, previous research found that theoretical orientation (i.e., cognitive-behavior or behavior) and less years of experience were significantly related to the use of parent-targeted EBPs (Brookman-Frazer et al., 2010). Although the sample in this study was older DBP youth and the PDEBs associated with this population are typically targeted to the youth, it would have been beneficial to determine if these associations generalized to this sample. In addition, previous research has found that although therapists in the CBR setting typically have positive attitudes toward EBPs, they think there are both advantages and disadvantages to using EBPs in the CBR setting (James et al., 2015). Along these lines, it may be beneficial for future investigations in this area to examine CBR therapists' characteristics such as theoretical orientation, years of experience, and attitudes toward evidence-based assessment and treatment

strategies (among a host of other therapist-level characteristics) with regard to potential relationships with youth improvement rates.

Another hypothesis for the lack of significant therapist variables is that therapist-related constructs might not influence improvement rates for DBP youth in CBR settings as much as other variables. This is not to say that therapist variables are not important in the investigation of EBPs or TAU; instead, it may be that the degree to which numerous multilevel variables influence youth improvement vary as a function of service setting and other important treatment parameters. For example, organizational characteristics (e.g., leadership, culture, mission, resources) might be another variable in the CBR setting that was not presently investigated, but may have predicted improvement rates for DBP youth, above and beyond that of therapist variables. The EBP dissemination and implementation movement has made a strong shift toward investigating the importance of organizational characteristics and leadership in the use of PDEBs (e.g., Aarons, Hurlburt, & Horwitz, 2011). This may be especially true in the CBR setting, where therapists might be required by their organization to implement certain programs and practices. Hence, it is possible that organizational characteristics might have been more influential in this study, as compared to therapist-level variables, suggesting the need to further investigate organizational variables among this population of youth.

### **Limitations**

Although the results of the present study are promising with regard to the influence of PDEB-use, lower age, and length of treatment on the final average progress rating or rate of improvement for average progress rating on DBP treatment targets, limitations should be considered. First, several variables from this study were based on data collected from the MTPS, a self-report measure filled out by the therapist. Self-report measures are typically at risk of

having a reporter-bias, especially when they might be perceived as reflecting the quality of work completed by the reporter. For example, therapists might endorse PEs they did not actually use and higher progress ratings for their clients so that they can be perceived as using “better” practices and being “better” therapists. However, research has shown that therapists in CAMHD were moderately accurate at endorsing PEs that they used in treatment sessions when compared to their self-report on the MTPS (Borntrager et al., 2013).

Second, there was a limited number of therapist-related variables included in this study. Results from this study may have been enhanced if other relevant variables were available to examine (e.g., theoretical orientation, gender, race, experience level). Similarly, another limitation regarding therapist information was that only the therapist who completed the MTPS most frequently was included in these analyses. In multiple levels of care, especially in the CBR setting, there are several therapists that work with each youth. Thus, it may be inaccurate to use the information from one therapist to complete these MLM analyses. However, if multiple therapists are consistently working with a youth, including their information in quantitative analyses would be very difficult (e.g., inability to combine different theoretical orientations from multiple therapists).

Another limitation for this study is that the CBR-III agencies in this sample serve different populations (e.g., only females, only males, youth who have substance abuse diagnoses). Hence, it can be argued that these different agencies should not have been combined into a single analysis and might benefit more from separate analyses for the specific populations they serve. In addition, as can be seen from Table 2, there were a considerable amount of youth who did not discharge successfully. This could have impacted the variables that were significant in predicting improvement rates for these youth (e.g., length of treatment episode might have



been shorter for youth who had a discharge status of “runaway”). Additionally, given the limited sample in CBR-III settings, this study attempted to incorporate as many youth as possible to maximize the sample size and obtain sufficient power. However, this meant including youth with varying lengths of treatment episodes (e.g., three to nine months of treatment). Having this variability in the length of treatment episodes may have impacted the results from this study. If the study had instead limited clients to only include those with at least six months of treatment, it may have removed the youth who had eloped, possibly impacting the extent to which PDEB-use predicted improvement rate. Finally, it is likely that the current study did not investigate other client-level variables that could have potentially influenced these results (e.g., which youth had internalizing concerns, which youth “aged out” of the system, etc.).

Finally, another limitation of this study is that the list of PDEBs were created based on PEs that derived from the evidence-base for DBP youth across all settings. By using a broader PDEB-profile that was not limited by CBR setting, PEs that were developed and tested for this specific setting (e.g., milieu therapy) were only included in a small percentage of all of the coded study groups because of the low number of randomized controlled trials in the CBR setting. Furthermore, the somewhat arbitrary cut-off level of 30% that was used to determine PDEBs then removed these CBR-only related PEs from the lists, while leaving PEs that may be more appropriate in other settings (e.g., praise).

### **Implications and Future Studies**

There are several implications of these results. First, the average number of PDEBs and PMESs used was significant and marginally significant, respectively, in predicting final average progress rating for DBP youth in the CBR setting. Future studies may elaborate on these findings by further investigating youth comorbidity and how this relates to the use of PEs and the

improvement rates for youth in this setting. For example, future research might choose to investigate the relationship between youth comorbidity patterns and PDEB- and PMES- utilization rates as they relate to youth improvement. Although potentially much needed, such forthcoming work in this area may be complicated as PMESs from one problem area could actually be PDEBs from other problem areas. Regardless of the specific approaches to be utilized, future research should attempt to clarify the extent to which comorbidity is truly the reason for the high use of PMESs among therapists working with DBP youth in CBR settings.

Another way of further investigating the use of both PDEBs and PMESs among therapists in this setting would be to gather more qualitative information regarding their clinical decision-making process. Collecting qualitative data would allow us to gain more in depth information about the daily issues/barriers these therapists experience when treating their clients. For example, qualitative information gained from speaking with a few CBR-III therapists suggested that a majority of the youth placed in their particular agency have a history of trauma, but may not have a diagnosis, leading several therapists to conduct Trauma-Focused Cognitive Behavior Therapy. Although this approach is evidence-based for trauma, it is not evidence-based for DBPs, which would have been associated with various PMES strategies in the current study. More information like this would help elucidate therapists' decisions to use PMESs.

A strength of this study is that it provided more research on a severe and understudied population of youth. There is a scarcity of research for youth in the CBR setting, as evidenced by the six randomized controlled trials that have been currently coded by PracticeWise, LLC. Furthermore, the majority of the research for youth placed in CBR settings is qualitative and not experimentally controlled. Future research should continue to investigate TAU practices of youth placed in this setting. For example, as the treatment outcome literature specific to CBR settings

continues to grow, our field may stand to benefit from investigating CBR-specific PDEBs for predicting youth improvement rates in public mental health CBR settings. Furthermore, research should investigate what types of PEs are associated with youth improvement for different types of diagnoses, outside of DBPs. In addition, given that these youth are older and likely to have more awareness of their own experiences in treatment, it might be helpful to gain more qualitative information from the youth to see what therapeutic practices and skills they believe to be the most helpful toward their progress. For example, although mindfulness was found to be a significant predictor of improvement rate, youth might not have seen the benefits of using this PE. On the other hand, youth might have found problem solving extremely helpful, even though it did not come out as a significant predictor in the analyses. This type of qualitative information can help with the interpretation of quantitative analyses, like the ones in this study. Furthermore, although costly, it would be beneficial to continue conducting randomized controlled trials for youth in this setting. For example, youth can be split into an experimental group that primarily receives the PDEBs from this study and a control group that receives a manualized treatment or TAU. Results from studies like this one might help researchers and clinicians narrow down the treatment practices that help these youth improve. Finally, researchers might also consider investigating the factors that influence CBR youth to maintain improvement post-discharge, when they might be placed in a less-controlled environment. Maintaining progress for these youth can be defined in multiple ways, including not returning to the CBR setting, not getting arrested, not using substances, length of time they stayed in treatment after leaving the CBR setting, and so on.

This study also contributed to the complexity and importance of defining PDEBs in research. In this study, PDEB-use was significant at predicting final average progress rating on

DBP targets with one definition (i.e., average number of PDEBs used per month), but not another (i.e., PDEB-score). This finding is particularly interesting given the current difficulties researchers studying EBPs are having with defining EBPs as a whole. Future studies should continue to investigate TAU using multiple methods of defining EBPs or PDEBs. In the current study, the criteria for a PDEB was a PE included in at least 30% or more of study groups that investigated evidence-based protocols. Additional studies might want to examine how the results may change when less conservative criteria are used (e.g., 20%, 10%, or 1% rule; using protocols from Level-three or better research support). In addition, researchers might want to continue determining which definition of PDEBs are more appropriate for TAU studies like this one. In the current study, defining PDEB-use as the average number of PDEBs used per month was significant, while using the proportionate PDEB-score was not. Future studies may want to investigate other definitions of PDEB-use that may have different strengths and weaknesses as compared to the ones used in this study. Finally, using a PE-approach is one method of calculating and observing the use of EBPs among therapists. Future research may also want to investigate the relationship between a youth's improvement rate and the use of treatment manuals and treatment families.

Thus, despite these limitations and indications for future research, the present study was the first investigation of the extent to which PDEB-use predicts improvement for DBP youth in CBR settings. Overall, the findings suggested that the average number of PDEBs used per month, lower age of clients, longer length of treatment, and the use of family therapy within their treatment episode were significant in predicting final average progress rating or rate of improvement for average progress rating on DBP treatment targets. In addition, these findings indicated that the average number of PMESs and Agency were marginally significant in

predicting final average progress rating. Given the importance of honing in on the specific practices that help youth from CBR settings improve, advancing empirical inquiry into TAU practices for these highly impaired population continues to be a worthwhile endeavor.

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