DISRUPTIVE BEHAVIOR TREATMENT PROGRESS AS A FUNCTION OF DISRUPTIVE BEHAVIOR AND DEPRESSED MOOD PRACTICES DERIVED FROM THE EVIDENCE BASE

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Daniel P. Wilkie, M.A.

Dissertation Committee:

Charles W. Mueller, Ph.D., Chairperson
Brad Nakamura, Ph.D.
David Cicero, Ph.D.
Frank Floyd, Ph.D.
Jenny Wells, Ph.D.

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Abstract

Disruptive behavior problems, the most common reason for referral to youth public mental health care, develop along multiple causal pathways and are associated with a wide variety of co-occurring problems, including irritability, emotional dysregulation, and mood disorders. Much of the evidence-based treatment literature for disruptive behavior problems tends to ignore these complexities, which cannot be easily ignored in actual practice. As such, effective treatment practices for youth disruptive behavior in usual care settings might differ from what the efficacy research suggests. I predicted that practices derived from the evidence base (PDEs) for mood problems and for both mood and disruptive behavior problems would predict disruptive behavior progress for both adolescent and preadolescent youth, while practices for disruptive behavior problems only would predict disruptive behavior progress for preadolescent but not adolescent youth.

Clinical data from adolescent (ages 13-17; N = 1210) and preadolescent (ages 8-12; N = 626) youth samples that received intensive in-home (IIH) services from the State of Hawai‘i, Child and Adolescent Mental Health Division (CAMHD) and were treated for disruptive behavior problems were examined. Both youth samples were studied to determine the association between disruptive behavior problem (DBP) treatment progress and PDEs for (a) depressed mood problems only (PDE_{MOOD}), (b) disruptive behavior problems only ($PDE_{DBD.13+}$ for adolescent PDEs, $PDE_{DBD.12-}$ for preadolescent PDEs), and (c) practices that appear in both depressed mood and disruptive behavior problem evidence-based treatment (PDE_{BOTH}). Using data from PracticeWise, LLC, PDEs in the study were defined as those that appear in at least 20% of active treatment arms in published evidence-based treatment studies that met criteria for Good Support or Better as of August 27, 2018.

When entered simultaneously into a multilevel model for the adolescent sample, PDE_{MOOD} and PDE_{BOTH} significantly predicted positive DBP progress, while $PDE_{DBD.13+}$ did not. When entered simultaneously into a multilevel model for the preadolescent sample, PDE_{MOOD} and $PDE_{DBD.12-}$ significantly predicted DBP progress, while PDE_{BOTH} did not. When examined as individual predictors in their own growth models, all three PDE categories predicted DBP progress, and PDE_{MOOD} had the largest associated positive effect size for DBP progress in both age groups. Further analyses suggest that practices focused on individual youth skills tended to be more associated with DBP progress than practices focused on caregivers, particularly for adolescent youth. These findings suggest that practices supported by the evidence base for depressed mood problems might be effective in the treatment of disruptive behavior problems in community mental health care, potentially by treating underlying irritability or emotional dysregulation and/or by focusing more on youth skills rather than caregiver skills. Potential but unexplored contributing factors might include increased difficulty in effectively implementing more complicated caregiver-focused practices to fidelity and the increased use of caregiver practices in months when disruptive behavior problems are at their worst.

Across both samples, lower CAFAS scores and fewer DBP targets predicted higher DBP progress. For the adolescent sample, higher age predicted higher DBP progress, while for the preadolescent sample, lower age and treatment length of 6 months or less predicted higher DBP progress. Future research directions might investigate whether PDEs for depressed mood delivered to high fidelity in a structured treatment program might be effective in DBP treatment, particularly for youth with irritable mood or youth whose caregivers have multiple barriers to treatment.

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Introduction

Disruptive behaviors are generally characterized as those that violate the rights of others or fail to conform to the expectations of authority figures or societal norms, and are commonly clustered under the dimension of antisocial behavior (Frick, 1998). Disruptive behavior disorders (DBDs) are characterized by symptoms that frequently put an individual at odds with family members, peers, and authority figures (Kaminski & Claussen, 2017). In the *DSM-IV-TR*, attention-deficit and disruptive behavior disorders were classified together and comprised of attention-deficit hyperactivity disorder (ADHD), conduct disorder (CD), oppositional defiant disorder (ODD), and disruptive behavior disorder not otherwise specified (DBD-NOS; American Psychiatric Association [APA], 2000). However, the *DSM-5* classifies a diagnostic group of disruptive, impulse-control, and conduct disorders, comprised of CD, ODD, intermittent explosive disorder, antisocial personality disorder, pyromania, kleptomania, and unspecified or other specified disruptive, impulse-control, and conduct disorders (APA, 2013). Virtually all of the data for the current study comes from the time period of *DSM-IV-TR*, so for the purposes of this study, DBD shall refer to CD, ODD, and DBD-NOS as listed in the *DSM-IV-TR*.

Disruptive behavior problems are common, heterogeneous, and consequential in their negative impact on those who experience them and on society at large. Some disruptive behavior, including aggression, defiance, acting out, and rule-breaking, is common among typically developing children, especially at younger ages (Kaminski & Claussen, 2017). Disruptive behaviors constitute the most frequent reason for referral to youth mental health services (Hinshaw & Lee, 2003), and disruptive behavior disorders are common in community mental health samples, with approximately one in four youth in these settings meeting criteria for CD and an additional one in six meeting criteria for ODD (Garland et al., 2001). DBDs are

heterogeneous regarding behaviors displayed, causal factors in their development, course of symptoms, and response to treatment, presenting a difficult challenge for treatment planning and implementation (Frick, 1998). Disruptive behaviors are associated with considerable negative societal impact, including harm to others, school truancy, increased public expenditures, and juvenile legal violations (e.g., Foster, Jones, & The Conduct Problems Prevention Research Group, 2005; Pardini & Fite, 2010; Scott, Kapp, Henderson, & Maughan, 2001); considerable comorbidity with other internalizing and externalizing disorders (e.g., Copeland, Miller-Johnson, Keeler, Angold, & Costello, 2007; Angold, Costello, & Erkanli, 1999); and long-term negative sequelae, including poor family and romantic relationships, workplace difficulties, low academic achievement, young adult legal violations, and high mortality rates (e.g., Burke, Rowe, & Boylan, 2014; Copeland et al., 2007; Kazdin, 1997).

Disruptive Behavior and an Externalizing Developmental Track

Disruptive behavior problems are often conceptualized as an externalizing manifestation of psychopathology, a grouping of behaviors that manifest in individuals acting negatively on the external environment (e.g., Johnston & Ohan, 1999; Liu, 2004). Hyperactive-impulsive-attention problems, characteristic of attention-deficit/hyperactivity disorder (ADHD), are associated with the earlier onset and greater persistence of disruptive behavior problems, suggesting a distinct developmental trajectory of externalizing problems that is more related to ADHD (Frick, 1998; Waschbusch, 2002). ADHD symptoms predict increases in disruptive behavior problems over time (Pardini & Fite, 2010) and adolescent conduct problems (Mannuzza, Klein, Abikoff, & Moulton, 2004), and roughly half of youth with ADHD are estimated to meet criteria for comorbid ODD and/or CD (Newcorn & Halperin, 2000). An early ADHD diagnosis has been linked to ODD by preschool age, CD by elementary school age, and substance use disorders in

adolescence, characterizing an early-onset and persistent manifestation of externalizing problems regarded as more severe and difficult to treat (e.g., Beauchaine, Hinshaw, & Pang, 2010; Loeber & Hay, 1997).

ADHD shows a notable association with the "headstrong" or "argumentative/defiant" factor of ODD symptoms, which is also distinctly associated with higher rates of comorbid conduct disorder (APA, 2013; Stringaris & Goodman, 2009a; Stringaris & Goodman, 2009b). Oppositional defiant disorder is connected to a subsequent diagnosis of conduct disorder, with approximately 30% of youth with ODD receiving a future diagnosis of CD (Loeber, Burke, Lahey, Winters, & Zera, 2000). In turn, CD is linked to adult antisocial personality disorder (ASPD), with approximately 40% of youth with CD meeting criteria for ASPD (Zoccolillo, Pickles, Quinton, & Rutter, 1992). Taken together, these findings suggest hyperactive-impulsive-attention problems are characteristic of externalizing problems due to their association with a more distinctly externalizing developmental pathway of psychopathology.

Disruptive Behavior and an Internalizing Developmental Track

While disruptive behavior has typically been conceptualized as part of an "externalizing developmental track" in psychopathology, research has also connected youth disruptive behavior problems to both comorbid and subsequent internalizing problems, with particular links between depressed mood and irritability in childhood and adolescence (e.g., Loeber, Burke, & Pardini, 2009; Stringaris, 2011). Irritability is characterized by touchiness and a low threshold for the expression of anger, and can be a symptom of both externalizing and internalizing disorders (Stringaris, 2011). Specifically, irritable mood is a criterion for the diagnosis of oppositional defiant disorder, and is also a criterion for the diagnosis of major depressive disorder and persistent depressive disorder in youth, but not adults (APA, 2013). Disruptive mood

dysregulation disorder (DMDD), characterized by both chronic irritability and severe temper outbursts, was added as a new diagnosis in the *DSM-5*, and although DMDD is grouped with depressive disorders, it is given instead of oppositional defiant disorder when youth meet criteria for both diagnoses (APA, 2013). Similarly, *DSM-5* suggests that oppositional defiant disorder not be diagnosed if related symptoms occur exclusively within the course of a mood disorder, further implicating irritability as a clinically recognized bridge between youth internalizing and externalizing problems (APA, 2013).

Oppositional defiant disorder has been connected to both concurrent and subsequent comorbid mood disorder, particularly when angry/irritable symptoms are present. In a nationally representative longitudinal study of American youth, Boylan, Vaillancourt, and Szatmari (2012) found that every youth who developed high levels of depressive symptoms had pre-existing moderate or high levels of oppositional symptoms, suggesting a developmental track of youth depression preceded by oppositional behavior. Further research suggests that ODD in childhood might be the most significant diagnostic predictor of depression in young adulthood, even above childhood depression (Burke, Loeber, Lahey, & Rathouz, 2005; Copeland, Shanahan, Costello, & Angold, 2009). The "angry/irritable mood" symptoms of ODD as included in *DSM-5* have shown particular association with future depressed mood diagnoses, while other ODD symptoms are predictive of different sequelae such as conduct disorder (Burke, Hipwell, & Loeber, 2010; Loeber et al., 2009). Given these findings, ODD might occupy a central ground between the internalizing/externalizing diagnostic divide (Copeland et al., 2007; Burke et al., 2005).

Conduct disorder has also been connected to comorbid mood disorder, with conduct disorder and depression co-occurring at a much higher rate than expected by chance (Angold et al., 1999). Comorbidity between the two problems can be very high, with one study finding that

76% of adolescent inpatients with conduct disorder also met criteria for a mood disorder (Arredondo & Butler, 1994). One explanation for this connection suggests that conduct problems might result in social failures that contribute to the development of depression. Alternatively, depression might emerge first and result in the development of conduct problems as a means of "acting out" on depressed feelings (Wolff & Ollendick, 2006). In a longitudinal study, McDonough-Caplan, Klein, and Beauchaine (2018) demonstrated that subsequent comorbid depression is likely to develop in youth with conduct problems, but that subsequent conduct problems are unlikely to develop in youth with only depression, suggesting that conduct problems tend to precede depressed mood in comorbid cases. As a third possibility, more general information-processing difficulties might underlie both depression and conduct problems, with maladaptive mental processes in response to social stimuli (e.g., perceiving social rejection) potentially leading to depressive and/or disruptive behavioral responses (e.g., attributing perceived social failure to personal shortcomings or negative qualities, reacting to perceived social failure with hostility and aggression; Dodge, 1993). However, some evidence suggests that the angry/irritable dimension of ODD (as opposed to the vindictiveness or argumentative/defiant dimensions) is the specific predictor of depression and conduct problem comorbidity. For example, one study found that conduct disorder did not predict a subsequent depression disorder for a sample of preadolescent girls when the irritable mood symptoms of ODD were accounted for in the analysis (Burke et al., 2010).

Therefore, youth disruptive behavior problems, particularly when characterized by irritability and negative affect, appear to be a major risk factor for depression. Disruptive behavior problems might even be an early stage in the development of depressed mood, with

youth who exhibit irritability and disruptive behaviors in childhood developing depression in adolescence and young adulthood.

Evidence-Based Treatment for Youth Disruptive Behavior Problems

Given the considerable frequency of and negative outcomes associated with disruptive behavior problems, numerous treatment interventions supported by scientific literature as evidence-based have been developed (e.g., Kaminski & Claussen, 2017). Most of these treatments focus on reducing maladaptive behaviors and increasing adaptive behaviors, often through parent training approaches (Eyberg, Nelson, & Boggs, 2008; Chorpita et al., 2011). Common treatment elements are found across many of the evidence-based disruptive behavior treatments, such as parent-child relationship building, positive reinforcement techniques, psychoeducation, and reviewing goals and progress (Garland, Hawley, Brookman-Frazee, & Hurlburt, 2008). For preadolescent youth, a recent review by Kaminski and Claussen (2017) suggests that group and individual parent behavior therapy with child participation are the most well-established treatments in the evidence base. Treatment focused more on adolescent disruptive behavior often features family-based, systems-oriented approaches, such as Multisystemic Therapy, Functional Family Therapy, and Multidimensional Treatment Foster Care (Henggeler & Sheidow, 2012). These parent and system approaches to treatment follow from theoretical frameworks that suggest social, ecological, and behavioral factors influence disruptive behavior, as well as findings that implicate a relationship between poor parenting practices and conduct problems (Henggeler & Sheidow, 2012; Wootton, Frick, Shelton, & Silverthorn, 1997).

Individual treatments for disruptive behavior, or approaches that feature both parent and individual elements, also show some support in the evidence base. In a review by Kaminski and

Claussen (2017), *probably efficacious* treatments include individual and group child behavior therapy, with a particular focus on problem-solving and social skills training. Parenting practices appear to play a role in individual disruptive behavior treatments, even when parenting is not directly involved in treatment. Webster-Stratton, Reid, and Hammond (2001) found the only risk factor related to a lack of improvement in a social skills and problem-solving treatment program was negative parenting practices (i.e., maternal critical statements and use of physical force). Parenting approaches might be less effective for adolescents, with some evidence that youth aged 13 and older show less progress in response to parent management training (Greco & Eifert, 2004). In short, efficacious treatments for disruptive behavior often feature parenting intervention foci, and parenting practices appear to be a key to progress, even when treatment is focused primarily on working directly with the youth.

Evidence-Based Treatment for Youth Depressed Mood

As with disruptive behavior, a scientific literature for the treatment of depressed mood problems exists and often guides the approach taken in psychological interventions. Evidence-based treatments for youth experiencing depressed mood problems have often involved adapting adult depression treatment approaches to the developmental level of youth clients. The vast majority of youth depression evidence-based treatment studies have tested the effects of cognitive behavioral therapy (CBT) and interpersonal psychotherapy (IPT; David-Ferdon & Kaslow, 2008; Weersing, Jeffreys, Do, Schwartz, & Bolano, 2017). In a recent review, both CBT and IPT as general theoretical approaches have been categorized as *well-established* treatments for adolescent depression (Weersing et al., 2017). IPT draws on attachment theory and tends to focus on current interpersonal relationships, and to be more structured than dynamic psychotherapy but less structured than CBT (Hollon & Ponniah, 2010). CBT approaches include

both cognitive and behavioral components, and can involve changing maladaptive beliefs through cognitive therapy, teaching behavioral skills through social skills and problem-solving therapy, or encouraging activities that result in more positive moods through behavioral activation (Hollon & Ponniah, 2010). In general, evidence-supported treatments for depression focus on individual or group work directly with the client, with an emphasis on changing how the client thinks, how the client relates to others, and how the client behaves.

With preadolescent children, however, the evidence base is less developed and less clear. A recent review by Weersing et al. (2017) did not categorize any treatment modalities as *well-established* or *probably efficacious* for preadolescent depression. Only seven randomized control trials testing CBT in children with depression qualified for the review, and findings in those studies were mixed, with one finding in favor of CBT over waitlist controls, two resulting in no significant difference between CBT and controls, and four finding generally positive but equivocal findings compared to a range of comparison conditions (Weersing et al., 2017).

Treatment and Treatment Response for Comorbid and Irritable Youth

There is mixed evidence that a comorbid presentation of these problems impacts response to treatment. In a review of previous studies on comorbid youth, Ollendick, Jarrett, Grills-Taquechel, Hovey, and Wolff (2008) found little to no effect of comorbid internalizing problems on response to child conduct treatment. However, Jarrett, Siddiqui, Lochman, and Qu (2014) found that elevated depressed mood symptoms predicted greater reductions in externalizing symptoms during a behavior-focused externalizing treatment, while Wilkie, Cicero, and Mueller (2018) found that focusing on depressed mood problem areas predicted higher disruptive behavior progress for youth with a depressed mood diagnosis.

With a limited evidence base for childhood depression treatment and mixed findings regarding treatment for comorbid youth, it might be informative to examine treatments that focus on symptoms of negative affect and emotional dysregulation in disruptive behavior. Some such treatment approaches are supported by the evidence base for both disruptive behavior and depressed mood problems, such as individual treatments that focus on improving social skills or problem-solving skills (Hollon & Ponniah, 2010; Kaminski & Claussen, 2017). Nelson-Gray and colleagues (2006) examined the treatment response to a modified dialectical behavior therapy (DBT) skills training for adolescents with ODD in a group therapy format, and found that the DBT skills training led to an increase in positive behaviors and decrease in negative behaviors. Similarly, Masi and colleagues (2014) found that both externalizing and internalizing symptoms decreased in response to a multimodal treatment program for youth with disruptive behavior disorders. The authors discussed the possibility that addressing emotional regulation and negative affect by focusing on self-control and problem solving might be an important clinical aim in improving the functioning of youth with both internalizing and externalizing problems (Masi et al., 2014).

Community-Based Usual Care

While there is strong support for the efficacy of some of these treatments, their effectiveness in community settings remains unclear. Community-based mental health treatment is variously grouped under the labels of usual care (UC), treatment as usual (TAU), or routine care, and in effectiveness research is often used as a generic control condition to which other treatments are compared (Kazdin, 2015). UC has previously been considered an unexamined "black box," with a notably small body of research on practices in UC and its effectiveness in mental health treatment (Bickman, 2000). More recently, UC has received increased empirical

evaluation regarding its effectiveness, in part to better understand UC in its own right, to better understand what evidence-based treatments are being compared to, to improve the quality of UC services, and to potentially inform new innovative approaches for the next generation of evidence-based mental health treatment (Hoagwood & Kolko, 2009; Kazdin, 2015). Findings from such research have been mixed, with some results suggesting that the majority of youth receiving community-based UC show little or no clinical improvement (e.g., Manteuffel, Stephens, Sondheimer, & Fisher, 2008; Warren, Nelson, Mondragon, Baldwin, & Burlingame, 2010). Some of this research has found that there is no apparent relationship between the dosage of treatment in UC and the effectiveness of said treatment, raising the possibility that UC treatment is not effective at all (Garland et al., 2013).

However, other evidence suggests that UC treatment is more effective than no-treatment control conditions, and that the therapeutic change seen in UC can potentially be framed as comparable to that seen in efficacy studies, depending on the outcome being measured and the control of confounding influences that might otherwise suggest the superior effect of evidence-based practices (EBPs; Kazdin, 2015; Miller, Wampold, & Varhely, 2008). Some studies had included youth being referred out or not receiving services at all under the UC or treatment-as-usual label, calling into question the meaning of research that characterizes UC as comparable to no treatment (Kazdin, 2015). It might also be difficult to characterize UC treatments given the huge variability of what UC encompasses and what treatment approaches are utilized, with potential differences not only between UC settings, but also within UC settings depending on factors such as therapist orientation and individual client needs (Kazdin, 2015). Indeed, in the process of developing this research project, I was unable to find any definition of usual care or treatment-as-usual in a literature search via PsycINFO and Google Scholar. As such, UC remains

understudied and poorly defined, and further examination of the various components of UC and treatment outcomes will likely illuminate what is important and effective in UC.

Characteristics of Evidence-Based Treatment Research and Usual Care

Considerable gaps exist between practices supported by the evidence-based research literature and their use in actual clinical settings. Some criticisms of evidence-based services research include an insufficient examination of issues faced by clinicians in non-research clinical settings, research being written for the purpose of publication in journals rather than for implementation, and a unidirectional tendency of science informing clinical work but clinical work not informing science (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Most research findings on evidence-based treatments are focused on efficacy in controlled settings rather than effectiveness in the conditions of actual youth mental health practice, creating understandable skepticism about the relevance of the evidence in clinical practice (Weisz & Kazdin, 2010).

Despite the existence of various treatments with strong efficacy support from the evidence base, usual care therapists often endorse treatment strategies that are not emphasized in evidence-based research (Brookman-Frazee, Garland, Taylor, & Zoffness, 2009). Furthermore, studies of coded recordings from treatment sessions led by usual care therapists found that, when they do endorse practices derived from the evidence base, they deliver those practices with low fidelity (Borntrager, Chorpita, Orimoto, Love, & Mueller, 2013; Garland et al., 2010).

Evidence-based treatment research often does not account for and describe potentially important sample characteristics, with Weisz, Jensen-Doss, and Hawley (2005) noting that 60% of articles examined failed to report race or ethnicity and more than 70% of articles failed to provide information on socioeconomic status. Weisz et al. (2005) further reported that levels of clinical representativeness in the evidence base are low, with only 13% of study samples actually

seeking treatment or clinically referred, 19% of studies actually employing at least one practicing clinician, and 4% of studies conducted within a clinical service setting.

There are notable differences between usual care samples and evidence-based treatment research samples. Youth in EBP studies tend to be younger, more frequently male, less ethnically diverse (i.e., more frequently White), and more likely to have a single diagnosis compared to youth in UC settings (Baker-Ericzén, Hurlburt, Brookman-Frazee, Jenkins, & Hough, 2010). Exclusion criteria frequently remove participants from EBP studies that might have more complicated presenting problems, such as comorbid diagnoses (Schoenwald & Hoagwood, 2001). EBP studies tend to feature highly supervised manualized interventions with highly trained treatment providers, often delivered via university clinics that reduce organizational barriers to treatment (Schoenwald & Hoagwood, 2001). In contrast, therapists in UC report feeling overwhelmed by the complex needs of UC clients and the low engagement of their parents, and tend to have a high rate of employment turnover (Garland et al., 2010; Schoenwald, Hoagwood, Atkins, Evans, & Ringeisen, 2010).

Considering family characteristics, Baker-Ericzén et al. (2010) found that UC families have higher stress, fewer social supports, and more marital and family problems than do families that participate in EBP studies. Parents in UC also tend to have higher rates of depressed mood diagnoses and a lower socioeconomic status (Baker-Ericzén et al., 2010). Many of these characteristics that occur at higher rates in UC than in EBP study samples are associated with worse outcomes, which leaves open the possibility that what is evidence-based in randomized control trial studies might not be effective in UC. A review by Gopalan et al. (2010) found that family stress and poverty negatively impact treatment engagement, with youth from low-income and urban communities particularly likely to drop out of services. Poor parent treatment

engagement and adherence is particularly impactful for disruptive behavior treatment, where parent participation is associated with better youth outcomes (Brannan, 2003; Dowell & Ogles, 2010; Nock & Ferriter, 2005). Low socioeconomic status, high family stress and marital conflict, and parent psychopathology, all of which are more frequent in UC, have been linked to poor treatment compliance and retention for youth receiving disruptive behavior problem treatment (Brookman-Frazee, Haine, Baker-Ericzén, Zoffness, & Garland, 2010). Given these various differences between UC and EBP sample characteristics, it remains unclear whether and to what extent efficacy findings translate to effective UC treatment for disruptive behavior.

Identifying Practices Derived from the Evidence Base

Despite these barriers and the limited use of EBPs in UC, efforts are ongoing to translate EBP research findings into effective treatment in clinical settings. One method of translating EBP research to address the complexity of UC treatment cases is to empirically distill specific practice elements found in the active arms of evidence-based treatment programs (Chorpita, Daleiden, & Weisz, 2005a). This process identifies specific elements or treatment practices and matches those elements to individual clients and their target problem, based on how often those elements are featured in evidence-based treatment protocols specific to the target problem. Such an approach can allow increased flexibility in UC settings to address case complexities that might be less common in EBP research settings. Through these and similar investigations, several core elements of practice that are common across EBP research for disruptive behavior have been identified, including those focused on youth skills and those focused on parent-mediated interventions (Garland et al., 2008). These practice elements derived from the evidence base, or PDEs, are typically defined as practice elements in a substantial proportion of evidence-

based manualized treatment studies for a specific problem area (Higa-McMillan, Nakamura, Morris, Jackson, & Slavin, 2014).

In order to define the practice elements that can be considered PDEs, the current study used data from the PracticeWise, LLC Evidence-Based Youth Mental Health Services coding system. PracticeWise, LLC is a private corporation that is focused on supporting youth mental health providers via professional training, online information resources, guides, consultation, and service system design and management. (PracticeWise, LLC, n.d.-a). PracticeWise, LLC routinely summarizes the evidence-based treatment literature to determine practice element presence across evidence-based treatment manuals for a given problem area while also considering important characteristic variables such as youth age, gender, and treatment setting (Bernstein et al., 2013).

PracticeWise, LLC utilizes the distillation and matching approach to derive specific practice elements from evidence-based treatment study groups. As of August 27, 2018, over 2400 study groups from over 1000 research articles were included in this database (PracticeWise, LLC, n.d.-b). Specific practices were distilled from these treatment protocols and matched to the problem areas and sample examined in the study utilizing a reliable coding system, in which each protocol is reviewed by at least two trained professional coders, with discrepancies between the two resolved by an independent expert (Chorpita et al., 2005b; PracticeWise, LLC, n.d.-c). Given PracticeWise rates treatments roughly corresponding to APA support criteria (Chambless & Ollendick, 2002; Task Force on Promotion and Dissemination of Psychological Procedures, 1995), users can identify the extent to which specific practice elements appear in evidence-based treatments for various problems and levels of support.

Practice Element Research in Usual Care

In Hawai‘i’s UC system, therapists report the monthly practices utilized in treatment, the specific problems targeted in treatment, and the corresponding progress made on those targets, allowing research to address the complexity of UC via the examination of relationships between specific practice elements and specific treatment target progress (Daleiden, Lee, & Tolman, 2004; Child and Adolescent Mental Health Division [CAMHD], 2005). Previous research in this UC system has discovered notable associations between PDEs and treatment outcomes that might not have been expected from the evidence-based literature. In a study that did not distinguish younger and older child clients, Orimoto (2014) found that a greater proportionate use of disruptive behavior practices that were PDEs based on studies that included youth 13 years and older significantly predicted greater change on disruptive behavior progress ratings, while the proportionate use of disruptive behavior PDEs based on studies that included youth ages 12 and under or on studies without an age criteria were not significant predictors of treatment progress. Notably, 8 of 54 specific practice elements examined were significant predictors of disruptive behavior progress ($p < .05$), not all of which were PDEs for disruptive behavior problems, and none of which were explicitly parent-focused despite the preponderance of such practices in disruptive behavior EBP research (Orimoto, 2014).

Milette-Winfree and Mueller (2018) found that youth in Hawai‘i’s CAMHD system received a disproportionate focus on externalizing problems when comorbid internalizing and externalizing disorders are present, even when an internalizing disorder was the principal diagnosis. However, an increased focus on disruptive behavior problems and use of disruptive behavior PDEs might not be associated with greater disruptive behavior progress in UC. In a counter-intuitive finding, Wilkie, Cicero, & Mueller (2018) found that greater monthly disruptive

behavior treatment focus predicted worse concurrent disruptive behavior progress ratings, while greater monthly depressed mood focus predicted greater disruptive behavior progress for youth with a depressed mood diagnosis. Due to these unexpected findings, a preliminary examination on a sample of disruptive behavior youth of all ages with either an ADHD or depression diagnosis was performed by Wilkie, Moeller, Daleiden, and Mueller (2018), which found that, when PDEs for both disruptive behavior and depressed mood problems were entered into a multilevel model simultaneously, disruptive behavior PDEs were not associated with disruptive behavior progress while PDEs for depressed mood and PDEs common to both problem areas (e.g., cognitive practices) were. Given these findings, it is possible that youth with disruptive behavior problems in a UC system are less amenable than participants in evidence-based studies to parent-focused treatments that target an assortment of behavioral problems, and that an extensive focus on disruptive behavior problems and use of PDEs for disruptive behavior might not be an effective approach in UC.

Summary

Treatment-based parenting practice recommendations appear to primarily focus on behavior, with less explicit focus on addressing potential irritable mood symptoms. This may be a gap in the treatment literature, particularly due to the role irritability appears to play in the externalizing/internalizing typology, the connection between irritability in disruptive behavior and depressed mood as youth increase in age, and the potential that parent interventions are less efficacious with older disruptive youth and/or youth treated through public mental health usual care services. Evidence-based treatment for youth depression differs from that for disruptive behavior problems, although there is some overlap, particularly with adolescent samples. In disruptive behavior, evidence based treatments tend to focus more on parenting and changing the

youth's environment, whereas individual therapeutic approaches focused on youth skills and behaviors become somewhat more supported with older youth age. In adolescent depressed mood treatment, practices derived from the evidence base tend to focus almost exclusively on individual therapeutic approaches to change client cognitions and behaviors, while efficacious childhood depression treatments remain unclear in the evidence base.

Given the notable differences between youth receiving UC services and youth who participate in EBP research studies, there also remains much to understand about the effective treatment of disruptive behavior in UC settings. Recent UC treatment research suggests that focusing on disruptive behavior problems might be associated with worse disruptive behavior outcomes, that parenting practices do not predict positive disruptive behavior treatment response, and that focusing on depressed mood problems and utilizing depressed mood PDEs might be effective in the treatment of disruptive behavior in UC settings. With these findings taken together, what is effective in UC disruptive behavior problem treatment remains uncertain. It is possible that the treatment barriers families in UC settings face create a treatment setting in which what is most effective is not directly informed by the evidence base, and that a more efficient avenue to alleviate disruptive behavior problems might be through focusing on the irritable mood and building the individual skills of youth referred for and receiving UC treatment.

Current Study

Using a routine measure of treatment and treatment response, the current study examines whether the monthly utilization of PDEs for disruptive behavior problems, depressed mood problems, or PDEs that appear for both problems predict differential same-month therapist-endorsed progress ratings on three disruptive behavior problem treatment targets (anger,

aggression, and oppositional or non-compliant behavior) in an intensive in-home setting of a statewide mental health system. PDEs for disruptive behavior ($PDE_{DBD.13+}$ and $PDE_{DBD.12-}$) were defined by practices identified in 20% or more of the aggregated body of Level Two (Good Support or Better) evidence-based manuals included in the PracticeWise database for disruptive behavior: (1) for youth ages 13 and older ($PDE_{DBD.13+}$), and (2) for youth ages 12 and under ($PDE_{DBD.12-}$). PDEs for depressed mood (PDE_{MOOD}) were defined by practices identified in 20% or more of the aggregated body of Level Two (Good Support or Better) evidence-based manuals for depressed mood for youth ages 13 years and older, but not for youth ages 12 and under due to the dearth of evidence-based depressed mood treatment research with preadolescents. PDEs that overlap between both the disruptive behavior and depressed mood groups (PDE_{BOTH}) were separated and aggregated into their own category of practices derived from the evidence base for both problem areas. The associations between PDE categories and disruptive behavior treatment progress were examined using multilevel modeling techniques with both an adolescent UC sample (ages 13 and older) and a preadolescent sample (ages 12 and under; see Table 1 and Table 2 for a full list of the PDEs that met these criteria for the 8-12 and 13-17 age groups, respectively). Disruptive behavior progress for youth ages 13 and older was examined for its relationship with PDEs for youth ages 13 and older, while disruptive behavior progress for youth ages 12 and under was examined for its relationship for disruptive behavior PDEs for youth ages 12 and under as well as depressed mood PDEs for youth ages 13 and older.

It was expected that all PDE categories would predict positive disruptive behavior progress when entered into the model separately from other PDE categories. Given previous findings (e.g., Orimoto, 2014; Wilkie, Cicero, & Mueller, 2018; Wilkie, Moeller, et al., 2018), and in light of common barriers faced by youth in UC treatment, greater monthly endorsement of

$PDE_{DBD.13+}$ was not expected to predict same-month progress on disruptive behavior problems for the 13 and older age group when entered simultaneously into the model with PDE_{MOOD} and PDE_{BOTH}, but greater monthly endorsement of $PDE_{DBD.12-}$ was expected to predict greater same-month disruptive behavior progress for the 12 and younger age group. Greater endorsement of both PDE_{MOOD} and PDE_{BOTH} was expected to significantly predict greater disruptive behavior progress when examined simultaneously with the other PDE categories for both age groups.

Table 1.

Practices derived from the evidence base examined with youth 8-12 years old

Category	$PDE_{DBD.12-}$	PDE_{MOOD}	PDE_{BOTH}
Practice Elements	Praise, Tangible Rewards, Time Out, Differential Reinforcement of Other Behavior, Commands, Modeling, Attending, Response Cost, Stimulus Control/Antecedent Management, Therapist Praise/Rewards, Behavioral Contracting, Monitoring	Child Psychoeducation, Activity Selection, Self-Monitoring, Relaxation, Self-Reward/Praise	Cognitive, Problem Solving, Maintenance/Relapse Prevention, Communication Skills, Caregiver Psychoeducation, Goal Setting, Social Skills Training

Table 2.

Practices derived from the evidence base examined with youth 13-17 years old

Category	$PDE_{DBD.13+}$	PDE_{MOOD}	PDE_{BOTH}
Practice Elements	Praise, Tangible Rewards, Monitoring, Family Therapy, Family Engagement, Modeling, Relationship/Rapport Building, Response Cost, Caregiver Coping, Therapist Praise/Rewards, Functional Analysis	Child Psychoeducation, Activity Selection, Self-Monitoring, Relaxation, Self-Reward/Praise	Cognitive, Problem Solving, Maintenance/Relapse Prevention, Communication Skills, Caregiver Psychoeducation, Goal Setting, Social Skills Training

Method

Data Source

A data-limited data set was electronically extracted from the Child and Adolescent Mental Health Management Information System (CAMHMIS) at the state of Hawai‘i’s Child and Adolescent Mental Health Division (CAMHD). Clinical documentation of all registered clients within the CAMHD system is recorded and stored in accordance with performance standards (CAMHD, 2012). Archival data for all youth between the ages of 8 and 17 who procured services from CAMHD from July 1, 2006 to June 30, 2017 were examined.

System of Care

In Hawai‘i’s public mental health system of care, the Department of Health Child and Adolescent Mental Health Division, or CAMHD, provides the most intensive services. CAMHD contracts with service agencies to provide mental health treatment interventions at multiple levels of care. Youth within the CAMHD system are typically placed within the least restrictive level of care that is medically necessary, with more restrictive levels of care (e.g., hospitalization) conceptualized as “higher” and less restrictive interventions (e.g., outpatient treatment) conceptualized as “lower” levels of care (CAMHD, 2012). The sample of youth examined by this study was limited to intensive in-home (IIH), the least restrictive level of care provided by CAMHD. There are multiple reasons for the selection of this single level of care: (1) intensive in-home is the most common level of care placement for youth receiving CAMHD services (Hill, Burgess, Hee, Jackson, & Nakamura, 2014); (2) IIH does not predetermine participants on the basis of their diagnosis or specific problem areas; (3) IIH does not prescribe practices performed or the foci of treatment; and (4) IIH most closely aligns with out-patient therapy, the most common service level in evidence-based research studies. In these ways, IIH is

the CAMHD level of care most representative of community-based usual care treatment as conceptualized and discussed in the treatment literature.

Participants

Youth participants. The 1836 youth participants in the study (a) were between the ages of 8 and 17 at the beginning of the treatment episode examined in the study, (b) received services between July 1, 2006 and June 30, 2017, (c) completed at least 3 months of treatment at the IIH level of care as indicated by the completion of a Monthly Treatment and Progress Summary in the third or later month of treatment, (d) did not carry a diagnosis related to psychosis, mania, mental retardation/intellectual disability, borderline intellectual functioning, autism spectrum, or pervasive developmental disorder, and (e) had at least one of three disruptive behavior treatment targets (i.e., aggression, anger, oppositional or non-compliant behavior) endorsed for at least two reporting months within the first six months of treatment (study window). Youth were separated into a preadolescent sample (n = 626) and an adolescent sample (n = 1210) to examine PDEs for disruptive behavior that were appropriate to each age group. Only each youth's first three-plus month IIH treatment episode was examined, although youth might have entered the system at another level of care (e.g., hospitalization).

The three disruptive behavior targets (anger, aggression, oppositional or non-compliant behavior) were selected as a measure of disruptive behavior for the following reasons: (a) these targets loaded together on a factor analysis (Love, Orimoto, Powell, & Mueller, 2011); (b) these targets have shown similar patterns in rate of change over time and average maximum level of progress reached, distinct from other potential targets of disruptive behavior (Love, Mueller, Tolman, & Powell, 2013); (c) these targets reflect an empirically-derived problem area profile in an analysis that distilled specific practice elements and matched them to client factors, which

was distinct from problems more related to juvenile justice involvement (Chorpita & Daleiden, 2009b); (d) the description of these treatment targets in the CAMHD codebook reflect some of the symptoms of disruptive behavior problems as detailed in the *DSM-IV-TR* (APA, 2000; CAMHD, 2008); (e) these three treatment targets have previously been successfully aggregated and coded together as a measure of disruptive behavior problems in CAMHD research (Love et al., 2010; Love et al., 2013; Wilkie, Cicero, & Mueller, 2018); and (f) these three targets are among the most frequently indicated treatment targets within the IIH level of care (Love et al., 2013; Milette-Winfree, Mueller, Hee, & Runland, 2014). Figure 1 provides more detailed information about the selection of youth based on inclusionary criteria at various cutoff points. Table 3 provides demographic information for the youth included in the study broken down by age group and by total sample.

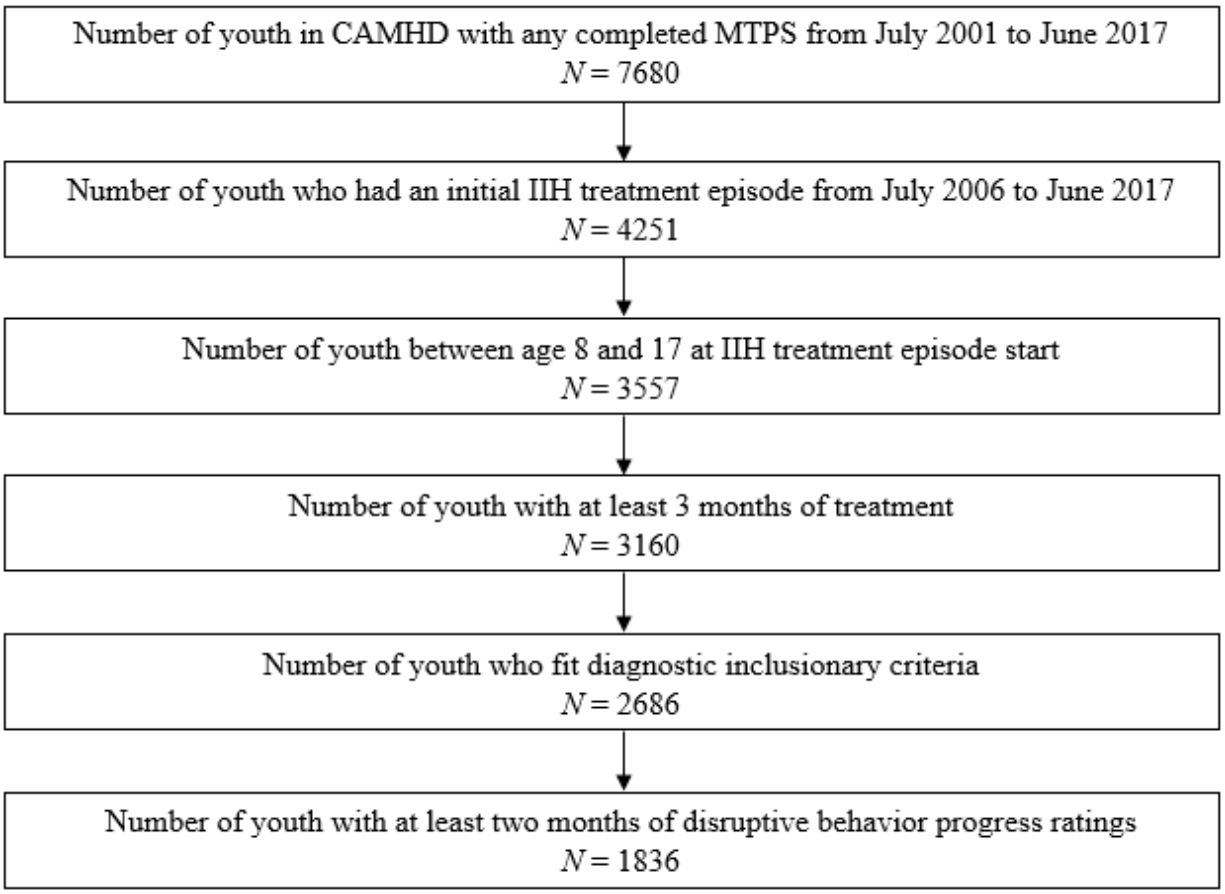

Figure 1. Flow diagram of sample selection among youth included in study by inclusion criteria.

Table 3.

Youth demographic and clinical information broken down by age group and combined total sample (N=1836)

Variable	Preadolescent Sample	Adolescent Sample	Total Sample
Sample Size	626	1210	1836
Age	10.5 (1.4)	15.6 (1.3)	13.9 (2.8)
Male Gender[a]	470 (75.1%)	767 (63.4%)	1237 (67.4%)
IIH Episode Over 6 Months[a]	443 (70.8%)	796 (65.8%)	1239 (67.5%)
Race[a]	--	--	--
American Indian or Alaska Native	2 (0.3%)	3 (0.2%)	5 (0.3%)
Asian	34 (5.4%)	103 (8.5%)	137 (7.5%)
Black	8 (1.3%)	9 (0.7%)	17 (0.9%)
Multiracial	368 (58.8%)	746 (61.7%)	1144 (60.7%)
Native Hawaiian or Other Pacific Islander	58 (9.3%)	141 (11.7%)	199 (10.8%)
White	71 (11.3%)	103 (8.5%)	174 (9.5%)
Unreported / Refused to Report	85 (13.6%)	105 (8.7%)	190 (10.3%)
CAFAS Nearest to Episode Start Date	83.5 (23.4)	99.9 (30.6)	94.3 (29.4)
Diagnosis (Primary)[a]	--	--	--
ADHD	193 (30.8%)	169 (14.0%)	362 (19.7%)
Conduct Disorder	23 (3.7%)	243 (20.1%)	266 (14.5%)
ODD	97 (15.5%)	169 (14.0%)	266 (14.5%)
Other DBD (NOS, Intermittent Explosive)	29 (4.6%)	81 (6.7%)	110 (6.0%)
Depressed Mood Disorder	64 (10.2%)	249 (20.6%)	313 (17.0%)
Anxiety Disorder / OCD	37 (5.9%)	35 (2.9%)	72 (3.9%)
Adjustment Disorder	82 (13.1%)	89 (7.4%)	171 (9.3%)
Substance Use Disorder	3 (0.5%)	52 (4.3%)	55 (3.0%)
Traumatic Stress Disorder	38 (6.1%)	70 (5.8%)	108 (5.9%)
Reactive Attachment Disorder	11 (1.8%)	6 (0.5%)	17 (0.9%)
Other	15 (2.4%)	17 (1.4%)	32 (1.7%)
No Primary Diagnosis Available	34 (5.4%)	30 (2.5%)	64 (3.5%)
Diagnosis (Any)[a]	--	--	--
ADHD	300 (47.9%)	335 (27.7%)	635 (34.6%)
Conduct Disorder	40 (6.4%)	326 (26.9%)	366 (19.9%)
ODD	219 (35.0%)	292 (24.1%)	511 (21.8%)
Other DBD (NOS, Intermittent Explosive)	56 (8.9%)	115 (9.5%)	171 (9.3%)
Depressed Mood Disorder	100 (16.0%)	385 (31.8%)	485 (26.4%)
Anxiety Disorder / OCD	88 (14.1%)	97 (8.0%)	185 (10.1%)
Adjustment Disorder	116 (18.5%)	151 (12.5%)	267 (14.5%)
Substance Use Disorder	16 (2.6%)	326 (26.9%)	342 (18.6%)
Traumatic Stress Disorder	76 (12.1%)	133 (11.0%)	209 (11.4%)
Reactive Attachment Disorder	28 (4.5%)	19 (1.6%)	47 (2.6%)
Other	51 (8.1%)	71 (5.9%)	122 (6.6%)
Clinician Highest Degree (Doctorate)	42 (6.7%)	80 (6.6%)	122 (6.6%)
Clinician Licensed (yes)	154 (24.6%)	300 (24.8%)	454 (24.7%)
$PDE_{DBD.13+}$ Average Per Month	--	3.11 (1.88)	--
$PDE_{DBD.12-}$ Average Per Month	2.23 (1.77)	--	--
PDE_{MOOD} Average Per Month	1.29 (1.08)	1.26 (1.02)	1.27 (1.04)
PDE_{BOTH} Average Per Month	2.77 (1.42)	2.75 (1.40)	2.76 (1.40)
DBD Target Average Per Month	1.29 (0.67)	1.18 (0.64)	1.22 (0.66)

[a]Represents frequencies and percentages. All other variables represent means and standard deviations.

Therapist participants. Clinical data for the study was provided by therapist (N = 354) report on the Monthly Treatment and Progress Summary, or MTPS. Among these 354 therapists, 281 provided services to the adolescent sample with 182 therapists providing services to more than one youth, and 259 provided services to the preadolescent sample with 136 providing services to more than one youth. As multiple therapists can work with the same youth in the IIH setting, the therapist who completed the largest number of MTPS forms per youth was considered the lead therapist for this study for the purposes of nesting in the multilevel modeling analyses. In cases where multiple therapists had the same number of MTPS forms completed for the same youth, the therapist with the earliest completed MTPS form was chosen as the lead therapist. This decision was made due to previous research that suggested that youth typically see more rapid improvement earlier in treatment (e.g., Wilkie, Cicero, & Mueller, 2018; Orimoto, Jackson, et al., 2012), suggesting a potentially greater importance of therapist-patient interactions during the early stages of treatment. Therapist data examined in analyses included highest degree obtained (i.e., doctorate vs. master's degree) and licensure status. Therapist information broken down by age group and for the entire sample is provided in Table 4.

Table 4.

Clinician information by age group and total sample

Variable	Preadolescent Sample	Adolescent Sample	Total Sample
Sample Size	259	281	354
Licensed[a]	53 (20.5%)	61 (21.7%)	71 (20.1%)
Highest Degree	--	--	--
Doctorate[a]	16 (6.2%)	20 (7.1%)	20 (5.6%)
Master's[a]	243 (93.8%)	261 (92.9%)	334 (94.4%)
Number of Clients	2.42 (2.33)	4.31 (5.88)	5.19 (7.29)

[a]Represents frequencies and percentages. All other variables represent means and standard deviations

Human Subjects Consideration

This study was submitted to and approved by the University of Hawai‘i at Mānoa’s Committee on Human Studies Institutional Review Board. Upon entry to the local usual care system (i.e., CAMHD), youth clients and their legal guardian(s) received a complete description of CAMHD’s Notice of Privacy and Disclosure Procedures and provided a written informed consent for the use of data for research purposes. Legal guardians were informed that they may revoke consent at any time. Data on clients, therapists and service episode are stored on password protected computers as part of the CAMHD database. To ensure confidentiality, data extracted for this study was limited so that individual health information was kept private according to CAMHD procedural rules. This study meets the stated standards of the Health Insurance Portability and Accountability Act (HIPAA; CAMHD, 2012).

Measures

Monthly Treatment and Progress Summary (MTPS; CAMHD, 2005; Appendices A and B). Progress rating and practice element data were collected from the MTPS (Daleiden et al., 2004). The MTPS is a locally-created clinician report form designed to collect data on service format and setting, problem areas targeted by the clinician in treatment (“treatment targets”), corresponding progress ratings on treatment targets, therapist practices utilized in treatment (“practice elements”), client medication use, reason for discharge, and discharge living situation. Each MTPS is completed on a monthly basis. CAMHD has previously provided statewide trainings on how to complete the MTPS, including the creation of the “Instructions and Codebook for Therapist Monthly Summaries” that is available to CAMHD therapists online (CAMHD, 2012). If a client receives treatment services from multiple therapists within a given month, the therapist that is most familiar with the youth, family, and services provided that

month is responsible for completing the MTPS after consulting with the other therapist(s) (CAMHD, 2012). Completion of the MTPS for each client has been required for reimbursement since July 1, 2006 (Nakamura, Higa-McMillan, & Chorpita, 2012). Following this requirement, MTPS completion rates have been very high, suggesting minimal missing monthly treatment data (Keir, Jackson, Izmirian, Mueller, & Sender, 2014).

During the process of cleaning and reorganizing the MTPS data, 62 out of 3468 (1.87%) MTPS entries in the preadolescent sample and 165 out of 6550 MTPS entries in the adolescent sample (2.52%) were identified as having two or more MTPS entries completed for the same youth during the same MTPS month. None of these duplicate or triplicate MTPS entries contained identical MTPS data, and many were completed by different providers, suggesting that these multiple MTPS entries reflected real clinical data. As such, multiple MTPS entries were aggregated to preserve clinical data, with all endorsements of treatment targets and practice elements maintained and all progress ratings averaged.

Clinicians indicate up to 10 targets (from a list of 53 predefined targets and two blank "write-in" targets) that were the focus of treatment during the reporting month and provide a rating of progress for each individual target relative to the client's baseline level of functioning. Progress ratings are scored on a 7-point anchored scale with the following anchors: 0 = <0% improvement (Deterioration), 1 = 0-10% improvement (No Significant Change), 2 = 11-30% improvement (Minimal Improvement), 3 = 31-50% improvement (Some Improvement), 4 = 51-70% improvement (Moderate Improvement), 5 = 71-90% improvement (Significant Improvement), and 6 = 91-100% improvement (Complete Improvement). When possible, progress ratings are to be informed by objective measures available to the clinician, such as assessments administered or behavioral observation data. Progress ratings are relative to an

initial baseline, such that each monthly progress rating is scored relative to the client's initial problem level for each target behavior (CAMHD, 2008). Previous analyses support the validity of the MTPS though a reasonable factor structure, moderate temporal stability after one (k = 0.66) and three (k = 0.52) months of treatment, and the association of treatment targets with relevant primary diagnoses (Daleiden et al., 2004; Love et al., 2011). MTPS progress ratings showed a significant relationship to change in functional status as measured by two standardized measures of clinical functioning and show temporal patterns of improvement that mirror other treatment outcome measures (Nakamura, Daleiden, & Mueller, 2007; Orimoto, Jackson, et al., 2012).

Therapists are also instructed to endorse intervention strategies (i.e., practice elements) utilized in treatment with the youth during the MTPS month from a list of 63 predefined practices and three "write-in" practices. Practice elements were coded as present ("1") if they were endorsed at any time during the MTPS month and absent ("0") if they were not endorsed on that MTPS month. Practice elements have demonstrated moderate one (k = 0.65 – 0.67) and three (k = 0.50) month stability from the beginning of treatment (Daleiden et al., 2004). An exploratory factor analysis of the MTPS practice elements suggested a three-factor structure (i.e., behavior management, coping and self-control, family interventions), with factors correlated (r = 0.46 – 0.52) and demonstrating adequate to good internal reliability (α = 0.78 – 0.82; Orimoto, Higa-McMillan, et al., 2012). MTPS practices have also evidenced both inter-rater reliability and convergent validity between therapist report and coded observations of audio-recorded treatment sessions, although therapists seem to have a lower standard for indicating practice element use than trained graduate student coders (Borntrager et al., 2013; Daleiden et al., 2006).

Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1994; Appendix C). The CAFAS is a 200-item clinician report scale that measures a youth's level of functional impairment. In the CAMHD system, the CAFAS is to be completed by care coordinators on a quarterly basis and entered into CAMHD's data management system. Care coordinators complete the CAFAS by evaluating the youth on behavioral descriptions of their impairment across eight subscales of functioning: School Role Performance, Home Role Performance, Community Role Performance, Behavior Toward Others, Mood/Emotions, Mood/Self-Harmful Behavior, Substance Use, and Thinking. Therapists score youths on their highest level of impairment on ten point scoring intervals (i.e., severe = 30, moderate = 20, mild = 10, no/minimal = 0) over the pasted 90 days based on the endorsement of specific items in each subscale at each impairment level. Total CAFAS score (range = 0 to 240) is calculated by the sum of impairment scores across the eight subscale domains.

For the purposes of this study, a client's baseline CAFAS score was calculated by selecting the total score that is the smallest number of days in absolute value from the beginning of the IIH treatment episode start date. If the youth's only CAFAS occurred over 90 days after the treatment episode start date, that CAFAS value was not included due to potential treatment effects impacting the indicated impairment on that youth's CAFAS score. Mean CAFAS administration for the preadolescent group occurred 7.16 days (*SD* = 75.00) before the start of treatment, with a range of 835 days before the treatment episode start date to 84 days after the treatment episode start date, while mean CAFAS administration for the adolescent group occurred 10.75 days (*SD* = 88.49) before the start of treatment, with a range of 1082 days before the treatment episode start date to 90 days after the treatment episode start date. There were 85

youth in the preadolescent group (13.6%) and 91 youth in the adolescent group (7.5%) who had no available value for their CAFAS score.

The CAFAS has evidenced adequate internal consistency across items, adequate convergent validity with other related measures, and good inter-rater reliability (Hodges & Gust, 1995; Hodges & Wong, 1996), including as used in the CAMHD system (Mueller, Tolman, Higa-McMillan, & Daleiden, 2010; Nakamura et al., 2007). The CAFAS has demonstrated concurrent validity with associations to severity of diagnoses, juvenile justice involvement, intensity of care, restrictiveness of living setting, social relationship difficulties, and school-related problems (Hodges & Kim, 2000; Hodges & Wong, 1996).

Defining the utilization of PDEs. PracticeWise, LLC categorizes the strength of evidence-based support for treatment manuals along five strength of evidence "levels." Level One and Level Two are based on and correspond to the American Psychological Association's efforts to define, identify, and disseminate information about empirically supported treatments through the establishment of guidelines and different levels of support (Chambless & Ollendick, 2002; Task Force on Promotion and Dissemination of Psychological Procedures, 1995). Level One is considered "Best Support," and is defined as treatment supported in the evidence base by their presence in at least two manualized randomized controlled trials that were efficacious compared to a non-active or alternative treatment approach and were conducted by at least two different investigatory teams. Level Two is considered "Good Support," and defined by treatment supported by either (a) two experimental studies that showed the efficacy of the treatment compared to a waitlist or control group, or (b) one manualized between-group experiment that demonstrated the efficacy of a treatment program compared to another treatment approach or placebo or equivalence to an established treatment. Level Three ("Moderate

Support") is defined as treatment supported by one between-group design experiment which demonstrated efficacy compared to another treatment approach or placebo or equivalence to an established treatment. Level Four ("Minimal Support") is defined as treatment supported by one experiment that showed the treatment is superior to a waiting list or control group, while Level Five ("No Support") is defined as treatment tested in at least one study that has failed to meet criteria for Levels One through Four (Chorpita & Daleiden, 2009a).

Through PracticeWise, LLC's Evidence-Based Youth Mental Health Services Literature Database (PWEBS) search engine, users can define search parameters in terms of strength of evidence (e.g., Level Two or Better), youth problem type (e.g., disruptive behavior), youth age and/or grade, youth gender, youth race/ethnicity, service settings (e.g., corrections facility), and primary or additional DSM diagnosis (PracitceWise, LLC, n.d.-b). After selecting relevant search criteria, the PWEBS search engine produces a list of empirically supported treatment families and specific practice elements associated with the inputted factors. At present, there is not a standardized set of criteria to determine at which point a practice element can be classified as derived from the evidence base (i.e., PDEs), with previous research utilizing frequency of practice element occurrence ranging from "present in at least 10% of treatment protocols with Level Two or better support" to "present in at least 30% of treatment protocols with Level One support" (e.g., Okamura, Nakamura, Mueller, Hayashi, & Higa-McMillan, 2014; Orimoto, Mueller, & Nakamura, 2013).

For the purposes of this study, practices were considered PDEs if they were present in at least 20% of study groups with Level Two or better support for each age in years within the group. For example, to determine the PDEs for depressed mood for the adolescent sample of youth ages 13 to 17, a PWEBs search was performed with the depression problem type selected

for each age within the sample (i.e., 13, 14, 15, 16, and 17). After the search was performed for each age in years, all practice elements that were present in at least 20% of study groups at each age were considered PDEs for adolescents with depressed mood. The criteria of 20% was chosen to both ensure that more strongly supported practice elements are represented for each age/problem group, but not set too highly such that practices would be excluded as a PDE if they are not present at a higher criterion for every individual age in the sample. Data from PracticeWise, LLC gathered on August 27, 2018 were utilized to determine PDEs for each sample.

PDEs were calculated in this way for adolescents with depressed mood, adolescents with disruptive behavior, and preadolescents with disruptive behavior. For both age groups, this yielded PDEs for disruptive behavior. Due to the dearth of empirically supported treatment studies for preadolescents with depressed mood, the adolescent depressed mood PDE profile was applied to the preadolescent sample to determine whether PDEs for depressed adolescents are effective in UC treatment for preadolescent clients. As such, these preadolescent depressed mood practices are not considered as truly derived from the evidence base for this age sample. Practices that were included in both the depressed mood and disruptive behavior categories (i.e., both the adolescent depressed mood practices, as well as the adolescent and preadolescent disruptive behavior practices for the adolescent and preadolescent age groups, respectively) were categorized together as “both” practices, due to their support in treatment for both problem areas. All remaining practices were aggregated into a category of practices not derived from the evidence base for disruptive behavior or depressed mood to be used as a non-PDE practice covariate.

Data Analytic Strategy

Data preparation. Response ranges for disruptive behavior progress ratings, treatment target endorsements, practice element endorsements, and CAFAS impairment scores were examined to identify impossible values or data entry errors. Practice element or treatment target endorsements were recoded to 1 or 0 to indicate their presence (i.e., any value greater than 0 was considered to be indicative of presence and recoded to 1) or absence (i.e., null values were recoded to 0). The outcome variable of monthly disruptive behavior progress rating was calculated for each MTPS month by aggregating and calculating the mean of the progress ratings of anger, aggression, and oppositional or non-compliant behavior, forming the disruptive behavior problem (DBP) progress rating value. In the preadolescent sample, 2,824 of the 3,468 (81.4%) MTPS entries had at least one disruptive behavior progress rating, while in the adolescent sample, 5,102 out of 6,550 (77.9%) MTPS entries had at least one disruptive behavior progress rating. The PDE category predictor variables (i.e., PDE_{MOOD}, $PDE_{DBD.13+}$, $PDE_{DBD.12-}$, PDE_{BOTH}) were calculated by summing the total number of PDEs within each category that were endorsed during each MTPS month.

To obtain a preliminary understanding of the data, CAFAS score and the dependent variable of DBP progress rating were examined for mean, standard deviation, skewness, and kurtosis values, and found to have relatively normal distributions. Table 5 depicts the means and standard deviations for the PDE category predictor variables and the DBP progress rating criterion variable by age group across the six month study window for those months in which a DBP progress rating was present (i.e., was included in the MLM analyses). Skewness (range = -0.29 to 1.54) and kurtosis (-0.84 to 1.67) scores for all variables, as well as visual examinations of normality, suggested relative normality for all variables. PDE category and DBP targeting

endorsement appeared to not notably vary by month, while DBP progress ratings appeared to increase over time, with larger increases between earlier months than between later months.

Table 5.

Means and standard deviations of time-level variables by DBP progress rating month.

	MTPS Month					
	1	2	3	4	5	6
Adolescent Sample	N=773	N=924	N=969	N=909	N=812	N=715
$PDE_{DBD.13+}$	M=3.26 (SD=2.21)	M=3.60 (SD=2.28)	M=3.39 (SD=2.28)	M=3.36 (SD=2.38)	M=3.21 (SD=2.31)	M=3.23 (SD=2.33)
PDE_{MOOD}	M=1.22 (SD=1.24)	M=1.40 (SD=1.29)	M=1.40 (SD=1.27)	M=1.37 (SD=1.26)	M=1.37 (SD=1.28)	M=1.40 (SD=1.30)
PDE_{BOTH}	M=2.69 (SD=1.75)	M=3.11 (SD=1.69)	M=3.04 (SD=1.67)	M=3.00 (SD=1.66)	M=3.00 (SD=1.68)	M=3.03 (SD=1.70)
DBP Targets	M=1.52 (SD=0.68)	M=1.53 (SD=0.69)	M=1.50 (SD=0.67)	M=1.47 (SD=0.67)	M=1.54 (SD=0.69)	M=1.48 (SD=0.65)
DBP Progress Rtg	M=2.04 (SD=1.15)	M=2.45 (SD=1.24)	M=2.75 (SD=1.30)	M=2.92 (SD=1.35)	M=2.99 (SD=1.36)	M=3.12 (SD=1.39)
Preadolescent Sample	N=446	N=503	N=513	N=497	N=463	N=402
$PDE_{DBD.12-}$	M=1.92 (SD=2.00)	M=2.46 (SD=2.10)	M=2.54 (SD=2.11)	M=2.51 (SD=2.15)	M=2.49 (SD=2.17)	M=2.58 (SD=2.20)
PDE_{MOOD}	M=1.11 (SD=1.29)	M=1.38 (SD=1.33)	M=1.35 (SD=1.29)	M=1.40 (SD=1.31)	M=1.43 (SD=1.40)	M=1.44 (SD=1.38)
PDE_{BOTH}	M=2.49 (SD=1.72)	M=2.98 (SD=1.67)	M=2.93 (SD=1.66)	M=2.99 (SD=1.71)	M=3.06 (SD=1.78)	M=2.99 (SD=1.69)
DBP Targets	M=1.57 (SD=0.72)	M=1.64 (SD=0.73)	M=1.58 (SD=0.71)	M=1.54 (SD=0.69)	M=1.56 (SD=0.70)	M=1.59 (SD=0.70)
DBP Progress Rtg	M=1.86 (SD=1.02)	M=2.40 (SD=1.15)	M=2.74 (SD=1.17)	M=2.96 (SD=1.26)	M=3.01 (SD=1.32)	M=3.21 (SD=1.29)

Note. Values are for months in which a disruptive behavior progress rating was present, and therefore included in multilevel model analyses.

Multilevel modeling (MLM) analyses. MLM techniques were employed to analyze whether PDEs related to disruptive behavior problems, mood problems, or both problem areas predicted disruptive behavior treatment progress ratings during the first six months of IIH treatment. Analyses followed guidelines discussed by Peugh (2010) to determine the appropriate parameter estimation methods. Full information maximum likelihood was selected as it includes regression coefficients in the likelihood function, which allows for the comparison of successive models (Heck, Thomas, & Tabata, 2013). The intraclass correlation (ICC) was calculated from

the unconditional means model (i.e., without predictors) to determine the proportion of variance explained by each level in the model (i.e., time, client, and therapist; Heck et al., 2013). In both the preadolescent and adolescent samples, all three levels of the model accounted for more than 5% of the variance in DBP progress rating, justifying a three-level multilevel model (Heck et al., 2013). Additionally, the shapes of the within-subject growth trends were inspected among a randomly selected subset of the total client sample (n = 50, approximately 2.7%) to determine the overall shape of the DBP progress rating growth curve (e.g., linear, quadratic, cubic). Relevant terms of time were considered for potential inclusion if the growth rates were not linear (Singer & Willett, 2003). Finally, variables such as age and CAFAS score were centered on their mean to maximize interpretation these variables had on DBP progress rating (Heck et al., 2013).

SPSS Statistics v25.0 was utilized to analyze three-level mixed-effects models, where time as measured by MTPS month was nested within youth, which was nested within therapist. Level one (i.e., time level) included the major predictors of PDE categories, an aggregate category of all remaining practices not derived from the evidence base for mood or disruptive behavior problem areas (i.e., non-PDE practices), number of disruptive behavior targets endorsed, and a measure of non-linear time as covariates. Level two (i.e., client level) included the youth-related variables, and level three included therapist-related variables as covariates. The level two variables examined included age, ethnicity, gender, impairment as measured by CAFAS closest to the episode start date, and whether or not the youth continued to receive treatment after six MTPS months (i.e., treatment duration). The level three (i.e., therapist level) variables examined were therapist licensure and therapist degree (i.e., doctorate or master's). Covariates were removed from the model during the model building process if their associated p value did not fall under 0.10 (i.e., $p > .10$). The PDE category predictors were not excluded from

the model at any point due to the current study's focus on these predictors. In order to more fully understand patterns of results, additional multilevel modeling analyses were conducted to a) examine each predictor individually and b) each individual practice element that composed the PDE categories as both individual and concurrent predictors.

Results

Data Preparation

Response ranges for DBP progress ratings, PDE endorsements, and total CAFAS score nearest treatment start were calculated. DBP progress ratings were recoded from a 1 to 7 in the raw data to the 0 to 6 scale utilized in previous research that involved MTPS progress ratings (e.g., Wilkie, Cicero, & Mueller, 2018). Treatment target endorsements that had a value greater than one were recoded to one (i.e., used that month) given that treatment target endorsement indicates the presence or absence of targeting that month and does not represent volume of targeting. No impossible values for total CAFAS were found in the dataset. Endorsements of the presence of impossible treatment target usage per month were found, with some values greater than one (i.e., 2 to 10) present.

MLM allows for incomplete or unequal amounts of data for each participant (Quene & van den Bergh, 2004), making it unnecessary for list-wise deletion to occur in participants that had missing data or unequal time points. However, MLM does assume that the missing data in the sample are missing at random (Quene & van den Bergh, 2004), so a Missing Values Analysis was run in IBM SPSS Statistics Version 25.0 on initial CAFAS scores (Little & Rubin, 1987). This Missing Values Analysis determined that CAFAS score was not missing completely at random for either the preadolescent or adolescent samples. To address this missing data, a multiple imputation was performed to calculate a CAFAS score value using relevant variables

that occurred at the same level (i.e., client-level variables; age, gender, ethnicity) as the CAFAS score. Given that MTPS data allows participants to have unequal amounts of data and the lack of an MTPS in a given month might reflect a lack of services that month, MTPS data was not investigated for missing data.

Before conducting an MLM, a preliminary step is often to partition the variance in the outcome into a proportion present at each level (i.e., calculate the ICC). For the adolescent sample, the total variance estimate of the unconditional means model with variance component covariance structures was 1.83 (level one variance of 1.04 + level two variance of 0.40 + level three variance of 0.39), indicating that level one (i.e., time as measured by month) accounted for 56.83% (i.e., 1.04/1.83) of the variance, level two (i.e., clients) accounted for 21.86% (i.e., 0.40/1.83) of the variance, and level three (i.e., therapist) accounted for 21.31% (i.e., 0.39/1.83) of the variance in the adolescent MLM analysis. For the preadolescent sample, the total variance estimate of the unconditional means model with variance component covariance structures was 1.66 (level one variance of 0.91 + level two variance of 0.28 + level three variance of 0.47), indicating that level one accounted for 54.82% (i.e., 0.91/1.66) of the variance, level two accounted for 16.87% (i.e., 0.28/1.66) of the variance, and level three accounted for 28.31% (i.e., 0.47/1.66) of the variance in the preadolescent MLM analysis. Given that all three levels of both the preadolescent and adolescent models exceeded 5% total variance in their respective sample, conducting three-level MLM analyses for both samples was determined to be appropriate.

A consistent trend in the shape of the growth curve did not emerge upon inspection of a random sample of 50 youth, with multiple varieties of growth shapes observed (e.g., linear, quadratic, cubic, etc.). Given this, the means of DBP progress ratings were calculated by month and examined (as seen in Table 5), and the growth of DBP progress appeared to be quadratic

(i.e., negatively accelerating) in nature, with larger increases between early treatment months and smaller increases between later treatment months. In order to find the best-fitting structure for the time variable, ten unconditional growth models with ten different structures for coded time as a fixed effect (i.e., two linear, eight nonlinear) were performed and compared on fit indices (i.e., Akaike information criterion [AIC]; Ronald Heck, personal communication, February 17, 2019; Raudenbush & Bryk, 2002). All ten different potential coding structures for time were significant for both the preadolescent and adolescent samples. For both samples, the same nonlinear coding structure of time yielded the lowest AIC values, and thus was utilized as the best-fitting time variable for both MLM age group analyses. This nonlinearly-coded variable will from here on be referred to as time, which was coded as having the first MTPS month for each youth as -1, the second month as -0.55, the third month as -0.35, the fourth month as -0.2, the fifth month as -0.1, and the sixth month as 0; see Table 6 for the coding of time by MTPS month. This structure for time is coded such that the intercept is the predicted level of the dependent variable at month six of treatment, with the first month of treatment coded as -1 to increase interpretability of the model (i.e., one unit of time represents change in the dependent variable from month one to month six of treatment).

Table 6.

Best fitting structure for time for both age samples

Time (in Months)	Best-Fitting Nonlinear Time Variable
1	-1
2	-0.55
3	-0.35
4	-0.2
5	-0.1
6	0

Adolescent time-only model. The patterns of change over time were hypothesized to vary between clients and between clinicians, so an additional unconditional growth model was conducted with time as a random effect at both the client and clinician levels once the determination for the coding structure of time was finalized as a fixed effect. Covariance structures at both the client and clinician levels were assumed to be unstructured (UN). This unconditional growth model established that the time effect varied randomly across both clients and clinicians. As such, time was maintained as a random effect in subsequent analyses. Several possible level one error structures were investigated with time as a random effect, but only identity matrix (ID) satisfied convergence criteria for the model, and so was maintained as the covariance structure for the repeated measure of time. The intercept of this model was 3.07 ($p < .001$), while the estimate for time was 1.09 ($p < .001$), suggesting that adolescent youth experienced an average disruptive behavior progress rating change from 1.98 ("minimal improvement [11%-30%]") after month 1 of treatment to 3.07 ("some improvement [31%-50%]") after month 6 of treatment.

Adolescent level one model. The next step of model development was to add time-varying (within youth) covariates to explain variance in the intercept. In addition to the time variable from the time-only model, the major predictors of PDE categories (PDE_{MOOD}, $PDE_{DBD.13+}$, PDE_{BOTH}), as well as covariates for non-PDE practices (i.e., all other practice elements that were not a part of the three adolescent PDE categories) and the sum of DBP targets endorsed per month (centered on the minimum) were added into the model as fixed effects to determine whether they explained variance in the intercept. Number of DBP treatment targets, PDE_{MOOD} and PDE_{BOTH} were all significant, while $PDE_{DBD.13+}$ and non-PDE practices were not significant. Non-PDE practices were removed from the model due to their lack of significant

prediction of DBP progress, but $PDE_{DBD.13+}$ was maintained in the model due to the focus of the current study on this practice category as a predictor. The final level one model for the adolescent sample included time, DBP targets endorsed per month, $PDE_{DBD.13+}$, PDE_{MOOD}, and PDE_{BOTH}. These covariates changed the intercept to 2.73 ($p < .001$), indicating that the final (i.e., month 6) average DBP progress rating was 2.73 for adolescent youth that had one DBP treatment target and had none of the three PDE category practices endorsed that month.

Significant predictors of higher progress ratings included PDE_{MOOD} and PDE_{BOTH}. For every additional PDE_{MOOD} practice endorsed in a given month, DBP progress that month increased on average by 0.15 ($p < .001$). For every PDE_{BOTH} practice endorsed in a given month, DBP progress that month increased on average by 0.06 ($p < .001$). DBP targets per month predicted lower DBP progress ratings, such that each additional DBP target endorsed in a given month over the minimum of one predicted an average same-month DBP progress rating decrease of 0.07 ($p < .01$). $PDE_{DBD.13+}$ was not a significant predictor ($p > .10$), and every additional $PDE_{DBD.13+}$ practice endorsed in a given month was non-significantly associated with a decrease of 0.01 in DBP progress rating.

The deviance value for the final level one model (-2 Log Likelihood = 15084.92) was smaller than the previous time-only model (-2 Log Likelihood = 15218.53). The deviance difference of 133.61 was greater than the chi-square of 9.49 (parameter difference $df = 13 – 9 = 4$), so the final level one model (i.e., Model 1) was a significant improvement over the time only model at predicting average DBP progress ratings.

Adolescent level two model. The next step of model development was to add client-level fixed predictors to further examine variance in the intercept. The time variable and relevant level one predictors were carried over, and the following variables were added to the model as fixed

effects: age in years (centered on the grand mean), gender, race, total CAFAS score nearest to treatment episode start date (centered on the grand mean), and length of treatment (coded as 1 for youth who had MTPS data past the first six months or 0 for youth with six or less MTPS months). Gender, race, and length of treatment were not significant predictors of DBP progress rating variance in the intercept and were removed from the final level two model (i.e., Model 2).

The final level two model included the following variables: time, $PDE_{DBD.13+}$, PDE_{MOOD}, PDE_{BOTH}, DBP targets endorsed per month, age in years, and total CAFAS score. These covariates changed the intercept to 2.74 ($p < .001$), which can be interpreted as the month 6 (i.e., final month possible in the study) DBP progress rating where only one DBP target and no PDEs were endorsed for youth who had the mean age and mean CAFAS rating. Older age and lower CAFAS scores predicted higher DBP progress ratings. For every year older a youth was than the mean age of 15.62, their mean DBP progress rating increased by an average of 0.08 ($p < .001$). For every 10 points lower a youth was rated on the CAFAS than the sample mean of 99.23, their mean DBP progress rating increased by an average of 0.04 ($p < .001$). PDE_{MOOD}, PDE_{BOTH}, and DBP targets endorsed per month remained significant predictors, while $PDE_{DBD.13+}$ remained a non-significant predictor of DBP progress ratings.

The deviance value of the final level two model (-2 Log Likelihood = 15040.21) was smaller than the final level one model (-2 Log Likelihood = 15084.92). The deviance difference of 44.71 was greater than the chi-square value of 5.99 (parameter difference $df = 15 – 13 = 2$), so the final level two model was a significant improvement over the final level one model in predicting DBP progress ratings.

Adolescent level three model. The next step of model development involved adding therapist-level fixed predictors to further explain variance in the intercept. Time, the main

predictor variables of PDE categories, and significant predictors at level one and level two were maintained in the model, while therapist highest degree obtained (i.e., doctorate degree or master's degree) and licensure status (i.e., licensed or unlicensed) were added into the model as fixed effects. None of these level three variables were found to be significant predictors of DBP progress ratings, and so were not included in the final model. This resulted in the final model including predictors at only level one and level two. However, the variance components were still estimated for level three (between therapists) since it was appropriate to consider covariates at levels one and two as nested within therapists even without significant covariates at the therapist level. The full results of this model can be seen in Table 7, while a visual depiction of predicted same month DBP progress for each PDE category practice element endorsed can be seen in Figure 2.

Table 7.

Multilevel models predicting DBP progress ratings for adolescent youth (N=1210)

		Model 1	Model 2
Fixed effects			
DBP progress rating	Intercept	2.74*** (SE = 0.07)	2.74*** (SE = 0.07)
	DBP Targets Per Month (CM)	-0.07** (SE = 0.03)	-0.07* (SE = 0.03)
	$PDE_{DBD.13+}$	-0.01 (SE = 0.01)	-0.01 (SE = 0.01)
	PDE_{MOOD}	0.15*** (SE = 0.02)	0.14*** (SE = 0.02)
	PDE_{BOTH}	0.06*** (SE = 0.01)	0.06*** (SE = 0.01)
	CAFAS Total Per 10 Points (GMC)		-0.04*** (SE = 0.01)
	Youth Age in Years (GMC)		0.08*** (SE = 0.02)
	Time	1.08*** (SE = 0.07)	1.07*** (SE = 0.07)
Covariance Parameters			
Level 1 (Within Clients)	Variance	0.71*** (SE = 0.02)	0.71*** (SE = 0.02)
Level 2 (Between Clients)	Variance	0.80*** (SE = 0.06)	0.78*** (SE = 0.06)
	Time Slope	0.96*** (SE = 0.14)	0.96*** (SE = 0.14)
	Covariance	0.67*** (SE = 0.08)	0.67*** (SE = 0.08)
Level 3 (Between Therapists)	Variance	0.59*** (SE = 0.09)	0.59*** (SE = 0.09)
	Time Slope	0.40*** (SE = 0.11)	0.40*** (SE = 0.11)
	Covariance	0.31*** (SE = 0.09)	0.31*** (SE = 0.09)
Goodness of fit	Deviance	15084.92	15040.21
	No. of estimated parameters	13	15
	AIC	15110.92	15070.21
	BIC	15195.91	15168.27

Note. DBP = disruptive behavior problems. PDE = practices derived from the evidence base. CAFAS = Child and Adolescent Functional Assessment Scale. GMC = grand-mean centered. CM = centered on the minimum. AIC = Akaike information criterion. BIC = Bayesian information criterion. Model 1 represents the final level one predictor model, while Model 2 represents the final level two predictor model.

~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

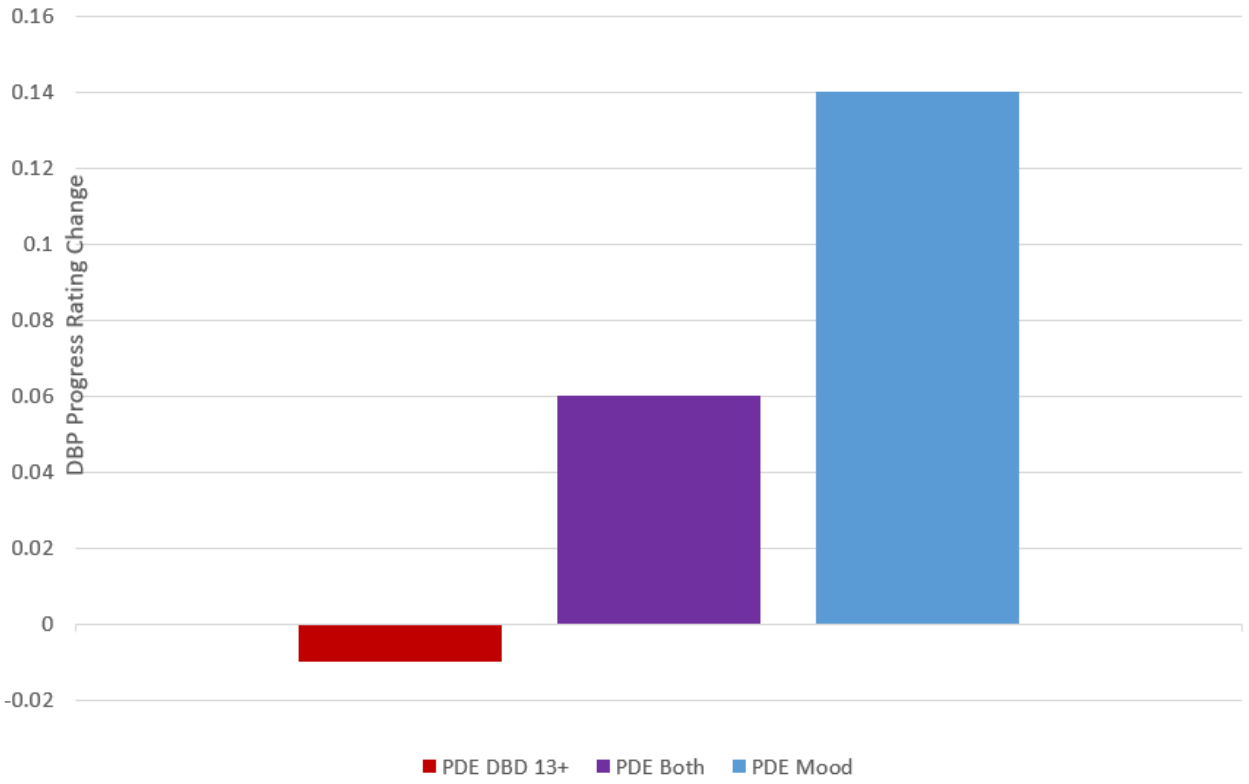

Figure 2. Modeled same month mean DBP progress rating difference for each PDE endorsed by category for the preadolescent sample.

Preadolescent time-only model. As with the adolescent model, time was added as a random effect at both the client and clinician levels for the preadolescent model after the determination of the coding structure of time was finalized as a fixed effect, as it was hypothesized that patterns of change over time varied between both clinicians and clients. Covariance structures at both the client and clinician levels were assumed to be unstructured (UN). This unconditional growth models established that the time effect varied randomly across both clients and clinicians, so time was maintained as a random effect in subsequent analyses. Several possible level one error structures were preliminarily investigated with time as a random effect. Only identity matrix (ID) satisfied convergence criteria for the model, and so was maintained as the covariance structure for the repeated measure of time. The intercept of this

model was 3.12 ($p < .001$), while the estimate for time was 1.37 ($p < .001$), suggesting that adolescent youth experienced an average disruptive behavior progress rating change from 1.85 ("minimal improvement [11%-30%]") after month 1 of treatment to 3.12 ("some improvement [31%-50%]") after month 6 of treatment.

Preadolescent level one model. The next step of model development was to add time-varying (within youth) covariates. In addition to the time variable from the time-only model, the major predictors of PDE categories (PDE_{MOOD}, $PDE_{DBD.12-}$, PDE_{BOTH}), as well as covariates for non-PDE practices and the sum of DBP targets endorsed per month (centered on the minimum) were added into the model as fixed effects to determine whether they explained variance in the intercept. PDE_{MOOD} was significant, while number of DBP targets, $PDE_{DBD.12-}$, PDE_{BOTH}, and non-PDE practices were not significant predictors of DBP progress. Non-PDE practices were removed from the final level one model, but $PDE_{DBD.12-}$ and PDE_{BOTH} were both maintained in the model due to the focus of the current study on these practice categories as predictors. Additionally, due to its significance in previous studies (i.e., Wilkie, Cicero, & Mueller, 2018), the number of DBP targets was also maintained in the model. The final level one model (i.e., Model 1) for the preadolescent sample included time, DBP targets endorsed per month, $PDE_{DBD.12-}$, PDE_{MOOD}, and PDE_{BOTH}. These covariates changed the intercept to 2.94 ($p < .001$), indicating that the final average DBP progress rating was 2.94 for preadolescent youth that were targeted for one DBP treatment target and received no PDE practices that month.

The only significant level one predictor of higher progress rating (other than time) was PDE_{MOOD}. For every additional PDE_{MOOD} practice endorsed in a given month, same-month DBP progress ratings increased on average by 0.06 ($p < .01$). $PDE_{DBD.12-}$ was not significant ($p < .06$), with each additional $PDE_{DBD.12-}$ practice endorsement non-significantly associated with a DBP

progress rating increase of 0.03. DBD_{BOTH} was not significant ($p > .10$), with each additional DBD_{BOTH} practice endorsement non-significantly associated with a DBP progress rating increase of 0.02. DBP targets were not significant in predicting lower DBP progress ratings ($p < .06$), with each additional DBP target endorsed in a given month associated with a DBP progress rating decrease of 0.06.

The deviance value for the final level one model (-2 Log Likelihood = 7682.66) was smaller than the previous time-only model (-2 Log Likelihood = 7710.47). The deviance difference of 27.81 exceeded the chi-square critical value of 9.49 (parameter difference $df = 13 – 9 = 4$), so the final level one model was a significant improvement over the time only model at predicting average DBP progress ratings.

Preadolescent level two model. The next step of model development was to add client-level fixed predictors to further explain variance in the intercept. The time variable and relevant level one predictors were carried over, and the following variables were added to the model as fixed effects: age in years (centered on the grand mean), gender, race, total CAFAS score nearest to the treatment episode start date (centered on the grand mean), and length of treatment (coded as 1 for youth who had MTPS data past the first six months or 0 for youth with six or less MTPS months). Gender and race were not significant predictors of DBP progress ratings and were removed from the final level two model (i.e., Model 2).

The final level two model included the following variables: time, $PDE_{DBD.12-}$, PDE_{MOOD}, PDE_{BOTH}, DBP targets endorsed per month, age in years, total CAFAS score, and length of treatment. These covariates changed the intercept to 3.05 ($p < .001$), which can be interpreted as the final DBP progress rating for youth in the sample who had the mean age, mean CAFAS score, and treatment that did not continue beyond six months in a month where only one DBP

target and no PDEs were endorsed. Younger age, lower CAFAS scores, and treatment episodes that lasted six months or less predicted higher DBP progress ratings. For every year younger a child was than the mean age of 10.51, their mean DBP progress rating increased by an average of 0.04 ($p < .05$). For every 10 points (i.e. the smallest scoring interval possible) lower a youth was rated on the CAFAS than the sample mean of 83.50, their mean DBP progress rating increased by an average of 0.03 ($p < .01$). If a youth's treatment episode did not continue beyond six months, their mean DBP progress rating increased by an average of 0.17 ($p < .05$). PDE_{MOOD} remained a significant predictor, while $PDE_{DBD.12-}$ became statistically significant ($p < .05$) with the addition of the final level two variables. DBD targets per month ($p < .06$) and PDE_{BOTH} ($p > .10$) remained non-significant predictors of DBP progress ratings.

The deviance value of the final level two model (-2 Log Likelihood = 7666.33) was smaller than the final level one model (-2 Log Likelihood = 7682.66). The deviance difference of 16.33 was above the chi-square value of 7.81 (parameter difference $df = 16 – 13 = 3$), and so the level two model was a significant improvement over the final level two model in predicting DBP progress ratings.

Preadolescent level three model. The next step of model development involved adding therapist-level fixed predictors to further explain variance in the intercept. Time, the main predictor variables of PDE categories, and previously maintained predictors at level one and level two remained in the model, while therapist highest degree obtained (i.e., doctorate degree or master's degree) and licensure status (i.e., licensed or unlicensed) were added into the model as fixed effects. Highest degree obtained ($p > .10$) and licensure ($p < .10$) were not significant predictors of DBP progress ratings. Given the p value below 0.10, licensure would have been maintained in the model. However, if licensure were maintained in the model, the deviance value

difference between the final level two model and the level three model with licensure status maintained (3.11) would not exceed the critical chi-square value (3.84) needed to be considered a significant improvement, so both level three predictors were not included in the final model. This resulted in the final model including predictors at only level one and level two. However, the variance components were still estimated for level three (between therapists) since it was appropriate to consider covariates at levels one and two as nested within therapists even without significant covariates at the therapist level. The full results of this model can be seen in Table 8, while a visual depiction of predicted same month DBP progress for each PDE category practice element endorsed can be seen in Figure 3.

Table 8.

Multilevel models predicting DBP progress ratings for preadolescent youth (N=626)

		Model 1	Model 2
Fixed effects			
DBP progress rating	Intercept	2.94*** (SE = 0.08)	3.05*** (SE = 0.10)
	DBP Targets Per Month (CM)	-0.06~ (SE = 0.03)	-0.06~ (SE = 0.03)
	$PDE_{DBD.12-}$	0.03~ (SE = 0.01)	0.03* (SE = 0.01)
	PDE_{MOOD}	0.06** (SE = 0.02)	0.07** (SE = 0.02)
	PDE_{BOTH}	0.02 (SE = 0.02)	0.02 (SE = 0.02)
	CAFAS Total Per 10 Points (GMC)		-0.03* (SE = 0.01)
	Youth Age in Years (GMC)		-0.04* (SE = 0.02)
	Treatment Over 6 Months		-0.17* (SE = 0.07)
	Time	1.33*** (SE = 0.08)	1.33*** (SE = 0.08)
Covariance Parameters			
Level 1 (Within Clients)	Variance	0.55*** (SE = 0.02)	0.55*** (SE = 0.02)
Level 2 (Between Clients)	Variance	0.64*** (SE = 0.07)	0.60*** (SE = 0.07)
	Time Slope	0.69*** (SE = 0.14)	0.68*** (SE = 0.14)
	Covariance	0.56*** (SE = 0.09)	0.53*** (SE = 0.09)
Level 3 (Between Therapists)	Variance	0.66*** (SE = 0.11)	0.65*** (SE = 0.11)
	Time Slope	0.38** (SE = 0.12)	0.39** (SE = 0.13)
	Covariance	0.30** (SE = 0.10)	0.30** (SE = 0.10)
Goodness of fit	Deviance	7682.66	7666.33
	No. of estimated parameters	13	16
	AIC	7708.66	7698.33
	BIC	7785.96	7793.46

Note. DBP = disruptive behavior problems. PDE = practices derived from the evidence base. CAFAS = Child and Adolescent Functional Assessment Scale. GMC = grand-mean centered. CM = centered on the minimum. AIC = Akaike information criterion. BIC = Bayesian information criterion. PDE = practices derived from the evidence-base.

~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

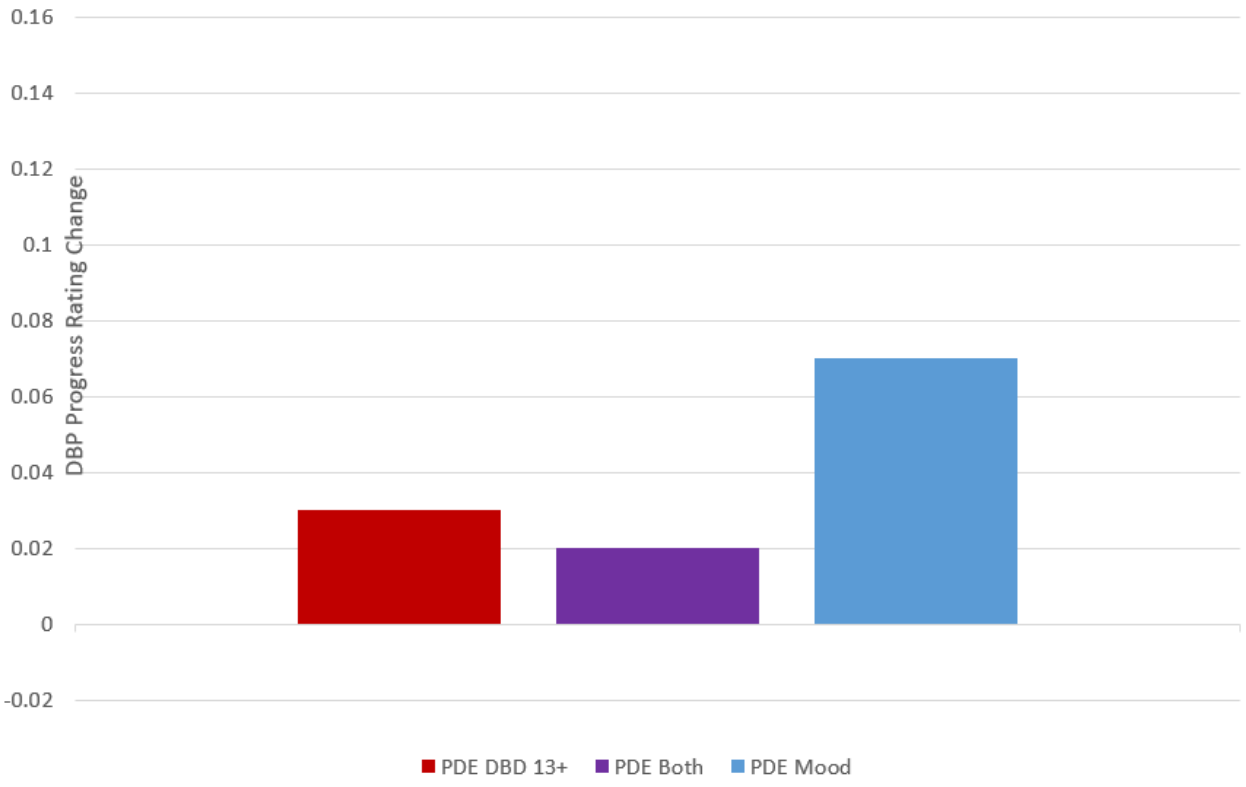

Figure 3. Modeled same month mean DBP progress rating difference for each PDE endorsed by category for the preadolescent sample.

Results of supplemental analyses. Each predictor in both the preadolescent and adolescent model was run in its own multilevel model as a sole predictor (with time) to examine bivariate relationships between the predictors and DBP progress rating. For the adolescent sample, the following predictors were significantly associated with positive disruptive behavior progress as the sole predictor in a three-level growth model: PDE_{MOOD} ($\beta = 0.17$, $p < .001$), PDE_{BOTH} ($\beta = 0.10$, $p < .001$), $PDE_{DBD.13+}$ ($\beta = 0.03$, $p < .001$), non-PDE practices ($\beta = 0.04$, $p < .001$), and youth age in years ($\beta = 0.09$, $p < .001$). CAFAS, treatment duration over 6 months, and therapist-level predictor results were similar to those in the full model, while DBD targets per month ($\beta = -0.04$) was not a significant sole predictor. For the preadolescent sample, the following sole predictors were significantly associated with positive disruptive behavior progress

in a three-level growth model: PDE_{MOOD} ($\beta = 0.08$, $p < .001$), PDE_{BOTH} ($\beta = 0.05$, $p < .01$), $PDE_{DBD.12-}$ ($\beta = 0.04$, $p < .01$), and non-PDE practices ($\beta = 0.02$, $p < .01$). CAFAS, treatment duration over 6 months, and therapist-level predictor results were similar to those in the full model, while DBD targets per month ($\beta = -0.04$) and youth age in years ($\beta = -0.04$, $p < .10$) were not significant sole predictors.

In order to better understand the relationship between disruptive behavior progress and the specific practice elements in each PDE category, additional multilevel models were conducted with all specific practices derived from the three PDE categories as predictors run simultaneously in the same model for each age group. As can be seen in Tables 9 and 10 for the adolescent and preadolescent samples, respectively, both positive and negative specific practice element predictors were found. These specific practice elements were also examined as the sole predictor (with time) in their own multilevel model. Results of these analyses can be seen in Table 11 for the adolescent sample PDE categories and Table 12 for the preadolescent sample PDE categories.

Table 9.

Multilevel model predicting DBP progress ratings with individual practice elements derived from the evidence base examined simultaneously for adolescent youth ordered by effect size within PDE category (N=1210)

Fixed effects		
DBP progress rating	Intercept	2.75*** (SE = 0.08)
	DBP Targets Per Month (CM)	-0.08** (SE = 0.03)
	CAFAS Total Per 10 Points (GMC)	-0.04*** (SE = 0.01)
	Youth Age in Years (GMC)	0.08*** (SE = 0.02)
	Time	0.98*** (SE = 0.07)
	Therapist Praise/Rewards ($PDE_{DBD.13+}$)	0.19*** (SE = 0.04)
	Functional Analysis ($PDE_{DBD.13+}$)	0.12 (SE = 0.10)
	Parent/Teacher Praise ($PDE_{DBD.13+}$)	0.11* (SE = 0.05)
	Family Therapy ($PDE_{DBD.13+}$)	0.05 (SE = 0.04)
	Tangible Rewards ($PDE_{DBD.13+}$)	0.05 (SE = 0.05)
	Modeling ($PDE_{DBD.13+}$)	0.01 (SE = 0.04)
	Monitoring ($PDE_{DBD.13+}$)	0.01 (SE = 0.05)
	Family Engagement ($PDE_{DBD.13+}$)	-0.02 (SE = 0.04)
	Response Cost ($PDE_{DBD.13+}$)	-0.11 (SE = 0.07)
	Relationship/Rapport Building ($PDE_{DBD.13+}$)	-0.17*** (SE = 0.04)
	Parent Coping ($PDE_{DBD.13+}$)	-0.19*** (SE = 0.04)
	Self-Monitoring (PDE_{MOOD})	0.18*** (SE = 0.04)
	Self-Reward or Self-Praise (PDE_{MOOD})	0.17** (SE = 0.06)
	Relaxation (PDE_{MOOD})	0.13** (SE = 0.04)
	Psychoeducation – Child (PDE_{MOOD})	0.11** (SE = 0.04)
	Activity Scheduling (PDE_{MOOD})	0.11** (SE = 0.04)
	Problem Solving (PDE_{BOTH})	0.14*** (SE = 0.04)
	Communication Skills (PDE_{BOTH})	0.13*** (SE = 0.04)
	Social Skills Training (PDE_{BOTH})	0.10* (SE = 0.04)
	Goal Setting (PDE_{BOTH})	0.09* (SE = 0.04)
	Cognitive (PDE_{BOTH})	0.04 (SE = 0.04)
	Maintenance/Relapse Prevention (PDE_{BOTH})	0.02 (SE = 0.06)
	Psychoeducation – Parent (PDE_{BOTH})	-0.14*** (SE = 0.04)
Covariance Parameters		
Level 1 (Within Clients)	Variance	0.70*** (SE = 0.02)
Level 2 (Between Clients)	Variance	0.70*** (SE = 0.06)
	Time Slope	0.88*** (SE = 0.13)
	Covariance	0.61*** (SE = 0.08)
Level 3 (Between Therapists)	Variance	0.63*** (SE = 0.09)
	Time Slope	0.42*** (SE = 0.11)
	Covariance	0.33*** (SE = 0.09)
Goodness of fit	Deviance	14905.80
	No of estimated parameters	35
	AIC	14975.80
	BIC	15204.61

Note. DBP = disruptive behavior problems. PDE = practices derived from the evidence base. CAFAS = Child and Adolescent Functional Assessment Scale. GMC = grand-mean centered. CM = centered on the minimum. AIC = Akaike information criterion. BIC = Bayesian information criterion. PDE = practices derived from the evidence-base.

~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

Table 10.

Multilevel model predicting DBP progress ratings with individual practice elements derived from the evidence base examined simultaneously for preadolescent youth ordered by effect size within PDE category (N=626)

Fixed effects		
DBP progress rating	Intercept	2.98*** (SE = 0.10)
	DBP Targets Per Month (CM)	-0.06~ (SE = 0.03)
	Treatment Over 6 Months	-0.18** (SE = 0.07)
	CAFAS Total Per 10 Points (GMC)	-0.03** (SE = 0.01)
	Youth Age in Years (GMC)	-0.04* (SE = 0.02)
	Time	1.31*** (SE = 0.08)
	Therapist Praise/Rewards ($PDE_{DBD.12-}$)	0.13** (SE = 0.04)
	Parent/Teacher Praise ($PDE_{DBD.12-}$)	0.12* (SE = 0.05)
	Modeling ($PDE_{DBD.12-}$)	0.10* (SE = 0.05)
	Tangible Rewards ($PDE_{DBD.12-}$)	0.08 (SE = 0.05)
	Attending ($PDE_{DBD.12-}$)	0.00 (SE = 0.06)
	Stimulus Control / Antecedent Management ($PDE_{DBD.12-}$)	0.00 (SE = 0.07)
	Time Out ($PDE_{DBD.12-}$)	-0.02 (SE = 0.07)
	Monitoring ($PDE_{DBD.12-}$)	-0.03 (SE = 0.06)
	Behavioral Contracting ($PDE_{DBD.12-}$)	-0.03 (SE = 0.05)
	Response Cost ($PDE_{DBD.12-}$)	-0.04 (SE = 0.08)
	Ignoring/Differential Reinforcement of Other ($PDE_{DBD.12-}$)	-0.07 (SE = 0.06)
	Commands ($PDE_{DBD.12-}$)	-0.14* (SE = 0.06)
	Self-Reward or Self-Praise (PDE_{MOOD})	0.17* (SE = 0.07)
	Activity Scheduling (PDE_{MOOD})	0.10* (SE = 0.05)
	Psychoeducation – Child (PDE_{MOOD})	0.06 (SE = 0.05)
	Self-Monitoring (PDE_{MOOD})	0.04 (SE = 0.06)
	Relaxation (PDE_{MOOD})	0.00 (SE = 0.05)
	Maintenance/Relapse Prevention (PDE_{BOTH})	0.24~ (SE = 0.13)
	Cognitive (PDE_{BOTH})	0.09~ (SE = 0.05)
	Problem Solving (PDE_{BOTH})	0.08~ (SE = 0.05)
	Communication Skills (PDE_{BOTH})	0.03 (SE = 0.04)
	Social Skills Training (PDE_{BOTH})	0.00 (SE = 0.05)
	Goal Setting (PDE_{BOTH})	-0.08 (SE = 0.05)
	Psychoeducation – Parent (PDE_{BOTH})	-0.08~ (SE = 0.05)
Covariance Parameters		
Level 1 (Within Clients)	Variance	0.54*** (SE = 0.02)
Level 2 (Between Clients)	Variance	0.57*** (SE = 0.07)
	Time Slope	0.67*** (SE = 0.14)
	Covariance	0.51*** (SE = 0.09)
Level 3 (Between Therapist)	Variance	0.66*** (SE = 0.11)
	Time Slope	0.38** (SE = 0.12)
	Covariance	0.30** (SE = 0.10)
Goodness of fit	Deviance	7618.61
	No of estimated parameters	37
	AIC	7692.61
	BIC	7912.61

Note. DBP = disruptive behavior problems. PDE = practices derived from the evidence base. CAFAS = Child and Adolescent Functional Assessment Scale. GMC = grand-mean centered. CM = centered on the minimum. AIC = Akaike information criterion. BIC = Bayesian information criterion. PDE = practices derived from the evidence-base.
~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

Table 11.

Fixed effects and n-size for specific practice elements as the sole predictor of disruptive behavior progress in multilevel growth models for adolescent youth (N=1210)

Variable	*N*	Coefficient
Therapist Praise or Rewards ($PDE_{DBD.13+}$)***	2142	0.28
Tangible Rewards ($PDE_{DBD.13+}$)***	695	0.21
Functional Analysis ($PDE_{DBD.13+}$)~	172	0.19
Parent or Teacher Praise ($PDE_{DBD.13+}$)**	1321	0.14
Modeling ($PDE_{DBD.13+}$)**	1778	0.13
Monitoring ($PDE_{DBD.13+}$)~	1343	0.08
Family Therapy ($PDE_{DBD.13+}$)*	2421	0.07
Response Cost ($PDE_{DBD.13+}$)	360	0.01
Family Engagement ($PDE_{DBD.13+}$)	2168	0.01
Relationship or Rapport Building ($PDE_{DBD.13+}$)**	2374	-0.11
Parent Coping ($PDE_{DBD.13+}$)**	2327	-0.12
Self-Reward or Self-Praise (PDE_{MOOD})***	751	0.34
Self-Monitoring (PDE_{MOOD})***	1185	0.29
Relaxation (PDE_{MOOD})***	1134	0.24
Activity Scheduling (PDE_{MOOD})***	1489	0.19
Psychoeducation – Child (PDE_{MOOD})***	2393	0.16
Problem Solving (PDE_{BOTH})***	2914	0.23
Communication Skills (PDE_{BOTH})***	3047	0.23
Social Skills Training (PDE_{BOTH})***	1624	0.22
Goal Setting (PDE_{BOTH})***	1825	0.14
Cognitive (PDE_{BOTH})**	2849	0.12
Maintenance or Relapse Prevention (PDE_{BOTH})~	605	0.11
Psychoeducation – Parent (PDE_{BOTH})*	2365	-0.08

Note. PDE = practices derived from the evidence base.
~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

Table 12.

Fixed effects and n-size for specific $PDE_{DBD.12-}$ practice elements as the sole predictor of disruptive behavior progress in multilevel growth models for preadolescent youth (N=626)

Variable	*N*	Coefficient
Therapist Praise of Rewards ($PDE_{DBD.12-}$)***	1354	0.17
Tangible Rewards ($PDE_{DBD.12-}$)**	640	0.16
Parent or Teacher Praise ($PDE_{DBD.12-}$)**	935	0.16
Modeling ($PDE_{DBD.12-}$)**	1219	0.15
Monitoring ($PDE_{DBD.12-}$)	727	0.06
Stimulus Control or Antecedent Management ($PDE_{DBD.12-}$)	292	0.06
Attending ($PDE_{DBD.12-}$)	461	0.05
Behavioral Contracting ($PDE_{DBD.12-}$)	760	0.02
Response Cost ($PDE_{DBD.12-}$)	224	0.01
Time Out ($PDE_{DBD.12-}$)	239	0.01
Ignoring or Differential Reinforcement of Other ($PDE_{DBD.12-}$)	469	-0.02
Commands ($PDE_{DBD.12-}$)	447	-0.08
Self-Reward or Self-Praise (PDE_{MOOD})***	435	0.26
Activity Scheduling (PDE_{MOOD})**	885	0.13
Self-Monitoring (PDE_{MOOD})*	535	0.11
Relaxation (PDE_{MOOD})	754	0.07
Psychoeducation – Child (PDE_{MOOD})	1210	0.07
Maintenance or Relapse Prevention (PDE_{BOTH})*	114	0.28
Problem Solving (PDE_{BOTH})**	1491	0.14
Cognitive (PDE_{BOTH})*	1239	0.11
Communication Skills (PDE_{BOTH})~	1697	0.08
Social Skills Training (PDE_{BOTH})~	1097	0.08
Goal Setting (PDE_{BOTH})	981	-0.02
Psychoeducation – Parent (PDE_{BOTH})	1605	-0.02

Note. PDE = practices derived from the evidence base.
~$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

Discussion

The primary aim of the current study was to determine whether practices derived from the evidence base for disruptive behavior and/or depressed mood problems predicted disruptive behavior problem progress ratings for preadolescent and/or adolescent youth in the first six months of intensive in-home public mental health care treatment. As hypothesized, PDEs intended for depressed mood problems (i.e., PDE_{MOOD}) were a significant positive predictor for both preadolescent and adolescent youth whether entered individually or with other PDE categories, and they were the strongest predictors across analyses. As hypothesized, practices for disruptive behavior only (PDE_{DBD}) were associated with same-month positive DBP progress for the preadolescent sample but not the adolescent sample, while practices associated with both disruptive behavior and depressed mood (PDE_{BOTH}) were associated with same-month progress for the adolescent sample. Against hypotheses, however, PDE_{BOTH} were not associated with same-month progress for the preadolescent sample when examined concurrently with other practice element categories. Follow-up analyses identified specific practices associated with higher and lower monthly progress ratings. Finally, other variables predicted progress (e.g. impairment and client age at beginning of treatment) but these findings did not change the larger findings about PDEs.

The major PDE_{MOOD} findings are notable in light of prior work by Wilkie, Cicero, & Mueller (2018), in which increased monthly focus on depressed mood problems (i.e., treatment targets) was associated with higher same-month disruptive behavior progress ratings for youth with a depressed mood diagnosis. Taken together, positive disruptive behavior progress in a community mental health setting has now been associated with both an increased focus on depressed mood problems and increased endorsement of PDEs for depressed mood. It is not

entirely clear why practices for depressed mood, but not for disruptive behavior or both problems, were consistently associated with disruptive behavior progress. Regarding the findings for depressed mood practices, youth with disruptive behavior problems frequently exhibit symptoms of irritability and emotional dysregulation and often present with or develop a comorbid depressed mood disorder (e.g., Burke et al., 2005; Loeber et al., 2009). It is possible that the client-directed skills utilized in depressed mood PDEs (e.g., self-praise or rewards, self-monitoring) are effective in providing youth clients with coping, self-regulation, and self-reinforcement skills that support the self-management of their disruptive behavior problems, particularly for those youth with irritable mood difficulties. Additionally, some PDEs for depressed mood can lead to environmental changes (e.g., activity selection) that might affect the reinforcement of a youth's disruptive (or differential alternative) behaviors without relying on caregiver involvement as the impetus for said change. This might be particularly true for adolescent youth, as all five specific PDE_{MOOD} practices predicted positive DBP progress in both sole predictor models and the simultaneous model.

A second possible explanation focuses on aspects of the sample (e.g., family resources and ability to enact change). Across all PDE categories, specific practices that are more focused on parents/caregivers (e.g., parent coping, parent psychoeducation, monitoring) tended to have smaller associated positive effect sizes than did practices more focused on the individual client (e.g., problem solving, child psychoeducation, self-monitoring). Therapists in community mental health might turn more towards caregiver-focused practices during months where disruptive behaviors are more severe in an attempt to enact appropriate caregiver responses and consequences, and focus more on youth-focused practices during months in which behaviors are less severe in an attempt to foster youth skills during less turbulent moments. Practices focused

on increasing positive and productive treatment engagement (e.g., parent psychoeducation, parent coping, relationship or rapport building) were most consistently associated with negative DBP progress. Therefore, it is possible that their association with negative same-month DBP progress might be in part an artifact of their utilization in more difficult treatment months. Therapists might also utilize fewer youth-focused practices for cases in which the youth is not productively engaged in treatment (e.g., refusing individual treatment, on runaway status). Another possibility for these patterns is that many, but not all, caregiver-focused practices require considerable buy-in and investment to see effective results. The process of designing and carrying out an effective rewards program, setting up a system of commands and active ignoring in response to the appropriate conditions, conducting productive family treatment with high engagement from all members, or working with caregivers to correctly deliver effective consequences through time out and response cost might present a high degree of complexity and required investment that cannot be effectively enacted in the face of barriers such as poverty, low caregiver engagement, or caregiver mental health impairment. Such behavior management strategies often face resistance and an escalation of problem behavior, which might overwhelm resources in already challenging environments.

A third possible explanation involves the extent to which practices that promote positive behavior might be related to positive progress ratings. Practices that focused on increasing positive behaviors or promoting positive youth skills, such as praise or problem-solving, appear to have stronger associations with progress than do those that focused on reducing negative behaviors (typically delivered by caregivers), such as time out or response cost. Youth more typically seen in community mental health settings have considerable impairment and tend to come from more marginalized backgrounds than those seen in efficacy trials (e.g., Baker-Ericzén

et al., 2010). A focus on implementing and/or reinforcing a positive alternative behavior might be particularly important for youth from adverse environments who have fewer positive skills or behaviors at the beginning of treatment and might therefore logically respond more to positive reinforcement and skill-developing approaches. The use of practices aimed at reducing negative behaviors (e.g., time out, commands, response cost, monitoring) might be an indicator that negative behaviors were more severe in a given month, resulting in stronger same-month associations with negative DBP progress, while those focused more on increasing positive behaviors (e.g., praise, activity scheduling, problem solving) might receive more usage when treatment is already proceeding smoothly and clients are not actively in crisis or disengaged from services. Although I do believe that the impact of practices endorsed in a given month should be seen in that month's progress rating, given that the practices were delivered throughout the month while the progress rating is given for progress made at the end of the month, it is possible that practices that were less associated with same-month DBP progress in this study (both caregiver-focused and those focused on reducing negative behavior) might have had a delayed effect on future treatment months.

Of course, given the non-experimental nature of the study, there can be a list of nearly endless potential explanations. That said, regardless of the causal mechanism underlying these findings, it is important to note that there has been very little discussion, or even innuendo, in the evidence-based literature suggesting that using practices derived from treatment protocols for mood problems might be associated with disruptive behavior improvement. At the broadest level, while extremely preliminary (see limitations section), these findings call into question the wisdom of the field's heavy reliance on developing knowledge about what works in treatment based on preconceived notions about how various youth problems differ. Treatment approaches

that focus on underlying mechanisms that cut across behavioral manifestations and diagnostic categories (e.g., irritability) might be a useful antidote to our current way of developing evidence-based interventions. While some work has begun in this direction (e.g., Barlow et al., 2017), much of this work focuses on what are perceived to be highly related problems (e.g., anxiety and depression). Indeed, the emerging literature that links oppositional and depression processes via irritability suggest such treatment development might be quite fruitful.

An additional alternative to the field's way of developing evidence-based treatments might focus not so much on "what is the problem," but instead on "what resources are available to work with in a given case, regardless of diagnosis or major presenting problem." Such treatment protocol development and testing would help address a current criticism of at least some of the evidence-based literature about the applicability and usefulness of empirically-supported treatments in community care, particularly public mental health care. There are very thoughtful efforts to address barriers to effective treatment (e.g., Chorpita, Daleiden, & Weisz, 2005b). However, even these treatment programs begin with efficacy trails, which as previously discussed often involve analyses based on a typically self-selected sample of Whiter, more middle class, less comorbid youth from engaged families who had the resources and engagement to attend treatment to completion (e.g., Baker-Ericzén et al., 2010). The question remains, has our field's understandable reliance on "efficacy before effectiveness" inadvertently pushed our understanding away from what actually can and will work for children and their families in difficult settings such a public mental health.

Overall, each of the three practice element categories and the non-PDE category predicted higher progress ratings when examined individually for both age groups. This finding is in line with previous findings in which the endorsement of a greater volume and diversity of

practice elements over the course of an episode has been associated with higher progress ratings in this community mental health care system (Izmirian, 2016; Love, 2014; Orimoto, 2014). In contrast to these previous studies, the current study examined practice use and progress on a monthly (rather than episode) basis, furthering support of a potential association between greater diversity of treatment practices and treatment progress. However, not all individual practices were associated with higher progress ratings and three PDE_{DBD} practices individually predicted negative DBP progress, diminishing the possibility that the mere increased diversity or volume of practice element usage, despite the specific practices being administered or endorsed, will be associated with higher progress. Additionally, it is noteworthy that PDE_{MOOD} alone was consistently associated with positive progress when practice element categories were examined simultaneously. Further research will be necessary to better understand how to interpret the recurring connection between practice volume/diversity and positive progress ratings within this system of care.

Other significant predictors in DBP progress ratings included total CAFAS score, age, number of DBP targets per month, and (for the preadolescent sample) treatment episode length. The association between higher CAFAS scores and lower DBP progress replicates previous research (e.g., Wilkie, Cicero, & Mueller, 2018), and it is no surprise that youth who are more functionally impaired might be making less progress in treatment. Longer treatment episode was a significant predictor of lower progress for preadolescent youth, but had a non-significant trend towards higher progress for adolescent youth. One possible explanation for the opposite directionality seen between age groups is that older youth might have had age-associated factors (e.g., increased independence, higher CAFAS impairment, higher rates of conduct disorder, substance use disorder, and depression) that made it more likely they prematurely ended services

or were moved to a higher level of care, while the younger children who were most responsive to treatment might have been more likely to successfully engage with and discharge from treatment within the first six months. An increased number of DBP targets per month significantly predicted lower monthly DBP progress ratings for the adolescent sample, and was non-significantly ($p < .10$) associated with lower monthly DBP progress ratings for the preadolescent sample. Increased DBP targeting might be representative of more severe disruptive behavior months, with more targets endorsed when youth are "off the rails," which I would expect to be associated with lower same-month progress ratings.

Although requiring replication, the fact that older age associated with higher DBP progress for the adolescent sample but lower DBP progress for the preadolescent sample might prove interesting. When taken together, youth within the 11 to 14 year old age range tended to have lower DBP progress than did youth who were both younger and older. It is possible that youth who are referred for services at these ages might present with higher rates of the early-onset and persistent form of disruptive behavior that is thought to be more difficult to treat and is manifested in conduct and substance use problems around those ages (e.g., Beauchaine et al., 2010; Loeber & Hay, 1997). These youth might stand in contrast to both disruptive behavior youth who receive their first episode of IIH treatment at older ages (e.g., higher rates of adolescent-onset conduct problems, lower rates of substance use) and disruptive behavior youth who are referred to their first IIH treatment episode at younger ages (e.g., lower rates of conduct disorder and substance use problems at those ages, earlier intervention). Youth around the 11 to 14 year old age bracket might present with the difficult combination of increased independent capacity for behavior relative to younger youth (e.g., greater developmental ability to be truant, run away, find and use substances) in conjunction with decreased capacity for abstract thought

and other adaptive behavior skills relative to older youth (e.g., lower insight, greater difficulty self-regulating) that result in particular difficulties in treatment. It is notable that PDE categories and specific practices for the adolescent sample tended to have larger associated effect sizes for adolescent youth compared to preadolescents (e.g., for PDE_{MOOD}, $\beta = 0.14$ for adolescent youth and $\beta = 0.06$ for preadolescent youth in the final models), which particularly held for practices that I would expect focus more on the youth client (e.g., the PDE_{MOOD} practices, Problem Solving, Communication Skills). Though still associated with positive DBP progress, it is possible that client-focused skills are less effective for younger youth due to their developmental stage and relatively lower capacity for self-regulation, independent behavior, and abstract thought. Clearly, further research is needed to parse out such complex age effects.

Limitations

As with all studies, there are important limitations. Findings are correlational in nature. As such, clear causality could not be assessed. Additionally, data for the study were derived from a convenience sample of youth who received public mental health care within the Hawai'i state community mental health system, and the generalizability of findings to other systems of care is not clear. That said, these sorts of community care studies can provide a useful counter-balance to efficacy and effectiveness studies, which each have their own limitations as well. Knowledge advances best when findings across diverse methods are brought together into a coherent whole.

Another major concern is the representativeness of therapist PDE endorsement on the MTPS with the practices as described in the evidence base. While community therapists seem to endorse practices in a logical manner (Orimoto et al., 2012), there is some evidence from this and other systems of care that they do not necessarily engage in these practices with depth and high skill levels (Borntrager et al., 2013; Garland et al., 2010). As such, it is possible that

therapists are actually doing a better job with some practices than others. For instance, if therapists do a better job with PDE_{MOOD} than PDE_{DBD} practices, then the current findings might be explained more by competency than by practice element selection. Due to the self-reported nature of the data, therapists were free to endorse any target, practice element, or progress rating they decided on, and it is not clear how well their self-report reflected actual clinical activities or client progress. Previous research has suggested that therapist self-report is not always consistent with observation of therapist behavior (e.g., Hurlburt, Garland, Nguyen, & Brookman-Frazee, 2010), further calling into question the accuracy of their MTPS self-report; however, research has also supported the validity of the MTPS as a measure of client progress (e.g., Nakamura et al., 2007).

MTPS data were taken on a monthly basis, and the presence or absence of endorsement of a particular target or progress rating does not necessarily reflect the amount of time or focus that each target or practice received over the course of that month. For example, one therapist endorsing "cognitive" as a practice element could have reflected a few brief minutes of use of that practice, while another therapist endorsing "cognitive" might have spent hours per week focused on cognitive restructuring.

Future Research

Given these results, future research should examine whether utilizing a more structured, high fidelity administration of practices derived from the depressed mood evidence base might be an efficacious and/or effective treatment approach for youth disruptive behavior, with a particular focus on those youth who present with irritable mood and who might be in a prodromal developmental stage of depressive mood problems. Further research is essential to better understand what these findings might suggest about treatment effectiveness in community

mental health settings, as it is possible that these findings could indicate that there is an effective treatment approach for disruptive behavior problems that focuses on individual youth skills that are derived from depressed mood treatment practices, particularly for youth whose family and environmental situations feature notable barriers to effective family- or systems-based treatment.

Considerations for future research might be to determine whether youth with disruptive behavior with or without irritable mood or emotional dysregulation symptoms show differential response to treatment. Future studies might more explicitly compare treatment approaches that focus more heavily on caregiver-focused practices to those focused more on client-focused practices, specifically in community settings where participants are not expressly recruited for participation in the study. The effectiveness of disruptive behavior treatment might be further improved by clearly defining the variety of potential barriers in treatment (e.g., comorbidity, high impairment, poor caregiver or client engagement, etc.), and developing strategies the treatment team should take when faced with those barriers. More broadly, research should further examine depressed mood treatments for youth under the age of 13, given the relative lack of current evidence-based treatments that examine mood treatments for this population at all. Alternative measures of treatment response and outcome might be examined in any future research to determine whether practices are resulting in longer-term progress such as functional change and successful treatment discharge. Research might also examine whether different treatment practice approaches derived from the evidence base are associated with other problem area outcomes, such as progress on depressed mood.

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Appendix A: Monthly Treatment and Progress Summary (MTPS)

SERVICE PROVIDER MONTHLY TREATMENT & PROGRESS SUMMARY
Child and Adolescent Mental Health Division (CAMHD)

Instructions: Please complete and electronically submit this form to CAMHD by the 5th working day of each month (summarizing the time period of 1st to the last day of the previous month). The information will be used in service review, monitoring, planning and coordination in accordance with CAMHD policies and standards. Mahalo!

Client Name:	CR #:	DOB:
Month/Year of Services:	Eligibility Status:	Level of Care (one per form):
Axis I Primary Diagnosis:	Axis I Secondary Diagnosis:	Axis I Tertiary Diagnosis:
Axis II Primary Diagnosis:	Axis II Secondary Diagnosis:	

Service Format (circle all that apply):
Individual Group Parent Family Teacher Other: _____

Service Setting (circle all that apply):
Home School Community Out of Home Clinic/Office Other: _____

Service Dates:																

Targets Addressed This Month (*number* up to 10):

	Activity Involvement		Community Involvement		Hyperactivity		Positive Peer Interaction		Shyness
	Academic Achievement		Contentment, Enjoyment, Happiness		Learning Disorder, Underachievement		Phobia/Fears		Sleep Disturbance
	Adaptive Behavior/Living Skills		Depressed Mood		Low Self-Esteem		Positive Thinking/ Attitude		Social Skills
	Adjustment to Change		Eating, Feeding Problems		Mania		Pregnancy Education/ Adjustment		Speech and Language Problems
	Aggression		Empathy		Medical Regimen Adherence		Psychosis		Substance Use
	Anger		Enuresis, Encopresis		Occupational Functioning/Stress		Runaway		Suicidality
	Anxiety		Fire Setting		Oppositional/ Non-Compliant Behavior		School Involvement		Traumatic Stress
	Assertiveness		Gender Identity Problems		Peer Involvement		School Refusal/Truancy		Treatment Engagement
	Attention Problems		Grief		Peer/Sibling Conflict		Self-Control		Willful Misconduct, Delinquency
	Avoidance		Health Management		Personal Hygiene		Self-Injurious Behavior		Other:
	Cognitive-Intellectual Functioning		Housing/Living Situation		Positive Family Functioning		Sexual Misconduct		Other:

CR # _____ (please repeat the number here)

Progress Ratings This Month (check appropriate rating for any target numbers endorsed as targets):

#	Deterioration < 0%	No Significant Changes 0%-10%	Minimal Improvement 11%-30%	Some Improvement 31%-50%	Moderate Improvement 51%-70%	Significant Improvement 71%-90%	Complete Improvement 91%-100%	Date (If Complete)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Intervention Strategies Used This Month (check all that apply):

	Activity Scheduling		Emotional Processing		Line of Sight Supervision		Personal Safety Skills		Stimulus or Antecedent Control
	Assertiveness Training		Exposure		Maintenance or Relapse Prevention		Physical Exercise		Supportive Listening
	Attending		Eye Movement, Tapping		Marital Therapy		Play Therapy		Tangible Rewards
	Behavioral Contracting		Family Engagement		Medication/ Pharmacotherapy		Problem Solving		Therapist Praise/Rewards
	Biofeedback, Neurofeedback		Family Therapy		Mentoring		Psychoeducation, Child		Thought Field Therapy
	Care Coordination		Free Association		Milieu Therapy		Psychoeducation, Parent		Time Out
	Catharsis		Functional Analysis		Mindfulness		Relationship or Rapport Building		Twelve-Step Program
	Cognitive		Goal Setting		Modeling		Relaxation		Other:
	Commands		Guided Imagery		Motivational Interviewing		Response Cost		Other:
	Communication Skills		Hypnosis		Natural and Logical Consequences		Response Prevention		Other:
	Crisis Management		Ignoring/Differential Reinforcement of Other Behavior		Parent Coping		Self-Monitoring		
	Cultural Training		Individual Therapy for Caregiver		Parent/Teacher Monitoring		Self-Reward/ Self-Praise		
	Discrete Trial Training		Insight Building		Parent/Teacher Praise		Skill Building		
	Educational Support		Interpretation		Peer Pairing		Social Skills Training		

CR # _____ (please repeat the number here)

Psychiatric Medications (List All)	Total Daily Dose	Dose Schedule	Check if Change	Description of Change
			☐	
			☐	
			☐	
			☐	
			☐	

Projected Discharge Date: _____ ☐ Check if Discharged During Current Month

IF YOUTH WAS DISCHARGED THIS MONTH, PLEASE COMPLETE ITEMS A & B:

A. Discharge Living Situation (check one):

☐ Home ☐ Foster Home ☐ Group Care ☐ Residential Treatment
☐ Institution/Hospital ☐ Jail/Correctional Facility ☐ Homeless/Shelter ☐ Other:_____

B. Reason(s) for Discharge (check all that apply):

☐ Success/Goals Met ☐ Insufficient Progress ☐ Family Relocation
☐ Runaway/Elopement ☐ Refuse/Withdraw ☐ Eligibility Change ☐ Other:_____

Outcome Measures: Optional. If you have any of the following data, please report the most recent scores:

CAFAS (8 Scales): (1-School:) (2-Home:) (3-Community:) (4-Behavior Toward Others:) (5-Moods/Emotions:) (6-Self-Harm:) (7-Substance:) (8-Thinking:) (Total:)			Date:
CASII/CALOCUS (Total):	CASII/CALOCUS (Level of Care):		Date:
CBCL (Total Problems T):	CBCL (Internalizing T):	CBCL (Externalizing T):	Date:
YSR (Total Problems T):	YSR (Internalizing T):	YSR (Externalizing T):	Date:
TRF (Total Problems T):	TRF (Internalizing T):	TRF (Externalizing T):	Date:
Arrested During Month? (Y/N):	School attendance (% of days):		

Comments/Suggestions (***attach additional sheets if necessary***):

Provider Agency & Island: _____ Clinician Name and ID#: _____
Provider Supervisor Signature: _____ Clinician Signature: _____
Submitted to CAMHD (date): _____ Care Coordinator: _____

Appendix B: MTPS Instructions and Codebook

DOH Child and Adolescent Mental Health Division
Instructions and Codebook for Provider Monthly Treatment and Progress Summary
Effective July 1, 2008

The instructions and codebook are to be used in conjunction with the CAMHD Service Provider Monthly Treatment and Progress Summary form. This codebook defines the numerous terms and possible responses necessary to accurately complete the form. For questions regarding these definitions or the use of the Monthly Treatment and Progress Summary, please contact the Clinical Services Office at 733-9349.

Instructions

Please complete and electronically submit to CAMHD the Monthly Treatment and Progress Summary by the 5th working day of the month. The summary should pertain to the previous month's services. This form should be completed by the clinician who is most familiar with the current status of the youth and family and with the services provided during the month. When necessary, the responding clinician should gather information from other provider team members to assure the most accurate description possible. Once completed by the clinician, the form should be reviewed and signed by a qualified supervisor.

At the top section, please write the Client Name, CR Number, Date of Birth (DOB), Home School, School Complex, Eligibility Status [i.e., Educationally Supportive (IDEA), Support for Emotional and Behavioral Development (SEBD), Mental Health Only], Axis I Primary Diagnosis, Axis I Secondary Diagnosis, Axis I Tertiary Diagnosis, Axis II Primary Diagnosis, Axis II Secondary Diagnosis, Level of Care, and Month/Year of Services. If some Diagnosis fields do not apply to the youth, please leave those fields blank. The Month/Year of Services refers to the month in which the service was provided, not the date the Monthly Provider Summary was completed. For example, if the report is submitted in the first week of June, the Month/Year of Services would read "May," because the services were delivered in May. For youth receiving more than one level of care during the month, please complete a separate form for each.

Under Service Format, please indicate whether services were delivered in the following manner (more than one format can be selected):

Individual –Working with youth directly
Group –Working with youth along with other youths receiving services
Parent –Working directly with parents or caregivers, with youth not present
Family – Working with parents or caregivers and youth together. Can include other family members
Teacher – Working with a teacher directly
Other – Another format not specified above; please write description

Under Service Setting, please note whether services were delivered in the following locations (more than one setting can be selected):

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Home –Working with youth or family members in the youth's home
School –Working with youth or professionals in the youth's educational setting, other than in the context of an IEP/MP meeting
Community – Working with youth or others in the youth's community/neighborhood
Out of Home – Working with the youth or family in a residential facility
Clinic/Office – Working with the youth or family in a clinical office
Other – Another setting not specified above; please write description

For Service Dates, please provide the dates for each service provided during that month. If additional space is required, please continue writing dates in the area below the boxes provided. If the service was provided out of home (i.e., continuously), please provide start and end dates for that month's services and put the word "to" in between in one of the boxes.

Targets

Targets are the strengths and needs being addressed as part of the mental health services for that youth.

When completing the Targets Addressed This Month, please put numbers (1, 2, 3…) rather than checkmarks (X, ✔) to the left of each target addressed. This is so that progress ratings in the next section can be attached to each target. For example, if "Academic Achievement" was targeted, place a "1" in the box to the left of that target on the form. Numbers do not need to reflect any particular order. If more than 10 targets were addressed during the month, please provide only those you feel are the 10 most important. If a target was addressed for which there is no option, please number the "other" box, and write in the target.

The list of treatment targets is intended to provide a summary of strengths and needs that are commonly targeted for change during mental health service provision. These problem areas are NOT diagnostic descriptions and the primary targets for treatment may change over time for a particular youth. For example, when treating a youth with an eating disorder, treatment may target eating/feeding behavior at one point, but target medical regimen adherence or positive family functioning on other occasions. These treatment targets are for progress summary purposes and should NOT replace the detailed specification of goals and objectives as part of the treatment planning process.

Definitions of Targets

1. **Academic Achievement** – Issues related to general level or quality of achievement in an educational or academic context. This commonly includes performance in coursework, and excludes cognitive-intellectual ability/capacity issues (#11) and specific challenges in learning or achievement (#24)
2. **Activity Involvement** – Issues related to general engagement and participation in activities. Only code here those activities that are not better described by the particular activity classes of school involvement (#40), peer involvement (#30), or community involvement (#12).
3. **Adaptive Behavior/Living Skills** – Skills related to independent living, social functioning, financial management, and self-sufficiency that are not better captured under other codes

such as personal hygiene (#33), self-management/self-control (#43), social skills (#47), housing/living situation (#22), or occupational functioning/stress (#28).

4. **Adjustment to Change** – Issues related to a youth's global response to a life transition or specific challenge (e.g., change of school, living situation, treatment transition or discharge, etc.).
5. **Aggression** – Verbal and/or physical aggression, or threat thereof, that results in intimidation, physical harm, or property destruction.
6. **Anger –** Emotional experience or expression of agitation or destructiveness directed at a particular object or individual. Common physical feelings include accelerated heartbeat, muscle tension, quicker breathing, and feeling hot.
7. **Anxiety** – A general uneasiness that can be characterized by irrational fears, panic, tension, physical symptoms, excessive anxiety, worry, or fear.
8. **Assertiveness** – The skills or effectiveness of clearly communicating one's wishes. For example, the effectiveness with which a child refuses unreasonable requests from others, expresses his/her rights in a non-aggressive manner, and/or negotiates to get what s/he wants in their relationships with others.
9. **Attention Problems** – Described by short attention span, difficulty sustaining attention on a consistent basis, and susceptible to distraction by extraneous stimuli.
10. **Avoidance** – Behaviors aimed at escaping or preventing exposure to a particular situation or stimulus.
11. **Cognitive-Intellectual Functioning** – Issues related to cognitive-intellectual ability/capacity and use of those abilities for positive adaptation to the environment. This includes efforts to increase IQ, memory capacity, or abstract problem-solving ability.
12. **Community Involvement** – Issues related to the amount of involvement in specific community activities within the child's day.
13. **Contentment/Enjoyment/Happiness –** Refers to issues involving the experience and expression of satisfaction, joy, pleasure, and optimism for the future.
14. **Depressed Mood** – Behaviors that can be described as persistent sadness, anxiety, or "empty" mood, feelings of hopelessness, guilt, worthlessness, helplessness, decreased energy, fatigue, etc.
15. **Eating/Feeding Problems**– Knowledge or behaviors involved with the ingestion or consumption of food. May include nutritional awareness, food choice, feeding mechanics (e.g., swallowing, gagging, etc.), and social factors relating with eating situations.
16. **Empathy** – Identifications with and understanding of another person's situation, feelings, and motives.
17. **Enuresis/Encopresis** – Enuresis refers to the repeated pattern of voluntarily or involuntarily passing urine at inappropriate places during the day or at night in bed or clothes. Encopresis refers to a repeated pattern of voluntarily or involuntarily passing feces in inappropriate places.
18. **Fire Setting** – Intentionally igniting fires.
19. **Gender Identity Problems –** Issues related with a youth's self-concept or self-understanding involving gender roles and social behaviors in relation to their biological sex. This does not address self-concept issues involving sexual orientation, which would be coded as "other."
20. **Grief** – Feelings associated with a loss of contact with a significant person in the youth's environment (e.g., parent, guardian, friend, etc.).

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21. **Health Management** – Issues related to the improvement or management of one's health, inclusive of both physical illness and fitness. In addition to dealing with the general development of health-oriented behavior and management of health conditions, this target can also focus on exercise or lack of exercise.
22. **Housing/Living Situation** – Refers to finding or stabilizing an appropriate living situation for a youth.
23. **Hyperactivity** – Can be described by fidgeting, squirming in seat, inability to remain seated, talking excessively, difficulty engaging in leisure activities quietly, etc.
24. **Learning Disorder, Underachievement** – Refers to specific challenges with learning or educational performance that are not better accounted for by cognitive-intellectual functioning (#11) or general academic achievement (#1).
25. **Low Self-Esteem** – An inability to identify or accept his/her positive traits or talents, and accept compliments. Verbalization of self-disparaging remarks and viewing him or herself in a negative manner.
26. **Mania** – An inflated self-perception that can be manifested by loud, overly friendly social style that oversteps social boundaries, and high energy and restlessness with a reduced need for sleep.
27. **Medical Regimen Adherence –** Knowledge, attitudes, and behaviors related to regular implementation procedures prescribed by a health care professional. Commonly include lifestyle behaviors (e.g., exercise, nutrition), taking medication, or self-administration of routine assessments (e.g., taking blood samples in a diabetic regimen).
28. **Occupational Functioning/Stress** – Issues related to career interests, seeking employment, obtaining work permits, job performance, or managing job stress or strain that are not better characterized under other targets (e.g., anxiety).
29. **Oppositional/Non-Compliant Behavior** – Behaviors that can be described as refusal to follow adult requests or demands or established rules and procedures (e.g., classroom rules, school rules, etc.).
30. **Peer Involvement** – A greater involvement in activities with peers. Activities could range from academic tasks to recreational activities while involvement could range from working next to a peer to initiating an activity with a peer.
31. **Peer/Sibling Conflict** – Peer and/or sibling relationships that are characterized by fighting, bullying, defiance, revenge, taunting, incessant teasing and other inappropriate behaviors.
32. **Phobia/Fears** – Irrational dread, fear, and avoidance of an object, situation, or activity.
33. **Personal Hygiene** – Challenges related to self-care and grooming.
34. **Positive Family Functioning** – Issues related with healthy communication, problem-solving, shared pleasurable activities, physical and emotional support, etc. in the context of an interaction among multiple persons in a family relation, broadly defined.
35. **Positive Peer Interaction** – Social interaction and communication with peers that are pro-social and appropriate. This differs from peer involvement (#30) in that it focuses on interactional behavior, styles, and intentions, whereas peer involvement targets actual engagement in activities with peers regardless of interactional processes.
36. **Positive Thinking/Attitude –** This target involves clear, healthy, or optimistic thinking, and involves the absence of distortions or cognitive bias that might lead to maladaptive behavior.
37. **Pregnancy Education/Adjustment** – Issues related to helping a pregnant youth prepare and adjust to parenthood.

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38. **Psychosis** – Issues related to atypical thought content (delusions of grandeur, persecution, reference, influence, control, somatic sensations), and/or auditory or visual hallucinations.
39. **Runaway** – Running away from home or current residential placement for a day or more.
40. **School Involvement** – Detailed description of amount of involvement in specific school activities within the child's scheduled school day.
41. **School Refusal/Truancy** – Reluctance or refusal to attend school without adult permission for the absence. May be associated with school phobia or fear manifested by frequent somatic complaints associated with attending school or in anticipation of school attendance, or willful avoidance of school in the interest of pursuing other activities.
42. **Self-Injurious Behavior** – Acts of harm, violence, or aggression directed at oneself.
43. **Self-Management/Self-Control** – Issues related to management, regulation, and monitoring of one's own behavior.
44. **Sexual Misconduct** – Issues related with sexual conduct that is defined as inappropriate by the youth's social environment or that includes intrusion upon or violation of the rights of others.
45. **Shyness** – Social isolation and/or excessive involvement in isolated activities. Extremely limited or no close friendships outside the immediate family members. Excessive shrinking or avoidance of contact with unfamiliar people.
46. **Sleep Disturbance** – Difficulty getting to or maintaining sleep.
47. **Social Skills** – Skills for managing interpersonal interactions successfully. Can include body language, verbal tone, assertiveness, and listening skills, among other areas.
48. **Speech and Language Problems** – Expressive and/or receptive language abilities substantially below expected levels as measured by standardized tests.
49. **Substance Abuse/Substance Use** – Issues related to the use or misuse of a common, prescribed, or illicit substances for altering mental or emotional experience or functioning.
50. **Suicidality** – Issues related to recurrent thoughts, gestures, or attempts to end one's life.
51. **Traumatic Stress** – Issues related to the experience or witnessing of life events involving actual or threatened death or serious injury to which the youth responded with intense fear, helplessness, or horror.
52. **Treatment Engagement –** The degree to which a family or youth is interested and optimistic about an intervention or plan, such that they act willfully to participate and work toward the success of the plan.
53. **Willful Misconduct/Delinquency** – Persistent failure to comply with rules or expectations in the home, school, or community. Excessive fighting, intimidation of others, cruelty or violence toward people or animals, and/or destruction of property.

Progress Ratings

Please provide a single progress rating for each target selected above (up to 10). Numbers 1 through 10 in the left column refer to the targets selected in the Targets Addressed This Month section above. For example, had you selected "Academic Achievement" above, there would be a "1" in the box to the left of that target on that section. Then, the first row of the Progress Ratings, labeled "1," is where you would note the progress ratings associated with academic achievement.

Please place a mark (X, ✔) in the column corresponding to your subjective rating of progress associated with this target. When possible, your overall subjective ratings should be informed by

a review of objective measures such as any available and relevant questionnaires or behavioral observation data. For example, if a youth receives a T-score of 70 during an intake assessment and the treatment goal is to reduce this score to 60, then if a youth receives a T-score of 65 during a monthly assessment, than 50% progress may be reported [i.e., 70 – 65 / 70 – 60 = 5 / 10 = 50%]. Or if a youth gets into 10 fights per week initially and the treatment goal is to reduce fighting to 0 fights per week, then during a month in which the youth was fighting only 3 times per week, that would reflect 70% progress [i.e., 10 – 3 / 10 – 0 = 7 / 10 = 70%].

Anchors refer to changes from baseline or beginning of services for that target. Thus, a youth who had reached 90% of an initial goal would receive a rating of "significant improvement." If that progress were to decline to 70% in the following month, the youth would then get a rating of "moderate improvement" for that target for that month (not "deterioration"). "Deterioration" refers to when a target gets worse from the time it was initially addressed. If there is a break in addressing a specific target (e.g., a target is addressed, then not addressed for a month, then addressed again in a later month), use the initial baseline from the first time as the point of comparison. Only when there is a break in the complete episode of care (i.e., discharge followed by later admission), should that reset the baseline for a given target.

If a goal is reached (improvement is complete), the provider may choose to note the date in the rightmost column. This implies that the target is no longer being addressed. Targets that are not complete should be rated again on the following month's summary form.

Intervention Strategies

Please place a mark (X, ✔) to the left of any intervention strategies used during the past month. There is no limit to how many may be checked. If strategies were employed that are not in the following list of definitions, please mark the "other" box and write in the strategy used.

Definitions of Intervention Strategies

1. **Activity Scheduling** – The assignment or request that a child participate in specific activities outside of therapy time, with the goal of promoting or maintaining involvement in satisfying and enriching experiences.
2. **Assertiveness Training** – Exercises or techniques designed to promote the child's ability to be assertive with others, usually involving rehearsal of assertive interactions.
3. **Attending** – Exercises involving the youth and caregiver playing together in a specific manner to facilitate their improved verbal communication and nonverbal interaction. Can involve the caregiver's imitation and participation in the youth's activity, as well as parent-directed play (previously called "Directed Play").
4. **Behavioral Contracting** – Development of a formal agreement specifying rules, consequences, and a commitment by the youth and relevant others to honor the content of the agreement.
5. **Biofeedback/ Neurofeedback** – Strategies to provide information about physiological activity that is typically below the threshold of perception, often involving the use of specialized equipment.

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6. **Care Coordination** – Coordinating among the youth's service providers to ensure effective communication, receipt of appropriate services, adequate housing, etc.
7. **Catharsis** – Strategies designed to bring about the release of intense emotions, with the intent to develop mastery of affect and conflict.
8. **Cognitive** – Any techniques designed to alter interpretation of events through examination of the child's reported thoughts, typically through the generation and rehearsal of alternative counter-statements. This can sometimes be accompanied by exercises designed to comparatively test the validity of the original thoughts and the alternative thoughts through the gathering or review of relevant information.
9. **Commands** – Training for caregivers in how to give directions and commands in such a manner as to increase the likelihood of child compliance.
10. **Communication Skills** – Training for youth or caregivers in how to communicate more effectively with others to increase consistency and minimize stress. Can include a variety of specific communication strategies (e.g., active listening, "I" statements).
11. **Crisis Management** – Immediate problem solving approaches to handle urgent or dangerous events. This might involve defusing an escalating pattern of behavior and emotions either in person or by telephone, and is typically accompanied by debriefing and follow-up planning.
12. **Cultural Training** – Education or interaction with culturally important values, rituals, or sites with no specific practices identified.
13. **Discrete Trial Training** – A method of teaching involving breaking a task into many small steps and rehearsing these steps repeatedly with prompts and a high rate of reinforcement.
14. **Educational Support** – Exercises designed to assist the child with specific academic problems, such as homework or study skills. This includes tutoring.
15. **Emotional Processing** – A program based on an information processing model of emotion that requires activation of emotional memories in conjunction with new and incompatible information about those memories.
16. **Exposure** – Techniques or exercises that involve direct or imagined experience with a target stimulus, whether performed gradually or suddenly, and with or without the therapist's elaboration or intensification of the meaning of the stimulus.
17. **Eye Movement/ Tapping** – A method in which the youth is guided through a procedure to access and resolve troubling experiences and emotions, while being exposed to a therapeutic visual or tactile stimulus designed to facilitate bilateral brain activity.
18. **Family Engagement** – The use of skills and strategies to facilitate family or child's positive interest in participation in an intervention.
19. **Family Therapy** – A set of approaches designed to shift patterns of relationships and interactions within a family, typically involving interaction and exercises with the youth, the caregivers, and sometimes siblings.
20. **Free Association** – Technique for probing the unconscious in which a person recites a running commentary of thoughts and feelings as they occur.
21. **Functional Analysis** – Arrangement of antecedents and consequences based on a functional understanding of a youth's behavior. This goes beyond straightforward application of other behavioral techniques.
22. **Goal Setting** – Setting specific goals and developing commitment from youth or family to attempt to achieve those goals (e.g., academic, career, etc.).

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23. **Guided Imagery** – Visualization or guided imaginal techniques for the purpose of mental rehearsal of successful performance. Guided imagery for the purpose of physical relaxation (e.g., picturing calm scenery) is not coded here, but rather coded under relaxation (#50).
24. **Hypnosis** – The induction of a trance-like mental state achieved through suggestion.
25. **Ignoring/Differential Reinforcement of Other Behavior** – The training of parents or others involved in the social ecology of the child to selectively ignore mild target behaviors and selectively attend to alternative behaviors.
26. **Individual Therapy for Caregiver –** Any therapy designed directly to target individual (non-dyadic) psychopathology in one or more of the youth's caregivers. If the therapy for caregivers involves marital therapy (#31) or communication skills (#10) those are not coded here, unless there are additional services for individual caregiver psychopathology, in which case all that apply should be coded.
27. **Insight Building** – Activity designed to help a youth achieve greater self-understanding.
28. **Interpretation** – Reflective discussion or listening exercises with the child designed to yield therapeutic interpretations. This does not involve targeting specific thoughts and their alternatives, which would be coded as cognitive/coping.
29. **Line of Sight Supervision** – Direct observation of a youth for the purpose of assuring safe and appropriate behavior.
30. **Maintenance/Relapse Prevention** – Exercises and training designed to consolidate skills already developed and to anticipate future challenges, with the overall goal to minimize the chance that gains will be lost in the future
31. **Marital Therapy** – Techniques used to improve the quality of the relationship between caregivers.
32. **Medication/ Pharmacotherapy** – Any use of psychotropic medication to manage emotional, behavioral, or psychiatric symptoms.
33. **Mentoring** – Pairing with a more senior and experienced individual who serves as a positive role model for the identified youth.
34. **Milieu Therapy** – A therapeutic approach in residential settings that involves making the environment itself part of the therapeutic program. Often involves a system of privileges and restrictions such as a token or point system.
35. **Mindfulness** – Exercises designed to facilitate present-focused, non-evaluative observation of experiences as they occur, with a strong emphasis of being "in the moment." This can involve the youth's conscious observation of feelings, thoughts, or situations.
36. **Modeling –** Demonstration of a desired behavior by a therapist, confederates, peers, or other actors to promote the imitation and subsequent performance of that behavior by the identified youth.
37. **Motivational Interviewing** – Exercises designed to increase readiness to participate in additional therapeutic activity or programs. These can involve cost-benefit analysis, persuasion, or a variety of other approaches.
38. **Natural and Logical Consequences** – Training for parents or teachers in (a) allowing youth to experience the negative consequences of poor decisions or unwanted behaviors, or (b) delivering consequences in a manner that is appropriate for the behavior performed by the youth.

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39. **Parent Coping** – Exercises or strategies designed to enhance caregivers' ability to deal with stressful situations, inclusive of formal interventions targeting one or more caregiver.
40. **Parent/Teacher Monitoring** – The repeated measurement of some target index by the parent, teacher, or other adult involved in the child's social ecology.
41. **Parent/Teacher Praise** – The training of parents, teachers, or other adults involved in the social ecology of the child in the administration of social rewards to promote desired behaviors. This can involve praise, encouragement, affection, or physical proximity.
42. **Peer Pairing** – Pairing with another youth of same or similar age to allow for reciprocal learning or skills practice.
43. **Personal Safety Skills** – Training for the youth in how to maintain personal safety of one's physical self. This can include education about attending to one's sense of danger, body ownership issues (e.g., "good touch-bad touch"), risks involved with keeping secrets, how to ask for help when feeling unsafe, and identification of other high-risk situations for abuse.
44. **Physical Exercise –** The engagement of the youth in energetic physical movements to promote strength or endurance or both. Examples can include running, swimming, weight-lifting, karate, soccer, etc. Note that when the focus of the physical exercise is also to produce talents or competence and not just physical activity and conditioning, the code for "Skill Building" (#55) can also be applied.
45. **Play Therapy** – The use of play as a primary strategy in therapeutic activities. This may include the use of play as a strategy for clinical interpretation. Different from Attending (#3), which involves a specific focus on modifying parent-child communication. This is also different from play designed specifically to build relationship quality (#49).
46. **Problem Solving** – Techniques, discussions, or activities designed to bring about solutions to targeted problems, usually with the intention of imparting a skill for how to approach and solve future problems in a similar manner.
47. **Psychoeducational-Child** – The formal review of information with the child about the development of a problem and its relation to a proposed intervention.
48. **Psychoeducational-Parent** – The formal review of information with the caregiver(s) about the development of the child's problem and its relation to a proposed intervention. This often involves an emphasis on the caregiver's role in either or both.
49. **Relationship/Rapport Building** – Strategies in which the immediate aim is to increase the quality of the relationship between the youth and the therapist. Can include play, talking, games, or other activities.
50. **Relaxation** – Techniques or exercises designed to induce physiological calming, including muscle relaxation, breathing exercises, meditation, and similar activities. Guided imagery exclusively for the purpose of physical relaxation is also coded here.
51. **Response Cost** – Training parents or teachers how to use a point or token system in which negative behaviors result in the loss of points or tokens for the youth.
52. **Response Prevention** – Explicit prevention of a maladaptive behavior that typically occurs habitually or in response to emotional or physical discomfort.
53. **Self-Monitoring** – The repeated measurement of some target index by the child.
54. **Self-Reward/Self-Praise** – Techniques designed to encourage the youth to self-administer positive consequences contingent on performance of target behaviors.

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55. **Skill Building** – The practice or assignment to practice or participate in activities with the intention of building and promoting talents and competencies.
56. **Social Skills Training** – Providing information and feedback to improve interpersonal verbal and non-verbal functioning, which may include direct rehearsal of the skills. If this is paired with peer pairing (#42), that should be coded as well.
57. **Stimulus/Antecedent Control** – Strategies to identify specific triggers for problem behaviors and to alter or eliminate those triggers in order to reduce or eliminate the behavior.
58. **Supportive Listening** – Reflective discussion with the child designed to demonstrate warmth, empathy, and positive regard, without suggesting solutions or alternative interpretations.
59. **Tangible Rewards** – The training of parents or others involved in the social ecology of the child in the administration of tangible rewards to promote desired behaviors. This can involve tokens, charts, or record keeping, in addition to first-order reinforcers.
60. **Therapist Praise/Rewards** – The administration of tangible (i.e., rewards) or social (e.g., praise) reinforcers by the therapist.
61. **Thought Field Therapy** – Techniques involving the tapping of various parts of the body in particular sequences or "algorithms" in order to correct unbalanced energies, known as thought fields.
62. **Time Out** – The training of or the direct use of a technique involving removing the youth from all reinforcement for a specified period of time following the performance of an identified, unwanted behavior.
63. **Twelve-Step Program** – Any programs that involve the twelve-step model for gaining control over problem behavior, most typically in the context of alcohol and substance use, but can be used to target other behaviors as well.

For medication interventions please list each psychiatric medication the youth is taking (e.g., Adderall ER), describe the prescribed total daily dose for each medication (e.g., 30 mg,), identify the prescribed dose schedule (e.g., 2x/week, 3x/day, 15-10-5/day, etc.), place a check mark in the appropriate box if there was a change in the medication or regimen during the reporting month, and provide a description of the change on the line to the right (e.g., new medication, daily dosage change from 10 to 30 mg, change in dose schedule from 5-5/day to 10-10-10/day, etc.).

For Projected End Date, please indicate the expected date for termination of the services for which this form was completed.

For Discharged During Month please indicate if the youth was discharged from your program during the reporting month. If the youth was discharged, please indicate the Living Situation that the youth was entering upon discharge and the Reason for Discharge. For Projected End Date, please indicate the expected date for termination of the services for which this form was completed.

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Living Situation upon Discharge

Please place a mark (X, ✔) to the left of statement that best describes the type of living environment in which the youth was expected to reside at the time of discharge. Please select only one option. If the youth's living situation at discharge is not well described by the following list of definitions, please mark the "other" box and write in the youth's living situation.

1. **Home -** Youth to live in a house, apartment, trailer, hotel, dorm, barrack, and/or single room occupancy. This excludes situations better characterized as foster homes.
2. **Foster Home-**Youth to reside in a foster home or therapeutic foster home. A foster home is a home that is licensed to provide foster care to children, adolescents, and/or adults.
3. **Group Care-**Youth to reside in a group care facility. This level of care may include a group home, therapeutic group home, or board and care. This excludes community-based residential and hospital-based residential care
4. **Residential Treatment-** Youth to reside in a community-based residential treatment, rehabilitation center, or other residential treatment that is not better characterized as a group home or institution/hospital facility. An organization, not licensed as a psychiatric hospital, whose primary purpose is the provision of individually planned programs of mental health treatment services in conjunction with residential care for children and youth. The services are provided in facilities that are certified by state or federal agencies or through a national accrediting agency.
5. **Institutional/Hospital-**Youth resides in an institutional care or hospital-based residential care facility with care provided on a 24 hour, 7 day a week basis. This level of care may include a skilled nursing/intermediate care facility, nursing homes, institutes of mental disease, inpatient psychiatric hospital, psychiatric health facility, Veterans Affairs hospital, or state hospital.
6. **Jail/Correctional Facility-**Youth resides in a Jail and/or Correctional facility with care provided on a 24 hour, 7 day a week basis. This level of care may include a jail, correctional facility, detention centers, prison, youth authority facility, juvenile hall, boot camp, or boys ranch.
7. **Homeless/Shelter-** A youth is considered homeless if s/he lacks a fixed, regular, and adequate nighttime residence or his/her primary nighttime residency is a supervised publicly or privately operated shelter designed to provide temporary living accommodations, an institution that provides a temporary residence for individuals intended to be institutionalized, or a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings (e.g., on the street). Youth who were discharged due to extended runaway or elopement episode should be recorded in this category.

Reason(s) for Discharge

Please place a mark (X, ✔) to the left of each statement that describes the reasons for discharging youth from the program during the reporting month. There is no limit to how many may be checked. If the discharge reason is not well characterized by the following list of definitions, please mark the "other" box and write in the reason.

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1. **Success/Goals Met-**Youth was clinically discharged due to sufficient treatment progress (e.g., symptoms reduced, functioning improved), treatment goals were met, youth was evaluated and services were determined unnecessary, services were completed, or youth was moving to a less restrictive and intensive level of care.
2. **Insufficient Progress-**Youth was discharged from service without showing sufficient treatment progress to be judged as clinically successful (i.e., little symptom reduction, improvement in functioning, or goal attainment was achieved).
3. **Family Relocation-**Youth was discharge because the youth and family moved out of state or out of the service area.
4. **Runaway/Elopement-**Youth was discharged in association with an extended period of unavailability for treatment because the youth had runaway from home or eloped from the program.
5. **Refuse/Withdraw-**Youth was discharged due to parental refusal, non-participation in treatment, lack of consent, or other indication that client withdrew from services against professional advice.
6. **Eligibility Change-**Youth was discharged in association with a change in eligibility for services, such as a termination of a court order or commitment, aging out of child and adolescent services, loss of Medicaid insurance, etc.

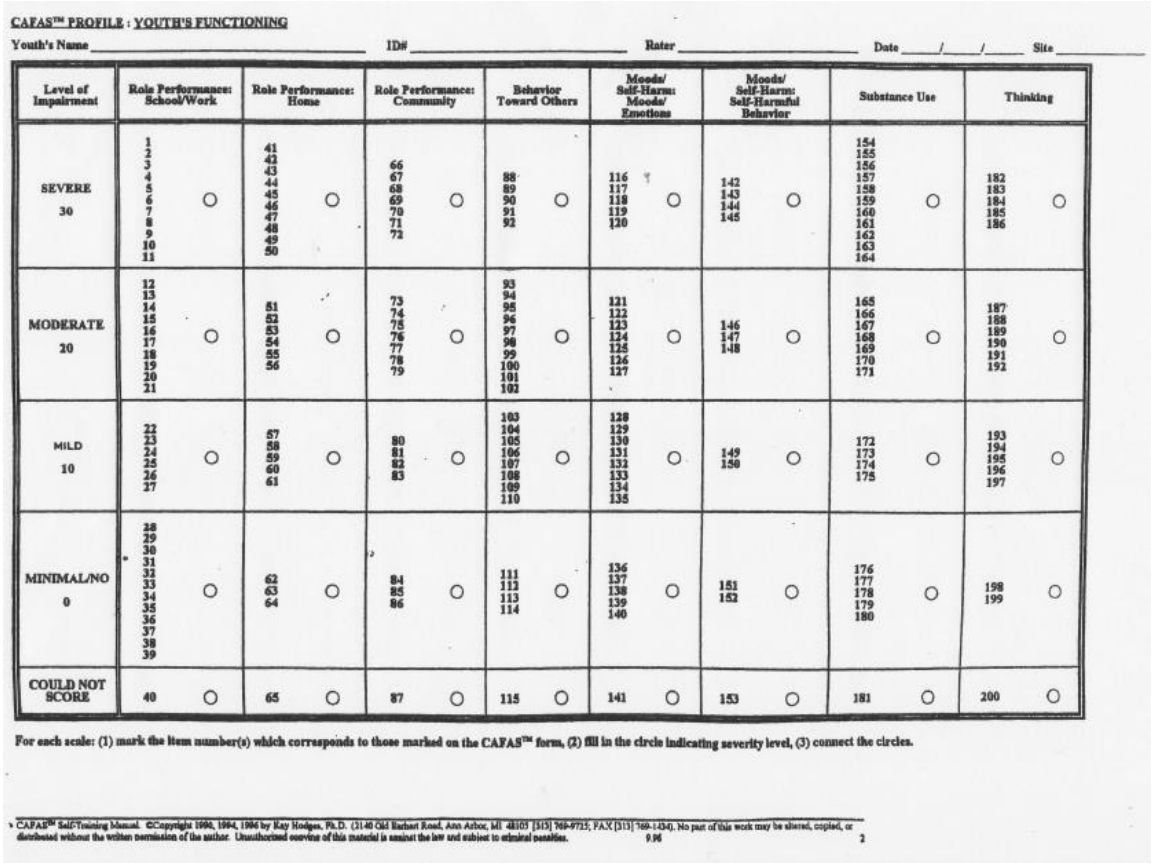
Please provide any other Comments or Suggestions for the youth's care coordinator you think would be important.

If scores are available on any of the Outcome Measures recommended in the Interagency Practice Guidelines, please provide them along with dates in the optional section provided. Include whether or not youth was arrested during the past month, and an estimate of the percentage of school days that were attended. If school is attended in a residential setting, this counts toward the percentage of days attended.

For the CAFAS, the numbered spaces refer to the following scales: 1-School, 2-Home, 3-Community, 4-Behavior Towards Others, 5-Moods/Emotions, 6-Self-Harm, 7-Substance, 8-Thinking. "Total" refers to the sum of these 8 scales.

Please write the name of the agency including location (e.g., Maui, Big Island) and name of the clinicians (along with CAMHMIS ID#) and provider, along with appropriate signatures of the clinician completing the form and the qualified supervisor. Note the date that the form was submitted electronically to CAMHD and provide name of Care Coordinator.

Appendix C: Child and Adolescent Functional Assessment Scale (CAFAS)



CAFAS™ PROFILE : YOUTH'S FUNCTIONING

Youth's Name _____ ID# _____ Rater _____ Date ____/____/____ Site _____

Level of Impairment	Role Performance: School/Work	Role Performance: Home	Role Performance: Community	Behavior Toward Others	Moods/ Self-Harm: Moods/ Emotions	Moods/ Self-Harm: Self-Harmful Behavior	Substance Use	Thinking
SEVERE 30	1 2 3 4 5 6 7 8 9 10 11 ○	41 42 43 44 45 46 47 48 49 50 ○	66 67 68 69 70 71 72 ○	88 89 90 91 92 ○	116 117 118 119 120 ○	142 143 144 145 ○	154 155 156 157 158 159 160 161 162 163 164 ○	182 183 184 185 186 ○
MODERATE 20	12 13 14 15 16 17 18 19 20 21 ○	51 52 53 54 55 56 ○	73 74 75 76 77 78 79 ○	93 94 95 96 97 98 99 100 101 102 ○	121 122 123 124 125 126 127 ○	146 147 148 ○	165 166 167 168 169 170 171 ○	187 188 189 190 191 192 ○
MILD 10	22 23 24 25 26 27 ○	57 58 59 60 61 ○	80 81 82 83 ○	103 104 105 106 107 108 109 110 ○	128 129 130 131 132 133 134 135 ○	149 150 ○	172 173 174 175 ○	193 194 195 196 197 ○
MINIMAL/NO 0	28 29 30 31 32 33 34 35 36 37 38 39 ○	62 63 64 ○	84 85 86 ○	111 112 113 114 ○	136 137 138 139 140 ○	151 152 ○	176 177 178 179 180 ○	198 199 ○
COULD NOT SCORE	40 ○	65 ○	87 ○	115 ○	141 ○	153 ○	181 ○	200 ○

For each scale: (1) mark the item number(s) which corresponds to those marked on the CAFAS™ form, (2) fill in the circle indicating severity level, (3) connect the circles.