

Parent Emotion Socialization and Treatment Outcomes for Children with Oppositional Defiant
Disorder: The Mediating Role of Emotion Regulation

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Abstract

Oppositional Defiant Disorder (ODD), characterized by irritability and defiant behavior, is associated with several negative outcomes in childhood and adulthood (APA, 2000; Webster-Stratton, 1996). There are a variety of approaches to treating ODD that differ in their focus on parents, children, or both parent and child (Greene & Ablon, 2005; Kazdin, 2005). These treatments also target different underlying processes of oppositional behaviors, such as parenting behaviors and children's emotion regulation. Research suggests that parent emotion socialization practices may indirectly influence externalizing behaviors, such as those present in ODD, through children's emotion regulation abilities (Eisenberg, Cumberland, & Spinrad, 1998). The present study examines this mediation model in children diagnosed with ODD ($n = 100$; 58 boys) who received either Parent Management Training or Creative & Proactive Solutions. Findings indicate that families receiving CPS exhibited higher decreases in ODD symptoms than those receiving PMT. There was no evidence for an indirect effect of emotion socialization on symptoms of ODD. However, increases in emotion encouraging, emotion discouraging, and emotion regulation were associated with decreases in ODD symptoms, whereas increases in problem solving were associated with increases in ODD symptoms. There were also pre-treatment indicators of children's treatment response, such as parent's problem solving, children's emotional lability, and ADHD symptoms. These results offer treatment implications, regarding the importance of both emotion socialization and emotion regulation in treatment improvement, as well as factors that may contribute to treatment response.

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Parent Emotion Socialization and Treatment Outcomes for Children with Oppositional Defiant Disorder: The Mediating Role of Emotion Regulation

Introduction

Oppositional Defiant Disorder (ODD) is an externalizing behavior disorder associated with risk for other psychological disorders, decreased social competence, and academic difficulties (Burke, Loeber, & Birmaher, 2002). Emotional skills, such as emotion regulation, have been implicated in ODD. Symptoms of ODD, such as expressing anger or impulsivity, reflect an under-regulation of emotion and correspond to lower emotion regulation abilities (Eisenberg et al., 2001). With typically developing children, parental emotion socialization strategies that validate emotions, encourage appropriate emotional expression, and problem-solve about emotions are associated with better child emotion regulation. Further, this research shows that parental emotion socialization indirectly affects children's behavior problems and positive outcomes through children's emotion regulation abilities (Cunningham, Kliever, & Garner, 2009; Gottman, Katz, & Hooven, 1996; Ramsden & Hubbard, 2002). Thus, emotion regulation and emotion socialization may be relevant treatment considerations in reducing behavior problems for children with ODD.

The purpose of the current study is to test a mediational model proposing that parents' change in emotion socialization from pre- to post-treatment will predict children's decrease in oppositional behaviors through the mediator of children's increase in emotion regulation over the course of treatment. I also test whether treatment type (Parent Management Training, the standard behavioral treatment for ODD, or Creative & Proactive Solutions, a newer alternative treatment for ODD that targets parent and child emotional skills) influences parents' change in emotion socialization strategies. In the following sections I first discuss the characteristics of

ODD. I then describe the two treatments used in this study, Parent Management Training (PMT) and Creative & Proactive Solutions (CPS). Afterwards, I turn to the central role of emotion regulation in oppositional behaviors, and then review the research demonstrating the influence of emotion socialization on emotion regulation. I conclude the introduction by discussing support for the proposed mediational model and providing an overview of the current study.

Oppositional Defiant Disorder

Definition. Oppositional Defiant Disorder (ODD) is characterized by negative, defiant, and disobedient behavior towards authority figures. Specifically, children with ODD may frequently lose their temper, argue with adults, deliberately annoy people, and be spiteful or resentful (APA, 2000). To meet criteria for ODD, these behaviors must be present for at least six months and cause significant impairment in academic, social, or occupational functioning. Further, children must not meet criteria for similar externalizing disorders, such as Conduct Disorder or, if above 18 years of age, Antisocial Personality Disorder (APA, 2000).

Disruptive behavior is developmentally normative in early years of life, thus ODD typically manifests as a history of aggressive behavior in toddlerhood and preschool years that continues into elementary school, at which point it is considered a clinically relevant problem (Loeber, Tremblay, Gagnon, & Charlebois, 1989). In elementary school, these disruptive behaviors amplify and may become more violent in nature, such as setting fires, vandalism, cheating, and weapon use. Lastly, the severity of ODD has typically been conceptualized in research as the number of symptoms present (Burke et al., 2002). Considering severity is especially relevant for understanding prognosis, because symptom severity is indicative of treatment response. Research demonstrates that those with more severe symptom presentation may not respond as well to treatment (Reyno & McGrath, 2005).

Comorbidity. ODD exhibits heterotypic continuity, as it relates to the presence of several other disorders at various points in development. ODD is often a precursor to Conduct Disorder (CD), which is characterized by destruction of property and violating the rights of others (Burke et al., 2002). Indeed, there has been longstanding debate about whether ODD and CD are different levels of severity of the same disorder, because there is considerable symptom overlap. However, ODD is not always predictive of CD; research indicates that some children with ODD never develop CD and others with CD did not have a history of ODD, suggesting that they are distinct disorders (Lahey, Loeber, Quay, Frick, & Grimm, 1992).

ODD is also associated with Antisocial Personality Disorder in adulthood, which is characterized by a pervasive pattern of disregard for and violation of the rights of others (Burke et al., 2002). Concurrently, ODD is highly comorbid with Attention Deficit Hyperactivity Disorder (ADHD), an externalizing disorder characterized by inattentiveness, hyperactivity, and impulsivity. ODD also emerges earlier in life when comorbid with ADHD (Burke et al., 2002). ODD also demonstrates comorbidity with anxiety disorders, in which individuals have excessive worry (Nock, Kazdin, Hirpi, & Kessler, 2007). Similar to symptom severity, comorbidity with another psychological disorder influences treatment outcomes, as those who are comorbid have a poorer treatment prognosis (Reyno & McGrath, 2005). Taken together, ODD demonstrates comorbidity with a number of externalizing and internalizing disorders. Because the present study focuses on externalizing symptoms associated with ODD, comorbidity with ADHD, another externalizing disorder, will be controlled for in analyses.

Demographics. Research demonstrates that the prevalence of ODD symptoms differs with respect to various demographics. A review by Burke and colleagues (2002) suggests that symptoms of ODD are three to four times more likely in boys than girls. Oppositional behavior

and aggression have been found to peak midway through elementary school and then decrease into adolescence, at which point property and status offenses were more prevalent (Lahey et al, 2000). Regarding ethnic differences, research demonstrates that oppositional behaviors were more prevalent in non-Hispanic white children than in Hispanic children (Breslau, Kendler, Su, Gaxiola-Aguilar, & Kessler, 2005). Further, these behavior problems have been more prevalent in economically disadvantaged families, particularly those living in urban areas (Loeber, Burke, Lahey, Winters, & Zera, 2000). Because the present study incorporated both genders and families from a variety of socioeconomic and ethnic backgrounds, demographic differences in oppositional behaviors will be examined prior to the primary analyses in order to identify potential control variables. Middle childhood, or elementary school aged children, is the focal age group for the present study, thus age differences in oppositional behaviors will also be explored.

Outcomes. ODD is associated with several negative outcomes in adolescence and adulthood. In a ten-year longitudinal study of elementary school-age children with ODD, Biederman and colleagues (2002) reported that ODD in childhood was associated with major depression in adulthood. Further, children with ODD had a larger risk of CD in adolescence and Antisocial Personality Disorder in adulthood. The National Comorbidity Survey Replication (Nock et al., 2007) supported these findings and also indicated that ODD was associated with substance use disorders, anxiety disorders, and difficulties with impulse control.

Further, children with ODD may also experience peer rejection, be perceived by peers as hostile, and receive more hostile reactions from peers (Coie, 1990). While symptoms of ODD in elementary school aged children have been linked to academic problems, this link was better explained by the consistent overlap between aggression and difficulties with

inattention/hyperactivity, as the latter was a stronger predictor of academic difficulties in elementary school (Hinshaw, 1992). However, antisocial behavior has been associated with academic underachievement and school drop-out in adolescence (Hinshaw, 1992; Webster-Stratton, 1996). Taken together, children with ODD are at a greater risk for future psychological, social, and academic problems, highlighting the need to treat this disorder in childhood to potentially mitigate adverse outcomes later on in life. Next, I will discuss two empirically supported treatments for oppositional youth, Parent Management Training and Creative & Proactive Solutions.

Treatment

Parent Management Training. The majority of psychological treatment approaches for children with disruptive behaviors focus on modifying parenting practices, such as Parent Management Training (PMT; Brestan & Eyberg, 1998; Kazdin, 2005). PMT is an empirically supported treatment for ODD that treats flawed parenting practices as an origin of children's disruptive behaviors. PMT teaches the parent to identify, define, and observe their child's behavior in order to promote desired behaviors, such as prosocial behavior, and decrease oppositional behaviors. For example, parents learn to properly implement commands, contingent reinforcement, and time outs to their children. This treatment typically lasts 6-8 weeks and involves at least one of the child's parents (Kazdin, 2005). While there are elements of treatment that incorporate the child, the majority of treatment focuses on modifying parent behaviors. Several randomized controlled trials have demonstrated that PMT was superior to existing treatment and control conditions in treating disruptive behaviors and promoting positive social behaviors, with children maintaining treatment gains 1-3 years after treatment (Feldman & Kazdin, 2005).

Although PMT is efficacious in decreasing children's disruptive behavior problems, there have been inconsistencies in replicating effects across studies and, in some instances, symptoms did not decrease below the clinical level (Burke et al., 2002; Webster-Stratton & Hammond, 1997). Research suggests that parent-focused treatment programs might not be the most effective, as they do not always translate to children's behavior improvement in other settings, such as school. Further, child risk factors for behavior problems, such as deficits in problem solving and social skills, are not addressed with parent-focused treatments (Webster-Stratton & Hammond, 1997).

In this light, Webster-Stratton and Hammond (1997) posited that families with children with oppositional behaviors will respond better to treatments that equally incorporate the parent and child. In their comparison of a parent-focused intervention, child-focused intervention, and parent-child intervention, they reported that families who received treatment with both parent and child components experienced more improvement than those who only received parent or child intervention. Specifically, their findings indicate a decrease in children's behavior problems, as well as an increase in children's social problem solving and maternal praise towards children. Further, there was a significant improvement in parent-child interactions in solving problems. These treatment gains maintained at a one-year following treatment. The authors suggest that incorporation of both child and parent interventions addresses both parent and child risk factors, leading to a more effective treatment (Webster-Stratton & Hammond, 1997). Taken together, it seems that both parent and child involvement in treatment may lead to better prognosis. Creative & Proactive Solutions is one such treatment, which I will explain in the following section.

Creative & Proactive Solutions. Creative & Proactive Solutions (CPS; Greene, 2011; Greene & Doyle, 1999), previously known as Collaborative Problem Solving, is a family-based cognitive-behavioral treatment intended for dysregulated and oppositional children. Rather than focusing on faulty parenting practices, the CPS approach considers children's symptoms as a manifestation of parent-child incompatibility and thus the goal is to improve this compatibility. Over the course of treatment, the clinician helps parents to discover factors underlying child's behavior problems, decide on priority problems to tackle, learn how to collaboratively problem solve with the child, and address other family issues. In order to simplify the transition from treatment to home, the parent training occurs in the context of parent-child interactions. Research demonstrates CPS to be effective in reducing children's behavior problems over and above a variety of parent training interventions, both at post-treatment and a four-month follow-up (Greene et al., 2004).

Notably, CPS aims to increase parent and child emotional awareness and identification, emotion regulation, and social skills. Therefore, CPS directly targets emotion regulation and foundational skills for parental emotion socialization. Fostering problem solving skills is particularly relevant for children with ODD, because children with disruptive behaviors have been shown to solve problems in a more hostile manner (Rubin & Clark, 1983; Rubin, Moller, & Emtage, 1987). In comparison to typically developing children, Webster-Stratton and Lindsey (1999) found that children with disruptive behaviors had fewer positive problem solving skills and more negative conflict management strategies. Moreover, problem-solving training in children has been shown to decrease oppositional behaviors at home and school (Webster-Stratton, Reid, & Hammond, 2001).

In the present study, I will compare families receiving CPS to those receiving PMT in order to examine whether the two treatments are differentially effective in supporting change in parental emotion socialization, child emotion regulation, and child oppositional behaviors. It is expected that parents receiving CPS, compared with those receiving PMT, will show a greater increase in encouraging children's emotions and a greater decrease in discouraging children's emotions due to the emphasis on increasing awareness and identification of children's emotions. Given the focus of CPS on problem solving training, it is expected that parents receiving CPS will show a greater increase in problem solving with their children than those receiving PMT. Further, it is expected that children receiving CPS will show a greater increase in emotion regulation and experience a greater decrease in oppositional behaviors from pre-treatment to post-treatment than those receiving PMT. I now turn to the inverse relation between children's emotion regulation skills and oppositional behaviors.

Emotion Regulation as an Indicator of Oppositional Behaviors

Emotion regulation, defined as the ability to manage one's emotions in accordance with the demands of the situation, is a skill that develops in early and middle childhood (Cassano, Perry-Parrish, & Zeman, 2007; Saarni, 1999). This skill is flexible and goal directed, in that it is exercised when necessary to exhibit socially appropriate behaviors (Campos, Campos, & Barrett, 1989; Thompson, 1994). Therefore, emotion regulation manifests as situationally-appropriate emotion expression, as one experiences an emotion and modulates its expression given the context (Shields & Cicchetti, 1997). Research regarding emotion regulation demonstrates this skill to be diagnostically relevant for child psychopathology. Children's emotion regulation difficulties, particularly with negative affect, are an established predictor of behavior problems

and considered a risk factor for psychopathology (Cicchetti, Ackerman, & Izard, 1995; Röhl, Koglin, & Petermann, 2012).

In particular, difficulties with emotion regulation can result in intense emotion expression, similar to the irritability present in ODD. For example, some ODD symptoms, such as rumination, holding grudges, and desire for revenge, contain emotional components and reflect the demonstration of inflexible emotion regulation strategies (Burke et al., 2002). Research by Rydell and colleagues (2003) demonstrated that difficulties with anger regulation in preschool children were predictive of oppositional behaviors in elementary school. Eisenberg and colleagues (2001) discovered similar results when comparing parent reports of 5-8 year old children with and without behavior problems. They reported that children with oppositional behaviors demonstrated more anger and impulsivity, as well as lower emotion regulation abilities, than children without behavioral difficulties. Specific to ODD, Casey's (1996) review of literature pertaining to emotion regulation in psychiatric samples showed that children with ODD display more negative affect than non-disordered children when in the presence of background anger, suggesting an under-regulation of emotion.

Another point of view is that children's reactivity may also contribute to their behavior problems (Morris, Silk, Steinberg, & Robinson, 2007). That is, highly emotionally reactive children, such as children with ODD, may need to engage in more emotion regulation strategies than other children in order to manage their intense affect. In this sense, it is not that children with ODD are not regulating their emotions but rather that it requires more emotion regulation to compensate for their high level of reactivity.

Taken together, a growing body of research implicates emotion regulation as a contributor to children's behavior problems, indicating that there is a need to foster these skills in

children with ODD. As noted above, CPS specifically targets both parent and child emotional awareness and emotion regulation. In the present study, it is expected that children who receive CPS will demonstrate increased emotion regulation from pre-treatment to post-treatment more so than those who receive PMT. From pre-treatment to post-treatment, change in children's emotion regulation is also expected to predict change in children's oppositional behaviors. Because parents shape children's emotion regulation abilities through emotion socialization, in which they teach and demonstrate appropriate emotion expression (Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997), I turn to emotion socialization in the next section.

Emotion Socialization as a Foundation for Emotion Regulation

A growing body of research suggests that children's emotion regulation deficits and subsequent behavior problems also have origins in parental approaches to children's emotions (Eisenberg, Zhou, Spinrad, Valiente, Fabes, & Liew, 2005). Known as emotion socialization, this is the process through which parents teach and model emotions for their children, as well as respond to their children's emotions (Morris et al., 2007; Saarni, Campos, Camras, & Witherington, 2006). In an influential heuristic model of emotion socialization, Eisenberg, Cumberland, and Spinrad (1998) describe parental discussion of emotion and reactions to their children's emotions as two key emotion-related parenting practices that influence children's emotion regulation and thereby influence children's social behavior and social competence. Broadly speaking, parental emotion-related discussion and reactions may either validate and encourage children's experience and appropriate expression of emotions, or dismiss and discourage children's experience and expression of emotions. These contrasting styles have been termed *emotion coaching* and *emotion dismissing* by Gottman and colleagues (1997). In the sections below, I first discuss literature on parents' encouragement of children's emotions

and then research on parents' discouragement of children's emotions. I conclude by turning to a specific parental strategy, problem-solving about emotions, which may be especially relevant for children with ODD because it models how to resolve distressing scenarios that may elicit negative affect.

Emotion encouragement. Emotion encouragement is conceptualized as parental acknowledgement and validation of children's emotions. This strategy is grounded in the belief that children's emotions have value and should be expressed (Gottman et al., 1997). Several studies have demonstrated an association between emotion encouragement and emotion regulation in typically developing elementary school age children. Kliewer and colleagues (1996) reported that parental acceptance and support of emotion expression in fourth and fifth grade children was linked to increased support seeking by children, one of the aforementioned strategies to manage affect (Kliewer, Fearnow, & Miller, 1996). Ramsden and Hubbard (2002) provided converging evidence to support this link, reporting that parental acceptance of children's emotions was associated with emotion regulation abilities in fourth grade children (Ramsden & Hubbard, 2002).

Regarding atypically developing children, there is a dearth of research on the link between emotion encouragement and emotion regulation in children with behavior problems. Shipman and Zeman (2001) examined these constructs in maltreated and non-maltreated children and demonstrated that mothers of maltreated children exhibited less understanding of their children's emotions and coping strategies for their children's emotions than mothers of non-maltreated children. In maltreated children, maternal support for children's emotions was associated with children's emotion regulation abilities. More recently, Dunsmore, Booker, and Ollendick (2013) examined parent emotion coaching and emotion regulation in children

diagnosed with ODD. They reported that parental coaching of children's emotions was associated with children's emotion regulation abilities. With children aged four to six years, Katz and Windecker-Nelson (2004) reported that parents with aggressive children engaged in less adaptive coping strategies with their children than did parents with nonaggressive children. Taken together, there is evidence to support the claim that parental emotion encouragement is linked to children's emotion regulation abilities in atypically developing children, yet this socialization strategy may not be as prevalent in families with children experiencing atypical development compared with families with typically developing children.

Emotion discouragement. Emotion discouraging is characterized by parental disapproval of emotion expression. Parents who employ this strategy may be uncomfortable with emotions and thus seek to minimize or punish their children's emotions to decrease children's emotion expression (Gottman et al, 1997). Eisenberg and colleagues (1998) argue that children who receive punitive reactions for their emotions do not learn regulation strategies and therefore may experience more intense emotions. In a study of four to six year old typically developing children, Eisenberg and Fabes (1994) reported that mothers' unsupportive reactions to their children's negative emotions were related to children's difficulties regulating such affect. Lunkenheimer and colleagues (2007) replicated these findings with eight to eleven year old children, reporting that parental dismissal of children's negative emotions was a risk factor for emotion dysregulation, or inflexible emotion regulation abilities. Similarly, parental minimization of children's emotions has also been associated with avoidant coping in third to sixth grade children (Eisenberg, Fabes, & Murphy, 1996).

Although there are several studies of emotion discouragement in typically developing children, there is a scarcity of research regarding parental emotion discouragement in families

with atypically developing children. Duncombe and colleagues (2012) conducted one such study, in which they examined children five to nine years of age at risk for externalizing difficulties, such as ODD. They reported that parents' dismissal of children's emotions was associated with children's difficulties with emotion regulation (Duncombe, Havighurst, Holland, & Franklin, 2012). Similarly, Suveg and colleagues (2005) examined parental emotion discouragement in a sample of eight to twelve year old children with or without an anxiety disorder. Their findings indicate that mothers of anxious children spoke less than their child when discussing emotions, used fewer positive words, and discouraged emotions more than mothers of non-anxious children. However, much remains to be discovered regarding parental emotion discouragement in children with oppositional behaviors and how this socialization strategy relates to children's emotion regulation.

Problem solving. Problem solving is a process through which parents aid their child in identifying causes, consequences, and future solutions to emotion eliciting situations (Eisenber et al., 1996). Problem solving can be conceptualized as an emotion socialization strategy, in that the parent is teaching the child appropriate ways to handle emotionally laden situations. However, this strategy is distinct from emotion encouragement and discouragement because it pertains to discussion of the situation or stimuli that elicited the emotion, rather than validating or dismissing the emotion itself. Given that problem solving is a strategy to modulate affect, assisting the child in understanding the problem and developing strategies for future situations can be understood as modeling appropriate coping behaviors and thus indicative of children's emotion regulation abilities (Jones, Eisenberg, Fabes, & MacKinnon, 2002). These linkages have been supported in the literature for typically developing children, though associations differ by parent and child gender. Eisenberg and colleagues (1996) reported that maternal problem-

focused coping was associated with adaptive coping in third to sixth grade children, whereas this link was not present with fathers. Further, parental problem-focused coping has also been linked with modulated affect in first to fourth grade boys, but not girls (Jones et al., 2002).

With respect to atypically developing children, there is little research regarding parental problem solving as a strategy to foster children's emotion regulation, as it is often incorporated as a composite of supportive parenting (Shaffer, Suveg, Thomassin, & Bradbury, 2012; Suveg, Shaffer, Morelen, & Thomassin, 2011). One such study examined nine to thirteen-year-old African American children living in violent urban environments, which has been considered a risk factor for oppositional behaviors. Observations of mother-child conversations of emotions indicated that maternal problem solving suggestions were associated with children's problem-focused coping (Kliewer, Parrish, Taylor, Jackson, Walker, & Shivy, 2006). However, much remains to be discovered, as the majority of research regarding problem solving strategies and atypically developing children pertains to the effectiveness of problem solving interventions for children with behavior problems, rather than parent problem solving strategies (Webster-Stratton et al., 2004).

Summary. Taken together, research demonstrates that how parents discuss emotions with children and react to children's emotions is indicative of children's ability to modulate their emotional experience and expression (Gottman et al., 1997). This link is particularly important to consider during middle childhood, at which point children begin to independently manage their emotions (Saarni, 1999). Parental responses that encourage children to express emotion and develop solutions for their emotional distress may foster children's abilities to handle intense emotional experiences. Conversely, punitive and dismissive responses to children's emotions may not provide children with knowledge of adaptive regulation skills. It is important to note

that children's emotion regulation abilities may also influence parent's socialization strategies, as there is an emerging body of work regarding parent-child bidirectionality (Morris et al., 2007). However the present study will focus on a parent-driven model, as the one of the study aims is to examine whether parent socialization strategies change as a result of receiving treatment, and then correspond to changes in children's emotion regulation.

Children who are highly reactive, such as children with ODD, may stand to receive a greater benefit from parent emotion socialization as they may need to implement more emotion regulation strategies to behave in a socially appropriate manner. By the same token, they may also be more vulnerable to the deleterious effects associated with minimizing and punitive socialization strategies, as this may lead to deficits in what are already insufficient emotion regulation abilities (Morris et al., 2007). Moreover, the aforementioned research indicates that supportive strategies were less prevalent in atypically developing children (Katz & Windecker-Nelson, 2004). Thus, such families may benefit from an intervention that fosters these practices, particularly during the developmental stage in which children take on a larger role in managing their own emotions.

In this light, the aims of the CPS treatment involve fostering particular emotion socialization strategies. Specifically, CPS is designed to increase parent and children's emotional awareness, modeling a supportive rather than dismissive approach to emotions. Further, CPS is designed to enhance parent and children's problem solving abilities, a component of emotion socialization that models effective emotion regulation. Conversely, PMT focuses more on child compliance to adult commands rather than emotion socialization practices and emotional competence (Greene et al., 2004). In the present study, it is expected that treatment type will predict changes in parents' emotion socialization, with families who received

CPS experiencing greater change in emotion socialization than those who received PMT. CPS is intended to foster children's emotion regulation, but given the aforementioned associations between emotion socialization and emotion regulation, it is expected that changes in parent emotion socialization will mediate the link between treatment type and change in children's emotion regulation.

Support for a Mediation Model

The above literature review provides evidence for links between parent emotion socialization practices, children's emotion regulation skills, and children's ODD symptoms. Both conceptual and empirical work support a mediation model, with beneficial emotion socialization indirectly influencing children's ODD symptoms through the mediator of child emotion regulation. Please see Figure 1.

In regard to theoretical work, Eisenberg, Cumberland, and Spinrad's (1998) heuristic model provides support for emotion regulation as a mediator of parent emotion socialization and children's social behavior, or behavior problems. Namely, parents socialize children through their reactions to children's emotion and parent-child discussion of emotions. These behaviors shape children's experience, expression, and regulation of emotion. These emotional competencies, in turn, are associated with social competence. That is, children who can effectively manage their emotions can use this skill to behave in a socially appropriate manner. Conversely, children who cannot regulate their emotions may have more difficulties with socially appropriate behavior and exhibit behavior problems (Eisenberg et al., 1998).

Empirical work also demonstrates the indirect influence of emotion socialization on children's behavior problems through emotion regulation. Regarding concurrent designs, Eisenberg and colleagues (2001) reported that parent's observed expressivity with their four to

six year old children was associated with children's observed persistence during a frustration task, as well as teacher and parent reported emotion regulation. Parent's expressivity also indirectly influenced elementary school age children's social competence and oppositional behaviors through these indices of emotion regulation (Eisenberg et al., 2001). In a similar study of typically developing fourth grade children, Ramsden and Hubbard (2002) obtained maternal reports of family expressivity, maternal emotion coaching and children's emotion regulation, as well as teacher reports of children's aggressive behaviors. While there was no direct effect of family expressivity and maternal coaching on children's aggression, there was an indirect association through children's emotion regulation, providing support for a mediational model (Ramsden & Hubbard, 2002).

There are also longitudinal designs that support a similar mediational model. Eisenberg and colleagues (2005) examined effortful control, a construct thought to contribute to emotion regulation, as a mediator of parental expressivity and children's oppositional behaviors in typically developing children at nine, eleven, and thirteen years of age (Eisenberg et al., 2005). Their findings indicate that observed parental expressivity with children at age nine predicted children's effortful control at age eleven, which, in turn, predicted oppositional behaviors in adolescence. However, additional longitudinal designs of a mediational model with emotion regulation are needed, particularly in atypically developing child populations.

Taken together, it seems that parents who encourage and accept their children's emotions have children who exhibit less oppositional behaviors, by virtue of children's ability to modulate affect (Duncombe et al., 2012). As such, I hypothesize that from pre-treatment to post-treatment, children's change in emotion regulation will mediate the association between change in parents' emotion socialization practices and change in children's ODD symptoms.

The Present Study

The present study seeks to examine parents' emotion socialization behaviors and children's ODD symptoms with respect to children's emotion regulation abilities. Although children's emotion regulation is established in the literature as a mediator of emotion socialization and behavior problems, the present study is unique in several respects. First, the present study innovates by using behavioral observations to assess three key aspects of parent emotion socialization: encouraging of children's emotions, discouraging of children's emotions, and problem-solving about emotions. These constructs are especially appropriate for the middle childhood sample in this study and are specifically targeted in the CPS treatment approach.

Second, the present study examines parent emotion socialization strategies, children's emotion regulation, and ODD symptoms over the course of CPS and PMT treatments. Thus, the present study may provide a new perspective on treatment efficacy in regard to the contributions of parent emotion socialization and children's emotion regulation to children's response to treatment. Moreover, this model will be examined in atypically developing children.

There are several hypotheses based on the available literature:

H1) Treatment group differences in changes from pre-treatment to post-treatment:

1a) It is expected that parents receiving CPS will experience a greater change in emotion socialization behaviors from pre-treatment to post-treatment than those receiving PMT.

1b) From pre-treatment to post-treatment, it is expected that children receiving CPS will experience a greater change in emotion regulation than those receiving PMT.

1c) It is expected that children receiving CPS will experience a greater decrease in ODD symptoms from pre-treatment to post-treatment than those receiving PMT.

It should be noted that hypotheses 1b and 1c have already been examined in this dataset.

However, the present study only examines middle childhood. Previous analyses were with a subset of the data and not within these parameters.

H2) A serial multiple mediation model is expected:

2a) From pre-treatment to post-treatment, it is hypothesized that change in parent emotion socialization will mediate the link between treatment type and change in children's emotion regulation abilities.

2b) Change in children's emotion regulation will mediate the link between change in parent emotion socialization strategies and change in children's ODD symptoms, from pre-treatment to post-treatment.

2c) Treatment type will have an indirect effect on children's change in ODD behaviors through change in parent emotion socialization and change in children's emotion regulation.

Method

Participants

This study is part of a larger treatment outcome study (Ollendick et al., 2013). Two hundred seventy-five families were screened via phone interview to determine study eligibility, of which 164 families were eligible and completed a baseline assessment session.

To be included in the study, children had to meet diagnostic criteria for Oppositional Defiant Disorder but not for Conduct Disorder, autism, a pervasive developmental disorder, or psychosis. Further, children could not have estimated Full Scale IQ below 80 or current suicidal or homicidal ideation. These criteria resulted in a final sample of 134 families that participated in the study, 106 of which completed treatment. See Table 1 for more details. Because the present

study focuses on middle childhood, only children 7-12 years of age were included in the analyses ($n = 100$, 58 boys). For a summary of demographic information for this subsample, see Table 2.

Procedure

Families seeking treatment for their children's oppositional behaviors were recruited from a university-based clinic. After completing an initial screening interview via telephone with a research assistant, those meeting inclusion criteria were randomly assigned to a treatment condition (Creative & Proactive Solutions, Parent Management Training, wait-list) and invited for a baseline assessment session. After obtaining written and verbal informed consent, the parent and child completed a structured a clinical interview, measures regarding the child's emotional adjustment and disruptive behaviors, and an emotion discussion task. The first session lasted approximately 2-3 hours.

Families in the CPS and PMT conditions received weekly treatment for ten weeks. Participating families received treatment free of charge, along with \$50 for each assessment session (baseline, post-treatment, six month and one year follow-up). Families assigned to the wait-list condition whose children still met criteria for ODD were provided treatment after a 4-week period.

All clinicians and assessment interviewers were post-masters graduate students in clinical psychology under the supervision of a licensed clinical and were trained on relevant assessments. Assessment interviewers were blind to treatment condition and did not serve as clinicians. All assessments were taped, 30% of which were coded by another therapist blind to the treatment condition, to ensure reliability amongst assessment interviewers.

Measures

Anxiety Disorder Interview Schedule, Fourth Edition (ADIS-IV; Silverman & Albano, 1996). The ADIS-IV is a widely used assessment used to ascertain the presence of a number of child psychiatric disorders. The interview consists of symptom and criteria-relevant questions based on the Diagnostic and Statistical Manual of Mental Disorders, (4th ed, DSM-IV; APA, 2000). In its present use, an interviewer administered the ADIS-IV to the parent at baseline and post-treatment. The ADIS-IV has been found to be a reliable assessment tool, demonstrating test-retest reliability in clinical and community samples (Silverman, Saavedra, & Pina, 2001).

Disruptive Behavior Disorder Rating Scale (DBDRS; Barkley, 1997; Pelham, Gnagy, Greenslade, & Milich, 1992). The DBDRS is a parent report of children's externalizing behaviors. Items are rated on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*very much*) and pertain to the DSM-IV diagnostic criteria of Attention Deficit Hyperactivity Disorder, ODD, and Conduct Disorder. Parents completed this measure at baseline and post-treatment.

In addition to displaying adequate reliability, research demonstrates that the DBDRS items exhibit internal validity and form distinct dimensions representative of ADHD, ODD, and CD (Burns, Walsh, Patterson, Holte, Sommer-Flanagan, & Parker, 1997; Pelham et al., 1992). The subscales of the DBDRS demonstrated adequate reliability in the present study ($\alpha = .63-65$). To examine *change in ODD symptoms* as the outcome variable, children's total score of ODD symptoms at pre-treatment was subtracted from their total score at post-treatment to create a change score. *Change in ADHD symptoms* was also computed in this manner, as ADHD symptoms were examined as a covariate. The Conduct Disorder items were not used in analyses.

Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997). The ERC is a parent report of children's affective behaviors, with 24-items rated on a 4-point Likert scale ranging from 1 (*Never*) to 4 (*Almost Always*). Items pertain to subscales of Lability/Negativity, such as lack of flexibility and mood swings, and Emotion Regulation, characterized by emotional awareness and situationally appropriate emotional displays. Parents completed the ERC at pre-treatment, mid-treatment, and post-treatment. The overall measure exhibits adequate reliability ($\alpha = .89$), as do the Lability/Negativity ($\alpha = .96$) and Emotion Regulation ($\alpha = .83$) subscales. Further, comparisons between the ERC and observations of children's self-regulation demonstrate validity (Shields & Cicchetti, 1997). Though the present study focuses on emotion regulation, lability was also utilized for descriptive purposes. However, several items of the Lability/Negativity scale are reflective of ODD symptoms, thus these items were removed from the Lability/Negativity scale to avoid multicollinearity. See Table 3 for items and the corresponding ODD symptoms. The internal consistency was satisfactory for the Emotion Regulation ($\alpha = .62-.69$) and the revised Lability scale ($\alpha = .73-.78$) at pre-treatment and post-treatment. As with the DBDRS, emotion regulation and lability were examined as change scores. For each subscale, the pre-treatment score was subtracted from the post-treatment score to form *change in emotion regulation* and *change in lability*.

Emotion talk task. Parents and children completed a conversation task intended to facilitate discussion of positive and negative emotions. Dyads were provided with three prompts relevant to the past week, those being to discuss a time that they felt happy with the other person, a time they felt upset (sad/angry/scared) when with the other person, and what they did the previous Sunday. Both parent and child responded to each prompt. Dyads were given nine minutes total for this task, which was recorded and coded. This task was completed at baseline

and post-treatment. In the event that both caregivers were present for this task, data for the parent present across both times points was used for analyses.

Using a coding scheme developed by Dunsmore and colleagues (2013), parents were rated on the degree to which they acknowledged, validated, and encouraged children's emotions during the child's response to each prompt. This construct, *emotion encouragement*, was rated on a 4-point scale, with 0 = no encouragement, 1 = acknowledges the event, 2 = acknowledges the emotion, 3 = emotion coaching. Along the same line, *emotion discouragement* was also coded, regarding parental neglect, overriding, or dismissal children's emotions, with 0 = no encouragement, 1 = dismisses the event, 2 = dismisses the emotion, 3 = overrides emotion, 4 = shows contempt for emotion. *Emotion encouragement* and *emotion discouragement* were coded for all three children's events, though the present study focused on these constructs during the parent-child discussion of the child's negative event. See Appendix A for coding scheme.

Parents were also rated on their problem-solving behaviors during the discussion of the children's negative event, such as discussing causes and consequences of the event and developing solutions. During the child's negative event, parents were rated as 0 = no discussion, 1 = discusses one or two event details, 2 = lectures the child about the problem, 3 = poses a question about causes or consequences, 4 = poses several such questions, 5 = helps the child develop a solution. See Appendix B for coding scheme.

Videos were coded by an undergraduate team led by a graduate student, with 30% of videos coded by the whole team for reliability. The inter-rater reliability for the aforementioned codes was maintained at an intra-class coefficient $> .80$ for all codes. In the event that parent or child named more than one event in their response to the prompt, only the first event was coded. As with the DBDRS and ERC, *emotion encouragement*, *emotion discouragement*, and *problem*

solving were computed as change scores. *Change in emotion socialization* consisted of these three individual change scores, rather than a composite change score. Please see Table 4 for descriptive statistics of the model variables at pre-treatment and post-treatment.

Results

Missing Data

Only 27 of the 100 participants had complete data on all measures at pre-treatment and post-treatment. At pre-treatment, 82 families completed the emotion talk task, 83 completed the DBDRS, and 80 completed the ERC, resulting in complete data for 65 families. At post-treatment, 54 families completed the emotion talk task, 50 completed the DBDRS, and 48 completed the ERC, resulting in complete data for 36 families. No demographic differences were present between those with complete and incomplete data. Thus, missing data was considered to be at random and expectation maximization was implemented to address missing data. This method has been widely used in empirical work (Gold & Bentler, 2000; Tabachnick & Fidell, 2012) and resulted in complete data for all 100 participants¹.

Descriptive Analyses

Demographic differences. Correlations, t-tests, and chi-square analyses were used to examine age, gender, SES and racial/ethnic differences in the proposed model variables, those being treatment type, parent pre- and post-treatment emotion socialization and change in parent emotion socialization, children's pre- and post-treatment emotion regulation and change in children's emotion regulation, and children's pre- and post-treatment ODD symptoms and change in children's ODD symptoms. No demographic differences were found (all $ps > .05$) and thus none were included as control variables in subsequent analyses.

¹ It should be noted that correlational analyses and treatment type differences in these 27 cases were similar in size and direction as those with estimated data ($n = 100$)

Differences from pre-treatment to post-treatment. Paired-samples t-tests examined whether the model variables significantly changed from pre-treatment to post-treatment, in order to ascertain whether there was meaningful change in these variables across the whole sample. Emotion encouraging significantly increased from pre- to post-treatment, $t(99) = -2.33, p = .02, M = 1.47, SD = 1.02$ at pre-treatment and $M = 1.78, SD = .83$ at post-treatment. Emotion regulation also increased from pre-treatment to post-treatment, $t(99) = -3.01, p = .002, M = 23.41, SD = 2.78$ at pre-treatment and $M = 24.05, SD = 3.20$ at post-treatment.

Conversely, lability decreased from pre-treatment to post-treatment, $t(99) = 11.95, p = .001, M = 28.07, SD = 4.16$ at pre-treatment and $M = 23.88, SD = 4.10$ at post-treatment. ODD symptoms also significantly decreased from pre-treatment to post-treatment, $t(99) = 13.03, p = .001, M = 5.72, SD = 1.46$ at pre-treatment and $M = 2.80, SD = 2.06$ at post-treatment. Moreover, ADHD symptoms decreased from pre-treatment ($M = 28.97, SD = 9.65$) to post-treatment ($M = 21.69, SD = 10.21$), $t(99) = 10.58, p = .001$. There were no significant differences from pre-treatment to post-treatment for emotion discouraging or problem solving, $ts < -.95, ps > .05$. So, although individual families may have exhibited varying changes in these constructs from pre-treatment to post-treatment, these changes occurred reliably across the sample only for parents' emotion encouragement, children's emotion regulation, lability, ADHD symptoms, and ODD symptoms.

Bivariate Associations

For descriptive purposes, bivariate correlations were calculated to examine associations among model variables at pre-treatment and post-treatment (Table 5).

Correlations among pre-treatment variables. Pre-treatment emotion encouraging was associated with pre-treatment problem solving, and inversely associated with pre-treatment

emotion discouraging and pre-treatment ODD symptoms. Pre-treatment emotion regulation was negatively associated with pre-treatment ODD symptoms. Further, pre-treatment ADHD symptom were associated with pre-treatment lability

Correlations among post-treatment variables. Post-treatment emotion encouraging was associated with post-treatment problem solving and emotion regulation, as well as inversely associated with ODD symptoms and ADHD symptoms. Post-treatment problem solving and emotion regulation were negatively associated with post-treatment ODD symptoms. Post-treatment ODD symptoms were associated with post-treatment lability and ADHD symptoms. Post treatment emotion regulation was inversely correlated with post-treatment lability and ADHD symptoms. Lastly, lability was associated with ADHD symptoms.

Stability from pre-treatment to post treatment. Stability in model variables from pre-treatment to post-treatment was evident through significant correlations for emotion discouraging, emotion regulation, lability, ODD symptoms, and ADHD symptoms. Correlations did not demonstrate stability from pre-treatment to post-treatment for emotion encouraging or problem solving.

Correlations of pre-treatment variables with post-treatment variables. Pre-treatment problem solving was inversely related to post-treatment lability and ODD symptoms; similarly, pre-treatment emotion regulation was negatively associated with post-treatment lability. Further, pre-treatment lability was negatively associated with post-treatment emotion regulation, as well as associated with post-treatment ADHD symptoms and ODD symptoms.

Change scores. Bivariate correlations were also conducted with the model variables as change scores (Table 6). These correlations demonstrate that increases in emotion encouraging from pre-treatment to post-treatment were linked to decreases in emotion discouraging, increases

in problem solving, and decreases in ODD symptoms. Further, increases in problem solving were associated with increases in emotion discouraging and decreases in emotion regulation abilities. In turn, increases in emotion regulation were linked to decreases in lability, ADHD symptoms, and ODD symptoms. Lastly, increases in ODD symptoms were associated with increases in lability and ADHD symptoms.

Hypothesis Testing: Change Scores

Treatment type differences. Before testing the proposed model, one-way ANOVAs examined treatment type differences in the remaining model variables, with ADHD comorbidity entered as a covariate. There were no differences by treatment type in change in emotion encouragement, change in emotion discouragement, change in problem solving, change in emotion regulation, or change in lability, $F_s < 1.16, p_s > .05$. However, children receiving Creative & Proactive Solutions ($M = -3.36, SD = 2.04$) exhibited more decrease in ODD symptoms than did those receiving Parent Management Training ($M = -2.49, SD = 2.36$), $F(1, 97) = 5.653, p = .02$. Given the treatment type differences in the outcome variable but lack of differences in other model variables, treatment type was entered into the model as a covariate, rather than an independent variable.

Mediation analyses. The hypothesized indirect and direct associations were then examined using the model variables as change scores. Though there were not consistent significant differences from pre-treatment to post-treatment in all model variables, change scores were retained for these analyses because they reflected change at the family level and allowed each family to serve as their own baseline. That is, individual families may have significantly changed from pre-treatment to post-treatment, despite the fact that these changes did not occur at a sample level.

The entire proposed model was tested with bootstrapping analysis via the *MEDIATE* procedure for SPSS (Hayes & Preacher, in press). The *MEDIATE* macro was selected for its ability to examine multiple independent variables and mediators as separate variables, as well as its ability to simultaneously test direct and indirect relations. Thus, the change in emotion socialization variables were entered as individual independent variables, with change in emotion regulation and change in lability entered as individual mediators. As with the previous analyses, ADHD comorbidity was entered as a covariate. Treatment type was also entered as a covariate. This procedure first examined the direct effects of emotion socialization on emotion regulation, lability, and ODD symptoms. Then, the full model was tested, including the indirect effect of emotion socialization on ODD symptoms through emotion regulation and lability.

Regarding the direct effects of emotion socialization on proposed mediators, analyses demonstrate that change in problem solving and change in ADHD symptoms were significantly associated with change in emotion regulation, such that increases in problem solving and ADHD symptoms were linked to decreases in emotion regulation, $F(5, 94) = 5.88, p = .001, R^2 = .20$. There were no significant associations with lability, $F(5, 94) = 1.86, p = .11, R^2 = .04$. Regarding direct effect of emotion socialization on oppositional behaviors, change in emotion encouraging, change in emotion discouraging, change in problem solving, change in ADHD symptoms, and treatment type were significantly associated with change in ODD symptoms, $F(5, 94) = 8.50, p = .001, R^2 = .27$. Specifically, increases in emotion encouraging and emotion discouraging were associated with decreases in ODD symptoms, whereas increases in problem solving and ADHD symptoms were linked to increases in ODD symptoms. As mentioned earlier, children receiving CPS exhibited more decrease in ODD symptoms than children receiving PMT. Please see Table 7 for standardized coefficients and model statistics for the

direct effects of change in emotion socialization variables on change in emotion regulation, lability, and ODD symptoms.

With respect to the full model, analyses indicate that the model was significant $F(7, 92) = 8.05, p = .001, R^2 = .33$. Regarding direct effects, change in emotion encouraging, change in emotion discouraging, and change in problem solving remained significantly associated with change in ODD symptoms. With the addition of emotion regulation and lability, change in ADHD symptoms and treatment type were no longer significantly associated with change in ODD symptoms; however, change in emotion regulation was significantly associated (Table 8). Regarding indirect effects, indirect effects were not present when emotion regulation was considered as the mediator, as the 95% confidence intervals for the omnibus indirect effect included zero ($B = -.02, SE = .02, CI = -.075-.003$). By the same token, indirect effects were not present with lability as the mediator ($B = .00, SE = .01, CI = -.004-.018$). Thus, direct effects reported above remained as the main findings. Increases in emotion encouraging, emotion discouraging, and emotion regulation were associated with decreases in ODD symptoms, whereas increases in problem solving were associated with increases in ODD symptoms. Bivariate correlations were examined to explicate the link between problem solving and ODD symptoms, as the direction of this association was unexpected. Pre-treatment problem solving was associated with decreases in ODD symptoms ($r = -.27, p = .006$), whereas pre-treatment ODD symptoms were not associated with any change in problem solving ($r = -.08, p > .05$). These correlations suggest that parent's problem solving practices at pre-treatment are indicative of decreases in children's ODD symptoms, rather than children's pre-treatment oppositional behaviors leading to changes in parents' problem solving practices over the course of treatment.

Moderation by emotion encouragement. The link between change in emotion discouraging and change in ODD symptoms was unexpected, as it was hypothesized that these constructs would be inversely associated. Research by Lunkenheimer and colleagues (2007) lends support for adaptive behavioral outcomes in the presence of parental emotion discouragement when the role of emotion encouragement is also considered. They reported that parents' emotion discouraging was associated with fewer behavior problems in children when coupled with emotion encouraging by parents. Therefore, change in emotion encouraging was explored as a moderator of change in emotion discouraging and change in ODD symptoms. Moderation analyses were completed with Hayes and colleagues' MODPROBE macro (Hayes & Matthes, 2009). All remaining model variables, those being change in ADHD symptoms, change in emotion regulation, change in lability, and treatment type, were included as covariates. Analyses indicate that moderation was not present, $t(91) = .04, p > .05$.

For descriptive purposes, crosstabs analyses were implemented to examine the degree to which changes in emotion encouraging overlapped with changes in emotion discouraging. For both emotion encouraging and emotion discouraging, increases in the behavior were coded as 1, no change was coded as 0, and decreases in the behavior were coded as -1. These analyses reveal that the 26% of parents increased in emotion encouraging and emotion discouraging, followed by 21% parents who increased in emotion encouraging and did not change in their emotion discouraging. Thus, it appears that increases in emotion encouraging and emotion discouraging are not mutually exclusive and did co-occur. Please see Table 9 for crosstabulations.

Moderation by treatment type. Given the lack of differences in emotion socialization variables by treatment type, moderation analyses were also conducted to examine treatment type as a potential moderator of several associations: change in emotion socialization and change in

emotion regulation, change in emotion regulation and change in ODD symptoms, and change in emotion socialization and change in ODD symptoms. Moderation analyses, again completed with MODPROBE (Hayes & Matthes, 2009), indicate that treatment type did not moderate any of the aforementioned links (for all interactions $t_s < 1.14$, $p_s > .05$).

Hypothesis Testing: Pre-treatment to Post-treatment

Given the lack of differences between pre-treatment and post-treatment variables, the proposed mediation model was also tested with variables at pre-treatment, mid-treatment and post-treatment. These analyses provided an alternative analytic framework from the mediation analyses with change scores, in that indirect relations were explored in a temporally consistent manner.

Treatment type differences. Before testing the whole model, independent samples t -tests examined treatment type differences in variables at pre-treatment, mid-treatment, and post-treatment. Analyses indicate that ADHD symptoms at pre-treatment were higher in children receiving PMT, $M = 31.65$, $SD = 8.76$, than in children receiving CPS, $M = 25.81$, $SD = 9.31$, $t(99) = 3.24$, $p = .002$. Further, ADHD symptoms at post-treatment were higher in children receiving PMT, $M = 23.54$, $SD = 11.20$, than in children receiving CPS, $M = 19.38$, $SD = 8.94$, $t(99) = 2.02$, $p = .047$. There were no treatment type differences in emotion socialization and ODD symptoms at pre- or post-treatment, nor were there such differences in emotion regulation and lability at mid-treatment. Given the treatment type differences in ADHD symptoms at pre- and post-treatment, treatment type was included as a covariate in mediation analyses.

Mediation analyses. The MEDIANTE macro (Hayes & Preacher, in press) was used to examine the indirect relation between pre-treatment emotion socialization (emotion encouraging, emotion discouraging, problem solving) and post-treatment ODD symptoms through mid-

treatment emotion regulation and lability. Treatment type, pre-treatment ADHD symptoms and ODD symptoms were included as covariates, as were pre-treatment emotion regulation and lability. Direct effects of pre-treatment emotion socialization and covariates on mid-treatment emotion regulation/lability and post-treatment ODD symptoms are reported first, followed by the direct and indirect effects of the full model.

There were several direct effects of the aforementioned covariates on mid-treatment emotion regulation and lability. Regarding mid-treatment emotion regulation, pre-treatment emotion regulation was associated with mid-treatment emotion regulation, $F(8, 91) = 9.57, p = .001, R^2 = .41$. Regarding mid-treatment lability, lability, emotion regulation, and ADHD symptoms at pre-treatment were all significantly associated with mid-treatment lability, $F(8, 91) = 14.45, p = .001, R^2 = .52$. See Table 10 for standardized coefficients and model statistics.

There were also direct effects on post-treatment ODD symptoms, $F(8, 91) = 10.95, p = .001, R^2 = .45$. Regarding covariates, pre-treatment lability, ODD symptoms, and ADHD symptoms were associated with post-treatment ODD symptoms. Pre-treatment problem solving was inversely associated with post-treatment ODD symptoms. See Table 10 for standardized coefficients and model statistics

In testing the full model, analyses indicated that an indirect effect of emotion socialization through either emotion regulation ($B = .00, SE = .00, CI = -.01-.01$) or lability ($B = .00, SE = .00, CI = -.01-.01$) was not present, as confidence intervals for both indirect effects included zero. However, four direct effects were present, $F(10, 89) = 8.58, p = .001, R^2 = .43$. Pre-treatment problem solving was negatively associated with post-treatment ODD symptoms. Further, lability, ODD symptoms, and ADHD symptoms at pre-treatment were associated with post-treatment ODD symptoms (Table 11).

Moderation by emotion encouragement. Similar to the previous mediation model with change scores, emotion encouraging at pre-treatment was explored as a moderator of pre-treatment emotion discouraging and post-treatment ODD symptoms. This model was examined with the MODPROBE macro (Hayes & Matthes, 2009). Problem solving, ADHD symptoms, ODD symptoms, emotion regulation, and lability at pre-treatment were included as covariates, as was treatment type. Analyses indicate that moderation was not present, $t(90) = -.71, p > .05$.

As above, crosstabs analyses were also implemented to examine the degree to which the presence of emotion encouraging overlapped with emotion discouraging at pretreatment. For both emotion encouraging and emotion discouraging, the absence of the behavior was coded as 0 and the presence of the behavior was coded as 1. These analyses reveal that 57% of parents engaged in emotion encouraging but did not engage in emotion discouraging, though 25% of parents engaged in both strategies. So, while many parents did not engage in both encouraging and discouraging at pretreatment, this overlap was present in a fair amount of the sample. See Table 12 for crosstabulations.

Moderation by treatment type. Treatment type was examined as a moderator of pre-treatment emotion socialization and mid-treatment emotion regulation, mid-treatment emotion regulation and post-treatment ODD symptoms, and pre-treatment emotion socialization and post-treatment ODD symptoms. Again, moderation analyses were completed with the MODPROBE macro (Hayes & Matthes, 2009). Pre-treatment emotion regulation, pre-treatment ADHD symptoms, and pre-treatment ODD symptoms were included as covariates for all analyses. However, pre-treatment ODD symptoms were not a covariate in the moderation model with pre-treatment emotion socialization and mid-treatment emotion regulation. These analyses indicate

that treatment type did not moderate any of the aforementioned associations (for all interactions $t_s < .66$, $p_s > .05$).

Discussion

The present study examined the influence of parent emotion socialization on children's emotion regulation and oppositional behaviors over the course of two empirically based treatments for ODD, Creative & Proactive Solutions and Parent Management Training. The present study first considered these associations at an individual level by using change scores to capture changes in individual families based on their pre-treatment scores. These associations were then examined at the group level by examining scores at pre-treatment, mid-treatment, and post-treatment. Both approaches offer unique insight, as the change scores represent individual families' change over time, whereas the analyses with pre-, mid- and post-treatment scores allow for temporally consistent mediation analyses at the sample-wide level. The findings and implications of both analytic approaches are discussed below.

Differences by Treatment Type and Over Time

Regarding Hypothesis 1, there were minimal differences by treatment type. Those who received CPS and PMT did not differ in their change in emotion socialization nor their change in emotion regulation. However, the paired samples *t*-tests demonstrated that there were increases from pre-treatment to post-treatment in emotion encouraging for the full sample, indicating that families changed in their socialization practices across treatment types at a sample-wide level. Indeed, both CPS and PMT contain elements that may influence parents' socialization strategies. For example, both treatments focus on modifying parents' responses towards their children's behavior (Greene, 2011; Kazdin, 2005), which may also translate to parents' modification of

their socialization practices. Thus, both treatments altered parents' encouragement of their children's emotions at a sample-wide level, though perhaps through different avenues.

On a similar note, each treatment holds components that could improve children's emotion regulation abilities and decrease lability. The parent education in PMT may provide parent-driven strategies to promote children's emotion regulation and decrease emotional outbursts, such as instituting time out, whereas CPS addresses these processes through parent-child problem solving strategies (Greene, 2011; Kazdin, 2005). Indeed, the paired-samples t-tests revealed that children did increase in emotion regulation abilities and decrease in emotional lability; therefore, it appears that each treatment produced change in emotion regulation and lability at a sample-wide level.

Regarding symptoms of ODD, families who received CPS showed larger decreases in children's oppositional behaviors than did those who received PMT. This finding is consistent with literature that indicated CPS to be effective in reducing children's behavior problems over and above parent-based interventions, such as PMT (Greene et al., 2004; Webster-Stratton et al., 2001). These findings are inconsistent with those of Ollendick and colleagues (2013); however the present study examined a subsample of the larger study, which may account for this difference. Furthermore, ADHD symptoms were included as a covariate in this analysis. Ollendick and colleagues (2013) controlled for more covariates in their analyses, such as age and race. It should be noted that families who received PMT also demonstrated decreases in symptoms of ODD, indicating that both treatments exhibit symptom reduction. Indeed, post-treatment ODD symptoms were significantly lower than pre-treatment ODD symptoms across both treatment types, indicating improvement in both treatment types across the sample.

Lastly, there was a significant decrease in ADHD symptoms from pre-treatment to post-treatment across treatment groups. As mentioned earlier, ADHD is highly comorbid with ODD and both are externalizing disorders. Given that both ODD and ADHD symptoms decreased from pre-treatment to post-treatment, perhaps these treatments were not only effective in treating ODD symptoms, but externalizing symptoms broadly speaking.

Emotion Regulation as a Mediator

There was no evidence to support Hypothesis 2, in which a serial mediation model was expected. Specifically, there was no evidence that change in emotion regulation mediated the link between change in emotion socialization and change in ODD symptoms, nor that mid-treatment emotion regulation mediated the association between pre-treatment emotion socialization and post-treatment ODD symptoms. This finding is inconsistent with previous literature that considers emotion regulation as a mediator of parents' emotion socialization and children's behavior problems (Eisenberg et al., 1998). However, although this mediational model has been widely demonstrated in typically developing populations (Eisenberg et al., 2005; Eisenberg et al., 2001; Ramsden & Hubbard, 2002), there is a scarcity of research regarding this model in atypically developing populations. In previous work with this sample at pre-treatment, Dunsmore and colleagues (2013) found that children's emotional lability moderated the link between maternal emotion coaching and children's emotion regulation. This suggests an alternative theoretical framework may shed light on how emotion socialization and emotion regulation contribute to children's oppositional behaviors.

Further, there are other risk factors of ODD that could potentially contribute to oppositional behaviors and thus would require consideration in explicating these links. As mentioned earlier, ODD exhibits comorbidity with a variety of other psychological disorders,

such as anxiety and depression, which may influence the underlying processes that contribute to children's oppositional behaviors. For example, the presence of depressed affect or anxiety, in addition to oppositionality in a child, may alter how parents respond to their children's emotions and also be indicative of increased difficulties with emotion regulation, above what would be expected with ODD. Also, Burke and colleagues (2002) discussed family factors related to the presence of ODD, such as economic disadvantage. Though parental education and family SES were examined as potential covariates in this study, the majority of the parents had a college degree or higher and were in the middle to upper SES. Different findings may emerge with a more economically diverse sample. Research by Dodge and colleagues (1994) indicated that family SES negatively predicted several aspects of parent-child interactions, such as maternal warmth and social support. Though these findings are not specific to emotion socialization, it does lend support for the notion that family SES may influence the parent's emotional availability and subsequent socialization experiences, which has ramifications for the child's emotion regulation skills. Lastly, different theoretical frameworks may be necessary based on child gender, as ODD has a higher prevalence in boys and there is a large body of research regarding how parents socialize emotions differently with daughters than with sons (Chaplin, Cole, & Zahn-Waxler, 2005). For example, research demonstrates that sadness is encouraged and anger is discouraged in girls, whereas the inverse occurs for males (Cassano et al., 2007). This gendered emotion socialization may have ramifications for children's emotion regulation abilities and subsequent oppositional behaviors. Taken together, perhaps it is worth exploring a different theoretical perspective in research with clinical populations that incorporate some of the aforementioned parent and child processes.

There are also methodological concerns worthy of consideration. Although change scores reflected change at the individual family level, the use of change scores may also account of this lack of findings, as the extant literature typically examined these constructs at one time point. However, analyses with pre-, mid-, and post-treatment also indicated a lack of mediation. Another potential methodological issue is that the measurement of parent's emotion socialization may have been affected by the nature of the emotion-talk task. Families may discuss emotional situations differently in a treatment setting, where discussions were prompted and in the context of receiving psychological services, than they may at home, where discussions may arise naturally in the context of a disagreement. Moreover, emotion regulation was measured through parent-report. There is an on-going debate regarding the optimal measurement of emotion regulation, whether through questionnaires or observational methods (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Specifically, reporting on emotion regulation abilities may be problematic, as these reports may be inaccurate or influenced by reporter bias. Lastly, measurement error in the actual variables is unlikely, as there was systematic variance in the model variables at pre-treatment, post-treatment, and as change scores. The inter-rater reliability for the observational coding was also satisfactory, as was the internal consistency for the DBDRS and ERC, though the reliability for the Emotion Regulation scale was slightly lower ($\alpha = .62-.69$).

It may also be the case that mediation was simply not present. Families in both conditions received treatment for twelve weeks, which is a short period of time to change a longstanding parenting style in a manner that impacts children's emotion regulation strategies. Emotion discouraging and problem solving did not significantly change at a sample-wide level from pre-treatment to post-treatment, though emotion encouraging did increase over treatment. Thus, change in emotion socialization was limited. Further, change in emotion socialization was

not significantly associated change in emotion regulation. Perhaps indirect effects would be more evident several months out of treatment, as parents and children use (or do not use) the strategies learned in treatment at home.

Main Effects of Emotion Socialization on ODD Symptoms

The mediation analyses did indicate a number of direct effects on ODD symptoms, which were also reflected in the bivariate correlations of the model variables as change scores and at pre-, mid-, and post-treatment. Regarding the change score analyses, increases in emotion encouraging were associated with decreases in ODD symptoms, which is consistent with extant literature that found parent's emotion encouraging and children's oppositional behaviors to be inversely related (Dunsmore et al., 2013). However, pre-treatment emotion encouragement was not related to children's post-treatment ODD symptoms. Thus, increases in parents' recognition and validation of children's emotions over the course of either treatment are indicative of symptom improvement, regardless of treatment condition.

Increases in emotion discouraging, however, were also associated with decreases in ODD symptoms. This finding was unexpected, as emotion discouragement by parents has been linked to increased behavior problems in children (Suveg et al., 2005). However, there is a growing body of literature that indicates the presence of a variety of socialization strategies is associated with better emotion understanding and social competence in children (McElwain, Halberstadt, & Volling, 2007). In particular, McElwain and colleagues (2007) reported that unsupportive responses to children's emotions by one parent, when in combination with supportive responses by the other parent, was associated with the best child outcomes, whereas supportive responses by both parents was associated with poorer child outcomes (McElwain et al., 2007). Further, Lunkenheimer and colleagues (2007) found that emotion discouragement was associated with

fewer behavior problems in children when in concert with emotion encouragement by parents. These findings lend support for the notion that emotion discouragement may be adaptive when parents also validate their children's emotions in other instances.

However, change in emotion encouragement was not found to be a moderator of parent's change in emotion discouragement and children's change in ODD symptoms in the present study, nor was moderation present when these variables were examined at pre-treatment and post-treatment. Perhaps this is due to the current focus on children with ODD, as the aforementioned literature examined typically developing children. I note that cross-tabulations indicated that a large percentage of the sample increased in both emotion encouraging and emotion discouraging, demonstrating these socialization behaviors did co-occur in some families. Discouraging emotions may be situationally appropriate and adaptive for children with ODD, as excessive negativity is a hallmark symptom of ODD. Thus, emotion discouragement by parents may teach children to limit such affect in situations for which it is not socially acceptable. Again, pre-treatment emotion discouraging did not predict post-treatment ODD symptoms. Thus, increases in parents' discouraging over the course of both treatments was related to symptom improvement within individual families.

Lastly, parent's increase in problem solving was linked to increased ODD symptoms, a departure from the previous work that stressed the importance of problem solving skills in decreasing children's behavior problems (Webster-Stratton et al., 2001). However, a different story emerges when problem solving was examined separately at pre-treatment and post-treatment, shedding light on the directionality of this relation. It appears that parent's pre-treatment problem solving was indicative of children's symptom improvement, rather than children's pre-treatment ODD symptoms driving changes in parent's problem solving behaviors

over the course of treatment. This notion was supported by the mediation analyses with pre-, mid-, and post-treatment scores. These analyses demonstrated a main effect of pre-treatment problem solving on post-treatment ODD symptoms, in that parents higher in problem solving before receiving treatment had children who exhibited fewer ODD symptoms at the end of treatment. Taken together, analyses suggest that parent's problem solving abilities at pre-treatment are indicative of children's symptom improvement, which is consistent with previous empirical studies regarding the importance of parents' problem solving efforts with their children (Webster-Stratton et al., 2001). Though the present study focused on a parent-driven model, it is important to note that parents and children affect each other over time (Morris et al., 2007). Thus, it may be the case that children's emotion regulation influences parents' socialization strategies over time and vice-versa. For example, children's increased abilities to manage their affect in a situationally appropriate manner may encourage parents to discuss emotions with their child, as it may be more rewarding for parents than if their child was emotionally dysregulated and unable to manage their emotions. Thus, it is possible that there were child-driven effects, though they were not of focus in the present study.

Main Effects of Emotion Regulation on ODD Symptoms.

Though emotion regulation did not mediate the link between emotion socialization and ODD symptoms, increased emotion regulation was associated with decreased oppositional behaviors. This effect was in the expected direction, as numerous studies have pointed to the inverse relation between emotion regulation and children's behavior problems (Cicchetti, Ackerman, & Izard, 1995; Eisenberg et al., 2001; Röhl et al., 2012). It is important to note that the present study's measurement of emotion regulation pertains more to the manifestation of emotion regulation, or the intensity of emotional expression, rather than the internal processes or

specific emotion regulation strategies. Emotion regulation at pre-treatment was not associated with post-treatment ODD symptoms, thus it is children's increased ability to manage affect that is predictive of symptom improvement. These findings lend support to the notion that oppositional behaviors may be based in inflexible emotion regulation strategies (Burke et al., 2002). Indeed, children with ODD display elevated levels of negative affect, which is indicative of emotional under-regulation (Casey, 1996). With this in mind, it is worth considering that poor emotion regulation and ODD symptoms may be isomorphic. The present study indicates that ODD is linked with poor emotion regulation. However, it is possible that some children with ODD may exhibit adaptive emotion regulation, making emotion regulation a heterogeneous process in ODD. That is to say, emotion regulation abilities may vary across children with ODD. Thus, emotion regulation might be considered as a moderator in future treatment outcome research.

Other Associations with of ODD Symptoms

Though emotion socialization and emotion regulation were the focus of the present study, analyses demonstrate that children's lability and ADHD symptoms also play a role in children's ODD symptoms. Specifically, pre-treatment lability and ADHD symptoms were linked to post-treatment ODD symptoms. These findings are consistent with clinical presentation of ODD, in that it is highly comorbid with ADHD and is characterized by inflexible emotion expression (Burke et al., 2002). These findings indicate that children's emotional lability and other externalizing behaviors play a role in children's treatment response, in that there are poorer treatment outcomes for children diagnosed with ADHD and those who are more emotionally volatile.

Considerations of Analytic Framework

Both of the analytic approaches give different perspectives on the contributing factors to children's oppositional behaviors and symptom improvement. When we consider each family's individual change over treatment, it appears that both parents' varied socialization behaviors and children's increased emotion regulation are indicative of children's symptom improvement. When we consider the sample at pre-, mid-, and post-treatment, it appears that parent's problem solving behaviors prior to receiving treatment are related to fewer ODD symptoms at post-treatment. Further, children's emotional lability and symptoms of ADHD are indicative of poorer treatment outcomes. Taken together, both sets of findings point to important factors to consider in treating ODD, both those that are present before receiving treatment and those that change over the course of treatment.

Strengths, Limitations and Future Directions

The present study exhibits a number of strengths. The use of observational data permitted a more comprehensive and ecologically valid measurement of parent's socialization strategies, rather than parent-report that could be subject to social desirability or reporter bias. The present study also used treatment outcome data, from which conclusions were drawn about variables associated with treatment response and mechanisms of change. Lastly, the present study examined families during the implementation of two different empirically supported treatments for ODD, which provided information about which parent and child processes were affected as a result of these treatments, and how these changes corresponded to children's outcomes.

There are several limitations of the present study that deserve consideration. First, there was an abundance of missing data that was addressed with expectation maximization. Though there were no apparent differences in results with the imputed data compared with analyses

without imputed data, complete data would have been preferable. Further, scores for children's emotion regulation and ODD symptoms were based on parent report. Having multiple reporters would provide a more comprehensive picture of children's behavior. Indeed, research suggests that parent-based interventions such as PMT do not generalize as well to symptom improvement in school settings (Webster-Stratton & Hammond, 1997). Teacher report may have been informative in assessing treatment gains across multiple settings.

Though the present study offers insight regarding the treatment of children's oppositional behaviors, much remains to be discovered. First, future research should continue to consider the interplay of emotion coaching and emotion dismissing responses, as well as their link to children's emotional and oppositional behaviors. The present study indicated that both emotion encouragement and discouragement were indicative of symptom improvement, thus these relations deserve further consideration. Findings by McElwain and colleagues (2007) pertained to the interplay between fathers' and mothers' socialization responses, thus examining both parents' responses would be valuable in future research.

Second, maintenance of treatment gains is important not only immediately after treatment, but in the months and years following its conclusion. Indeed, research on both CPS and PMT has focused on their effectiveness one to three years after treatment in order to determine their effectiveness (Feldman & Kazdin, 2005; Webster-Stratton & Hammond, 1997). Thus, future studies should examine children's emotion regulation and oppositional behaviors at later time points, such as six months or one year post-treatment, to ascertain whether the findings of the present study hold over time, or whether a mediational model then emerges.

Third, the present study only focused on children's oppositional behaviors. Child outcomes outside of ODD symptoms will be important to focus on in subsequent empirical work

to gain a more thorough understanding of treatment response. ODD has been linked to academic and peer difficulties (Coie, 1990; Hinshaw, 1992; Webster-Stratton, 1996), thus examining a range of outcomes would provide a more comprehensive picture of treatment gains with respect to children's adaptive functioning.

Treatment Implications

There are several important treatment implications from the present study. First, parents' socialization responses are linked to children's behavior problems, as well as children's treatment response. Promoting a diverse socialization approach may be adaptive for children with ODD, as emotion discouraging may be appropriate at times for children with oppositional behaviors to promote situationally appropriate emotion expression, whereas encouraging children's emotions also provides opportunities for children to become aware of and understand their emotions. Further, children with parents who engage in problem-solving strategies may stand to benefit more from treatment than those with parents who do not engage in such discussion with them, as it models adaptive coping for children. Thus, considering parent's problem solving skills at the onset of treatment may be informative for anticipating treatment response.

Second, the present study reflects the importance of fostering children's emotion regulation abilities in efforts to reduce behavior problems. Oppositional defiant disorder is characterized by elevated negative affect and defiance. Thus, emotion regulation is particularly relevant to children with ODD, as it centers on children's ability to manage their emotions in an adaptive and socially appropriate manner, and should be of focus in treating this clinical population.

Third, it appears that emotional lability and ADHD symptoms are strongly related to the presence of ODD, suggesting that this symptom profile deserves consideration in treating defiant children. Incorporating aspects of psychological and pharmacological treatments for ADHD may maximize treatment gains for children with Oppositional Defiant Disorder. Indeed, reducing inattention and hyperactivity may aid children's engagement and compliance with treatment.

Conclusion

The present study sheds light on the processes that contribute to treatment response in families with ODD. It appears that parents' increased emotion encouraging and emotion discouraging practices, as well as children's increased emotion regulation, promote children's symptom improvement. Further, these effects are not specific to type of treatment. Parent's pre-existing problem solving abilities, along with children's emotional lability and symptoms of ADHD before receiving treatment, also play an important role in children's treatment response. As such, the present study offers relevant treatment implications, such as the prominent role that parent emotion socialization plays in reducing children's oppositional behaviors and the importance of focusing on emotional adjustment in treating this clinical population.

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Table 1
Frequencies of Recruitment and Treatment Assignment

Assignment	<i>n</i> = 275
Excluded at phone screening (<i>n</i> = 111)	
Referred out for different treatment	23
Not interested in participating	18
Too young	16
Cognitive deficiencies	15
Other	14
Insufficient symptoms of ODD	9
Conduct Disorder diagnosis	9
Caller was not legal guardian	7
Already receiving other treatment	5
Unable to contact	4
Excluded at pre-treatment assessment (<i>n</i> = 30)	
Did not meet criteria for ODD	13
Dropped out before treatment	11
Other diagnoses more impairing	5
Cognitive deficiencies	1
Met study criteria (<i>n</i> = 134)	
Collaborative Problem Solving	60
Parent Management Training	63
Waitlist, then CPS	7
Waitlist, then PMT	4

Table 2
Family Demographics as a Percentage of the Sample

Characteristic	<i>n</i> = 100
Family Structure	
Adoptive/Foster	3.2
Married/Together	68.1
Unmarried/Together	1.1
Parent and step-parent	4.3
Single Parent	7.4
Divorced/separated	12.8
Other	3.2
Race/Ethnicity	
African-American	5.3
Asian	2.1
Caucasian	85.1
Hispanic	5.3
Other	2.1
Maternal Education	
Some high school	2.1
High school diploma	9.6
Trade school	3.2
Some college	20.2
College diploma	40.4
Graduate school	24.5
Paternal Education	
Some high school	3.2
High school diploma	27.0
Trade school	3.4
Some college	18.0
College diploma	22.5
Graduate school	25.8

Table 3

Removed ERC Lability Items and Corresponding ODD symptoms

ERC Lability	ODD symptom
6. Is easily frustrated	Criterion A, Angry/Irritable Mood: Is often touchy or easily annoyed
8. Tantrums easily	Criterion A, Angry/Irritable Mood: Often loses temper
10. Takes pleasure in distress of others	Criterion A, Defiant Behavior: Often deliberately annoys others
14. Responds angrily to limit-setting by adults	Criterion A, Defiant Behavior: Often actively defies or refuses to comply with requests from authority figures or with rules

Table 4

Descriptive Statistics of Pre-treatment, Mid-treatment, and Post-treatment Variables

	<i>M</i>	<i>SD</i>
Pre-tx emotion encouraging	1.46	1.02
Pre-tx emotion discouraging	.30	.69
Pre-tx problem solving	2.45	1.43
Pre-tx emotion regulation	23.41	2.77
Pre-tx lability	28.07	4.17
Pre-tx ODD symptoms	5.71	1.46
Pre-tx ADHD symptoms	28.97	9.65
Mid-tx emotion regulation	23.29	3.50
Mid-tx lability	25.55	3.94
Post-tx emotion encouraging	1.78	.83
Post-tx emotion discouraging	.37	.61
Post-tx problem solving	2.77	1.32
Post-tx emotion regulation	24.05	3.19
Post-tx lability	23.87	4.10
Post-tx ODD symptoms	2.79	2.06
Post-tx ADHD symptoms	21.69	10.21

Table 5
Correlations of pre-treatment, mid-treatment, and post-treatment model variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Pre-tx Emotion Enc.	1															
2. Pre-tx Emotion Disc.	-.31**	1														
3. Pre-tx Problem Solving	.37**	.11	1													
4. Pre-tx Emotion Regulation	.07	.02	-.06	1												
5. Pre-tx Lability	.01	-.12	-.04	-.20	1											
6. Pre-tx ODD symptoms	-.23*	.04	.03	-.23*	.15	1										
7. Pre-Tx ADHD symptoms	.07	.00	-.04	.03	.47*	-.05	1									
8. Mid-tx Emotion Regulation	.03	.07	.11	.62**	-.24*	-.24*	-.07	1								
9. Mid-tx Lability	-.02	-.08	-.10	-.19	.69**	.18	.51**	-.46**	1							
10. Post-tx Emotion Enc.	-.06	.17	-.07	.22*	.06	.15	-.16	.06	-.14	1						
11. Post-tx Emotion Disc.	-.03	.24*	-.11	-.07	-.20	.09	.07	-.01	-.07	-.08	1					
12. Post-tx Problem Solving	-.07	-.03	-.07	-.01	.28**	-.10	.04	-.08	.00	.53**	.17	1				
13. Post-tx Emotion Regulation	.12	-.05	0.19	.77*	-.34**	-.23*	-.17	.67**	-.42**	.20*	-.09	-.03	1			
14. Post-tx Lability	-.02	-.13	-.25*	-.33**	.64**	.07	.55**	-.52**	.72**	-.16	-.09	.10	-.68**	1		
15. Post-ODD symptoms	-.04	-.01	-.27*	-.07	.47**	.23*	.55**	-.16	.50**	-.27**	-.02	-.22*	-.36**	.64**	1	
16. Post-tx ADHD symptoms	-.04	-.08	-.15	-.01	.60**	-.10	.76**	-.17	.63**	-.31**	-.17	-.04	-.36**	.78**	.67**	1

Note: * $p < .05$, ** $p < .01$

Table 6

Correlations of Change Scores

	1.	2.	3.	4.	5.	6.	7.	<i>M</i>	<i>SD</i>
1. Δ Emotion Enc.	1							.48	1.60
2. Δ Emotion Disc.	-.31**	1						-.04	.98
3. Δ Problem Solving	.48**	.23*	1					.37	2.38
4. Δ Emotion Regulation	-.06	.06	-.30**	1				.67	2.49
5. Δ Lability	-.19	.11	.02	-.46**	1			-4.39	5.35
6. Δ ODD symptoms	-.30**	-.02	.10	-.41**	.33**	1		-2.97	2.53
7. Δ ADHD symptoms	-.02	-.13	.04	-.35**	.19	.25*	1	-6.98	8.88

Note: * $p < .05$, ** $p < .01$

Table 7
Direct Effects of Emotion Socialization on ODD Symptoms, Emotion Regulation, and Liability

	ΔODD symptoms				Δ Emotion Regulation				Δ Liability						
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>R</i> ²	<i>F</i> _{model}	<i>B</i>	<i>SE</i>	<i>B</i>	<i>R</i> ²	<i>F</i> _{model}	<i>B</i>	<i>SE</i>	<i>B</i>	<i>R</i> ²	<i>F</i> _{model}
Δ Emotion Enc.	-.95*	0.19		0.27	8.50*	0.25	0.18		0.2	5.88*	-0.57	0.33		0.04	1.86
Δ Emotion Disc.	-.74*	0.28				0.4	0.27				0.19	0.51			
Δ Problem Solving	.48*	0.12				-.41*	0.12				0.2	0.22			
Δ ADHD symptoms	.07*	0.02				.10*	0.03				0.1	0.05			
Tx Type	-.82*	0.39				0.46	0.38				-0.35	0.69			

Note: * $p < .05$

Table 8

Direct and Indirect Effects of Emotion Socialization on ODD Symptoms

Direct effects of all remaining model variables									
	β	SE β	R^2	F_{model}					
			.33	8.05*					
Δ Emotion Enc.	-.85*	.18							
Δ Emotion Disc.	-.66*	.28							
Δ Problem Solving	.37*	.12							
Δ Emotion Regulation	-.24*	.13							
Δ Lability	.07	.06							
Δ ADHD symptoms	.04	.03							
Tx Type	-.68	.38							
Indirect effects through Δ Emotion Regulation					Indirect effects through Δ Lability				
	β	SE	LLCI	ULCI	β	SE	LLCI	ULCI	
Δ Emotion Enc.	-.06	.07	-.26	.02	-.04	.05	-.19	.02	
Δ Emotion Disc.	-.10	.10	-.38	.02	.01	.06	-.06	.20	
Δ Problem Solving	.10	.06	.00	.26	.02	.03	-.02	.09	
Omnibus	-.02	.02	-.08	.00	.00	.01	-.01	.02	

Note: * $p < .05$

Table 9

Crosstabulations of Change in Emotion Encouragement and Change in Emotion Discouragement

	Decrease in ED (-1)	No change in ED (0)	Increase in ED (1)
Increase in EE (-1)	4	10	15
	4%	10%	15%
No change in EE (0)	1	8	2
	1%	8%	2%
Increase in EE (1)	13	21	26
	13%	21%	26%

EE = Emotion Encouragement, ED = Emotion Discouragement

Table 10

Direct Effects of Pre-treatment Emotion Socialization on Mid-treatment Emotion Regulation/Lability and Post-

	Post-tx ODD symptoms				Mid-tx Emotion Regulation				Mid-tx Lability			
	<i>B</i>	<i>SE B</i>	<i>R</i> ²	<i>F</i> _{model}	<i>B</i>	<i>SE B</i>	<i>R</i> ²	<i>F</i> _{model}	<i>B</i>	<i>SE B</i>	<i>R</i> ²	<i>F</i> _{model}
Pre-tx			0.45	10.95*			0.41	9.57*			0.52	14.45*
Emotion	0.24	0.18			-0.3	0.31			0.31	0.32		
Enc.												
Pre-tx												
Emotion	0.21	0.25			0.09	0.42			-0.29	0.42		
Disc.												
Pre-tx												
Problem	-0.43*	0.12			0.3	0.21			-0.24	0.21		
Solving												
Pre-tx												
Emotion	-0.01	0.06			.69*	0.1			-.29*	0.1		
Regulation												
Pre-tx												
Lability	0.11	0.04			-0.14	0.08			.43*	0.08		
Pre-tx ODD												
symptoms	0.34	0.11			-0.19	0.19			0.15	0.2		
Pre-Tx												
ADHD	0.1	0.02			-0.02	0.03			.12*	0.03		
symptoms												
Tx Type	0.19	0.33			-1.05	0.57			0.16	0.57		

*Note: *p < .05*

Table 11

Direct and Indirect Effects of Pre-treatment Emotion Socialization on Post-treatment ODD Symptoms

Direct effects of all remaining model variables									
	β	SE β	R^2	F_{model}					
			.43	8.58*					
Pre-tx Emotion Enc.	.25	.19							
Pre-tx Emotion Disc.	.21	.25							
Pre-tx Problem Solving	-.43*	.12							
Mid-tx Emotion Regulation	.02	.07							
Mid-tx Lability	.01	.07							
Pre-tx ADHD symptoms	.10*	.02							
Pre-tx Emotion Regulation	-.02	.07							
Pre-tx Lability	.10*	.05							
Pre-tx ODD symptoms	.35*	.12							
Tx-type	.21	.35							
Indirect effects through Mid-tx Emotion Regulation					Indirect effects through Mid-tx Lability				
	β	SE	LLCI	ULCI	β	SE	LLCI	ULCI	
Pre-tx Emotion Enc.	-.01	.04	-.13	.04	.00	.03	-.05	.11	
Pre-tx Emotion Disc.	.00	.04	-.06	.11	.00	.04	-.10	.06	
Pre-tx Problem Solving	.01	.03	-.04	.09	.00	.02	-.07	.04	
Omnibus	.00	.00	-.01	.01	.00	.00	-.01	.01	

Note: * $p < .05$

Table 12

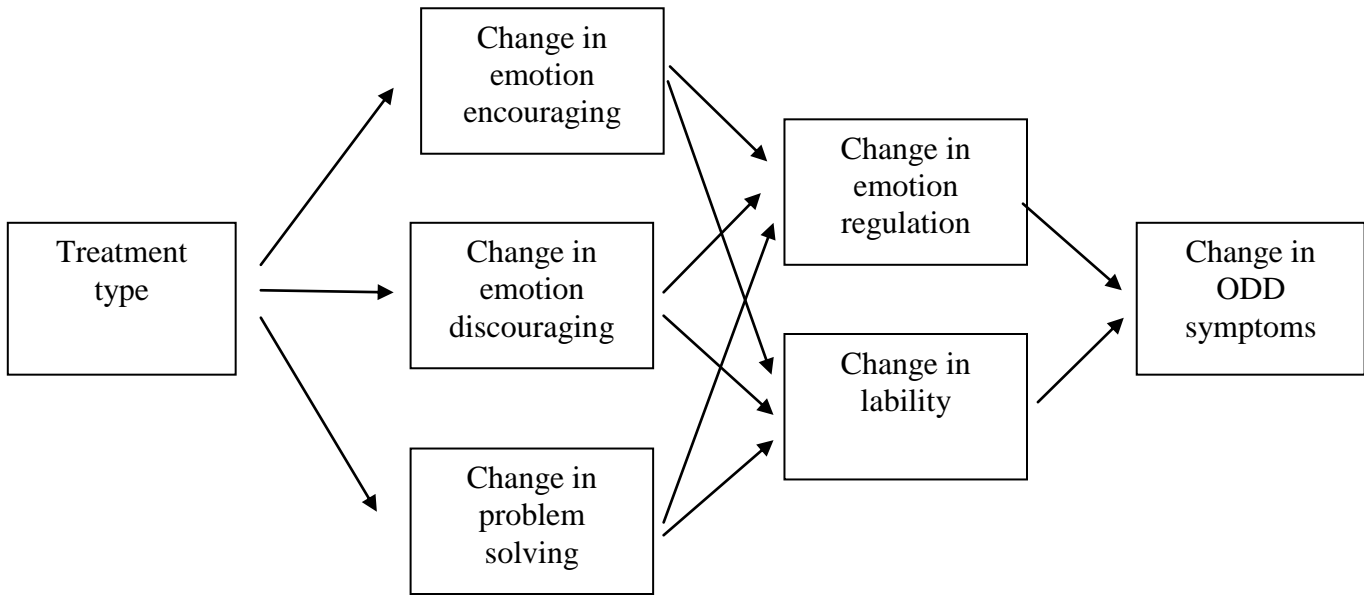
Crosstabulations of Emotion Encouragement and Emotion Discouragement at Pre-treatment

	No ED (0)	ED (1)
No EE (0)	12	6
	12%	6%
EE (1)	57	25
	57.0%	25.0%

EE = Emotion Encouragement, ED = Emotion Discouragement

Figure 1

Conceptual Model



APPENDIX A

Emotion Talk Coding Scheme (Booker et al., 2013)

- Watch ENTIRE tape first!
- Code for overall Quality of Interaction
- Code assigned questions

GLOBAL RATING: QUALITY OF INTERACTION

After watching the entire tape, rate the overall quality of interaction between the child and parent.

- -1 = disengagement, hostility, lack of reciprocity, arguing
- 0 = engaged, reciprocity, civil conversation, conversation etiquette
- +1 = engaged AND warmth, affection, attunement

This rating should be based on overall interaction: multiple instances of a behavior in any given category. In addition, if there are multiple instances of multiple behaviors from different categories (ie. -1 and +1) average them out (ie. code as a 0).

TIME

- Time of the question asked

TURN ID

- C = Child
- P = Parent
- Example: C1 = child, first question, P2 = parent, second question, etc.

CARD EMOTION

- Simply record the agreed emotion (positive 2, positive 1, neutral, negative 1, and negative 2) for each card

RESPONSE?

- Pick one: S, P, A, or ‘.’
- S = Spontaneous
 - Player answers the question on their own, the other player didn’t remind them of a specific event
- P = Prompted
 - The other player added more information. The other person did more than just repeat the question. Give a P if the other player guided the answer towards something, for instance, if the player gave a suggestion or helped the person remember something specific that was not part of the question on the card.
 - Just repeating the question or defining a word is NOT considered prompting
- A = Avoided; if A, you will stop coding and fill in the rest with ‘.’
 - Player says they don’t want to answer the question and/or they pick an alternative
 - Player doesn’t have an answer (“never slept outdoors”)
 - ODD project: if player doesn’t answer question, code as avoided
- ‘.’

- Player forgot to answer the question don't code at all; fill in '.' all the way through.

REFERENCE TO EMOTION? (*This is specific to the player's response, his or hers emotion (not of a 3rd person!), related to the question on the card*)

- Were there any emotion words in the player's response to the card, any dramatizations of emotion, or any other nonverbal indicators of emotion (e.g., marked change in tone of voice, facial expression, body language)?
 - '.' = player avoided the card.
 - 0 = no emotion.
 - 1 = consistent or mild. This will be coded if the player makes one reference to emotion (e.g., uses an emotion term, dramatizes emotion, shows nonverbal expression of emotion).
 - 2 = multiple or strong. This will be coded if the player makes more than one reference to emotion or shows very strong emotional intensity (e.g., uses an emotion term + dramatizes emotion, uses an emotion term + shows nonverbal expression of emotion, shows strong verbal or nonverbal indicators of emotion).
- Notes:
 - Remember to always code for both positive and negative emotions regardless of card emotion.
 - Emotion terms: angry, afraid, anxious, guilty, ashamed, sad, envious, jealous, disgusted, happy, joyful, proud, relieved, love (if about "desiring or participating in affection", as with a person or other animal) (from Lazarus, 1991); synonyms count, too (e.g., "pissed off" for "angry")
 - Be careful: "like", "love", and "enjoy" can be used as a preference towards something and in those cases are not emotion terms (e.g., "I like/love/enjoy riding my bicycle")
 - Generally speaking, if you can fit the word into: "I felt _____" then you can consider it an emotion word

All of the below are related to the *other player's* response: This can be about the person's emotion or the emotion of a 3rd person.

ENCOURAGING

- '.' = player avoided the card
- 0 = other player shows no encouragement; for example, does not respond or is discouraging
- 1 = other player acknowledges the facts or discusses the *event*
 - this is more than just saying "okay" and moving on
 - Examples: "yeah, and we were waiting for her to try on jeans," "oh, now I remember that," "what was that game we were playing?"
 - If person is just responding "yes/no" to a question, not considered acknowledgement
- 2 = other player acknowledges the *emotion* (can be nonverbal)
 - nonverbal: mirroring of emotion; pat on back; shows awareness of the emotion
 - this should be a clear acknowledgement of the *emotion* and not of the event

- even if the other player joins in the conversation or shows recognition of the event it doesn't mean they have acknowledged the expressed emotion per se
- 3 = coaching (validate or label emotions)
 - talking about causes and consequences
 - other player helps the responding player to verbally label the emotions in their response
 - other player seeks intimacy or teaching opportunity about the responding player's emotion
 - other player verbally empathizes with or validates the responding player's emotion
 - other player helps the responding player to problem solve
 - Examples: 'How did you feel when that happened?', 'Were you angry?', 'I could tell you were mad because you walked away', 'Can you think of anything that would have made it easier?', 'Yeah, I can see how you feel...'
 - If parent is coaching, ie. asking questions about emotions, and child responds to questions, consider this as reference to emotion

DISCOURAGING

- '.' = player avoided the card
- 0 = other player shows no discouragement; for example, does not respond or is encouraging
- 1 = other player argues the events/facts or dismisses the event
 - this is more than just moving on rapidly
 - Examples: "I did not do that," "whatever," making a rude noise, changing topic abruptly
- 2 = other player is dismissive of the *emotion*
 - Invalidate, criticize, avoid or actively distract the responding player from emotions
 - Devalue the responding player's emotions verbally or nonverbally
 - Convey the notion that the given emotion is wrong or unimportant
 - Belittle the responding player's expression or create an unsafe climate for discussing feelings.
 - Examples: 'It wasn't anything to get upset over', 'Let's just not talk about that'
 - Examples of dismissive behavior: abrupt change of topic, talking over the person, engaging in distracting behaviors, making superficial off-task comments
- 3 = other player overrides the emotion
 - other player corrects the responding player in his/her emotion. Tells the responding player that in fact it was a different emotion that he or she felt or that he or she really felt nothing.
 - Examples: 'No, you weren't upset about that, you really liked it', 'you did not even notice that at the time, you're just making it up now'
- 4 = other player shows contempt
 - other player devalues or dismisses the responding player *as a person* because of his/her emotions
 - examples: 'only a stupidhead would get upset over something like that', 'why are you always too sensitive?'

- eye rolling and other contemptuous expressions and laughter or ridicule; name calling: ‘he’s a brat when he’s angry’, ‘don’t be a crybaby’.

Notes:

- Higher scores trump lower ones: if you see evidence for both acknowledging of the event AND of the emotion, you should code that as *Encouraging 3*. In other words, when separate pieces of evidence support a lower and higher score, go with the higher score
- When one piece of evidence is in between two scores, go with the lower one. For instance, if you are undecided between a ‘2’ and a ‘3’ for encouraging emotion, go with a ‘2’ – be conservative
- Both encouragement and discouragement are always coded – responses may show both encouragement and discouragement, one or the other, or neither
- Code encouragement/discouragement separately for positive emotions and negative emotions
- Can have encouragement/discouragement without any reference to emotion originally being brought up by the responding player
- When players share a response, you can code the same based on events but not for emotions. Code emotions separately based on how each player responded
- Dramatization of event can be seen as mirroring the expressed emotion
- When conversation is off topic, don’t code

More Examples:

Encouraging 2:

Child is talking about a situation that made him sad and Mom says: “I can understand why you are sad, but ...”

In this case, Mom clearly acknowledges the child’s emotion even though she quickly goes on to talk about the reason she did what she did.

Encouraging 3:

Mom talks about something that made her mad and at some point the child says: “why did it make you mad?”. This shows awareness on the part of the child to Mom’s feelings. In addition, by asking “why”, the child is seeking to further understand the cause of that emotion.

Discouraging 2:

Mom talks about a time she was upset and how her feelings were hurt. Although child acknowledges her feelings he proceeds to say that “you were being mean”. He therefore, devalues her feelings by putting the blame on her.

APPENDIX B

Dyadic Communication Coding Manual

Procedure: First, watch the video coding Child Engagement, Parental Warmth, and Parental Negativity. Then, watch each conversation/card and code the designated participant for the remaining codes (P = parent, C = child).

Degree of child engagement (C)

Code for the **whole** conversation task, not per card

How much did the child participate in the conversation task?

1 = Child was not engaged, majority of the time was off task

2 = Child somewhat participated in the conversation, occasionally giving one word responses, or becoming distracted/off task

3 = Child was completely engaged and fully participated in the conversation task

Parental warmth (P)

Code for the **whole** conversation task, not per card

How much did the parent behave in an overall positive or warm manner? This can be present in conversation content, body language, tone of voice

Examples: leaning in towards the child, smiling, laughing, eagerly talking with child, praising child, behaving in a supportive and encouraging manner

0 = no positive behaviors

1 = one or two positive behaviors

2 = three or four positive behaviors

3 = displayed several positive behaviors

Parental negativity (P)

Code for the **whole** conversation task, not per card

How much did the parent behave in an overall negative or hostile manner? This can be present in conversation content, body language, tone of voice

Examples: cold body language (positioned away from child), not making eye contact, being overly critical, sarcastic or rude, rolling eyes, giving dirty looks, punitive tone, complaining

0 = no negative behaviors

1 = one or two negative behaviors

2 = three or four negative behaviors

3 = displayed several negative behaviors

Problem solving (P)

Only use this code with **negative** event cards from the **child**

The extent to which the parent helped the child develop a deeper understanding of the problem/emotional event (discuss causes, consequences, etc). The parent explored the problem with the child through questions and helps the child develop ideas for how to handle similar situations in the future.

This code pertains to the details of the event/problem. Be very careful not to code for **emotion talk/emotion coaching**. For problem solving, only pay attention to how much the parent and child discuss the **event**.

Note: Although this may be a process that parent and child go through together, it is *parent-directed*.

. = avoid

0 = no discussion

Example: Child gives an event, but parent says “Ok” and moves on)

1 = minimal discussion of the event

Example

Child: I was mad when I couldn't go to the park.

Parent: That was on Sunday, right?

Child: Yeah, when Steven came over.

Parent: Oh yeah, I remember that.

2 = parent discusses the event at length but not **with the child**.

Perhaps the parent lectures the child on what to do next time, but there is not back-and-forth discussion.

3 = asks the child at least one question about the cause or consequence of the event

Example

Child: I was mad when I couldn't go to the park.

Parent: That was on Sunday, right?

Child: Yeah, when Steven came over.

Parent: Oh yeah, I remember that. So what happened when you got mad?

Child: You told me to take some space

4 = several questions to child

5 = discuss causes and consequences or develop solutions for future events. Even if there is not solution, there is some resolution about the event by the end of the conversation.

Example

Child: I was mad when I couldn't go to the park.

Parent: That was on Sunday, right?

Child: Yeah, when Steven came over.

Parent: Oh yeah, I remember that. So what happened when you got mad?

Child: You told me to take some space

Parent: That's right, I did. Did that help?

Child: Kind of. But I still don't understand why I couldn't go

Parent: Well what happened before Stephen came over?

Child: I don't know. I was playing a video game.

Parent: What did I ask you to do before he came over?

Child: To clean my room.

Parent: Yes, to clean your room. Did you?

Child: No

Parent: So what do you think should happen next time?

Child: Clean my room?

Parent: That's right.

Parent Narrative Embellishment (P)

Only code for parent cards

The extent to which the parent provided background information pertaining to the event, was very expressive and detailed. How much did the parent talk about the event/emotion?

Note: Doesn't go hand-in-hand with warmth/positivity, a parent can be very elaborative-without being overly positive. Repeating the same information does not count towards embellishment

0 = no detail

Example: Names an event and moves on to the next card without providing any details

1 = provides one or two background details

Example: I was upset last week when you fought with your sister. The reason I was upset was because we were at the store.

2 = provides a moderate amount of background detail

Example: "I was upset last week when you fought with your sister. The reason I was upset was because we were at the store. I just wish that you and your sister would get along, especially when we are in public. I mean, you guys were causing a ruckus and disrupting the entire store."

3 = provides numerous details, very comprehensive overview of the event/emotion. Does it seem like the parent has told the complete story?

Example: "I was upset last week when you fought with your sister. The reason I was upset was because we were at the store. I just wish that you and your sister would get along, especially when we are in public. I mean, you guys were causing a ruckus and disrupting the entire store. More than that, I don't like it when you guys act so hateful towards one another. We have talked about how we need to respect family and (etc etc)"

Dyadic inter-subjectivity (PC)

This is a code for the *dyad*, not specifically for the parent or child. Code both parent and child card for each emotion discussion.

Shared meaning and togetherness expressed by the parent and child, extent to which the dyad worked together to construct the meaning of the event together. **Did they seem to agree on details, be of the same frame of mind and "on the same page"?** Don't seem to argue with one another, there is lots of back-and-forth between the parent and child

Note: They can disagree as long as there is not a sense of hostility and there is lots of back and forth between the parent and child

0 = did not share focus, attention, or ideas

Example: Dyad did not discuss event

1 = rarely were on the same page

Example: disagreement on event or not connected.

2 = seemed to share focus, attention, or ideas occasionally

Example: may agree on one or two details but it doesn't go beyond that.

3 = parent and child were, for the most part, in agreement/of the same mind frame and rarely seemed to be discordant

Example

Parent: I had fun with you when we went to the duck pond

Child: We've never been to the duck pond.

Parent: Yes we have, remember last weekend?

Child: Oh yeah, that's right! And we fed the fish!

Parent: That's right, we did. I remember we saw someone...

Child: Tommy, from school. We played with his new football.

Parent: Did you like playing football with him?

Child: It was ok, Tommy isn't very good at it.

Parent: Well, maybe he hasn't practiced as much as you have.

Child: Maybe.

4 = parent and child were completely "on the same page" and seemed to be in sync with each other

Example

Parent: I had fun with you when we went to the duck pond

Child: Oh yeah, that's right! And we fed the fish!

Parent: That's right, we did. I remember we saw someone...

Child: Tommy, from school. We played with his new football.

Parent: Did you like playing football with him?

Child: It was ok, Tommy isn't very good at it.

Parent: Well, maybe he hasn't practiced as much as you have.

Child: Yeah, he doesn't play on the football team.

Parent: That's true. Then I remember we took a walk around the pond.

Child: We saw a frog!

Parent: Yeah, and you made that noise, that..

Child: The frog noise

Parent: The frog noise, that's right.